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SOPAC

**PROCEEDINGS OF THE
TWENTY-NINTH SESSION**

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Port Mabel

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About the Cover:

The cover is part of a composite picture of Kiritimati (Christmas Island) Lagoon, Kiribati. It is part map and part satellite image. The map was scanned and geocoded (geometrically corrected). All map parts coloured blue representing the lagoon sea water were replaced by an also geocoded satellite image. This satellite image was derived from Landsat 7, recorded 16 September 1999. For the image display, the bands blue, green and red were selected giving a much more detailed picture of the lagoon morphology.

The image was purchased to produce bathymetry as an input for the hydrodynamic modelling of the lagoon.

SOUTH PACIFIC APPLIED GEOSCIENCE COMMISSION

Member Countries:

Australia, Cook Islands, Federated States of Micronesia, Fiji Islands,
French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia,
New Zealand, Niue, Papua New Guinea, Samoa, Solomon Islands,
Tonga, Tuvalu and Vanuatu

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SOPAC

**PROCEEDINGS OF THE
TWENTY-NINTH SESSION**

hosted by the
**Government of the Republic of Kiribati in
Tarawa, Kiribati**

26 September – 4 October 2000

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December 2000

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INTRODUCTION TO SOPAC

Objectives

The South Pacific Applied Geoscience Commission (SOPAC) is an independent, inter-governmental, regional organisation mandated by several South Pacific nations to:

- develop resource policy, and advise on the management and development of onshore and offshore mineral and aggregate resources;
- meet the needs for water resources, waste management, health and sanitation through the provision of resource policy and management advice, appropriate information and training;
- support the information requirements and enhance the skills required for management and operation of the energy sector in member countries;
- assist decision makers and planners to develop coastal zones and extract resources while protecting them from degradation;
- predict the effects of hazards on the health, wealth and development potential of member countries;
- assist decision makers and planners to understand ocean processes, develop ocean areas and extract resources while protecting oceans from over-exploitation and pollution;
- provide geoscientific and related education needs through the provision of a variety of training and education opportunities at all levels of geoscience and resource management;
- meet the demands for electronic information by member country governments and regional organisations to manage resources and risk;
- support National authorities in disaster management activities through advice information; and
- provide readily-available and current information in geoscience and related fields to member countries and others.

Member Countries

Member countries are currently Australia, Cook Islands, Federated States of Micronesia, Fiji Islands, Guam, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, Solomon Islands, Kingdom of Tonga, Tuvalu and Vanuatu. New Caledonia and Tahiti Niu are Associate Members.

Background

The Commission comprises the Governing Council (the member country representatives), the Secretariat (based in Suva) and the Technical Advisory Group (TAG). TAG comprises advisors who are nominated by member countries and by supporting Governments and organisations, or are invited by the Secretariat.

The Commission's Work Program is formulated from member country requests, and is carried out by its Secretariat based in Suva, Fiji.

SOPAC was established in 1972 as CCOP/SOPAC (the Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas) under the sponsorship of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). In 1984, CCOP/SOPAC changed its legal status to become an independent, regional inter-governmental body, changing its name to SOPAC (South Pacific Applied Geoscience Commission) in 1989.

Funding

SOPAC is funded by a combination of statutory and voluntary contributions by its member countries and grants from donor governments and international agencies. An annual budget of around F\$5 million supports the implementation of the Work Program and the operation of the Secretariat.

Supporting countries include Australia, Fiji and New Zealand as members, Canada, France, Republic of Korea, Japan, Norway, the People's Republic of China, Taiwan and the United Kingdom. The European Union, Commonwealth Secretariat and UNDP are the principal multilateral supporting agencies. SOPAC has formal and informal links with many other supporting agencies and institutions. Member countries provide considerable support during survey work, and ship time in the region is regularly contributed by other countries such as the France, Japan, United States and Germany.

SOPAC Annual Session

The SOPAC Annual Session is a meeting of the Commission, and has four components:

- (a) a Plenary Session covers the procedural aspects of the meeting and the presentation of reports from member countries, donor Governments and organisations, and the Secretariat. This session is a meeting of the Council at which other delegates are invited as observers, contributing to the discussion of non-technical matters concerning SOPAC such as cooperation and funding.
- (b) a meeting of the Technical Advisory Group (TAG) to consider the SOPAC Work Program. All TAG members participate as equals during this meeting.
- (c) a meeting of the Science Technology and Resources Network (STAR) which is an open forum for reporting geoscientific research in the South Pacific and for exchanging information and ideas between scientists from SOPAC Member Countries and the international geoscientific community.
- (d) a Governing Council meeting to discuss the administrative and financial business of SOPAC, which may be open to observers who could speak when invited.

See the Table on the next page for a summary of past SOPAC sessions.

Summary of SOPAC Annual Sessions

Session	Date	Venue	Chairman	Vice-Chairman	TAG Chairman	Rapporteur(s)
Preparatory	Jul 1971	Manila, Philippines	R.W. Willett, NZ	—	—	—
FIRST	Nov 1972	Suva, FJ	D. Green, FJ	S. Tu'a Taumoepeau, TG	R. Willett, NZ	—
SECOND	Aug-Sep 1973	Nuku'alofa, TG	S. Tongilava, TG	R. Richmond, FJ	R. Willett, NZ	—
THIRD	Sep 1974	Apia, WS	T. Enari, WS	P. Mueller, WS	J.W. Brodie, NZ	—
FOURTH	Sep 1975	Honiara, SI	R.B. Thompson, SI	G. Sawtell, CK	J.W. Brodie, NZ	—
FIFTH	Nov 1976	Rarotonga, CK	G. Sawtell, CK	S. Tongilava, TG	D. Kear, NZ	—
SIXTH	Oct 1977	Port Moresby, PN	N. Agonia, PN	R. Richmond, FJ	J.W. Brodie, NZ	J. Wright, UK
SEVENTH	Oct 1978	Wellington, NZ	D. Kear, NZ	S. Kingan, CK	J. Wright, UK	G. Shepherd, TS
EIGHT	Sep-Oct 1979	Suva, FJ	R. Richmond, FJ	A. Macfarlane, VA	M. Teman, US	J. Wright, UK
NINTH	Oct 1980	Tarawa, KI	T. Otang, KI	A. Macfarlane, VA	J. Wright, UK	J. Eade, NZ
TENTH	Oct 1981	Port Vila, VA	A. Macfarlane, VA	S. Tongilava, TG	J. Wright, UK	J. Eade, NZ
ELEVENTH	Nov 1982	Wellington, NZ	H. Thompson, NZ	S. Tongilava, TG	N. Exon, AU	J. Eade, NZ
TWELFTH	Oct 1983	Nuku'alofa, TG	S. Tongilava, TG	L. Ioane, WS	N. Exon, AU	D. Howell, US; J. Eade, NZ
THIRTEENTH	Oct-Nov 1984	Apia, Western Samoa	K. Eteuati, WS	S. Danitofea, SI	H.G. Greene, US	N. Exon, AU
FOURTEENTH	Sep 1985	Honiara, SI	J. Saliga, SI	S. Kingan, CK	H.G. Greene, US	D. Mallick, UK
FIFTEENTH	Sep 1986	Rarotonga, CK	S. Kingan, CK	G. Anderson, PN	J.V. Eade, NZ	D. Mallick, UK
SIXTEENTH	Oct 1987	Lae, Papua New Guinea	W. Searson, PN	S. Sopoanga, TU	D.J. Mallick, UK	J. Eade, TS; M. Fisk, UN
SEVENTEENTH	Oct 1988	Suva, FJ	S. Sopoanga, TU	R. Rutland, AU	C. Helsley, US	J. Eade, TS
EIGHTEENTH	Oct 1989	Canberra, AU	R.W. Rutland, AU	K. Kolone (Interim)	R.N. Richmond, TS	J. Harper, TS
NINETEENTH	Oct 1990	Tarawa, KI	T. Tokataake, KI	C. Mortimer, VA	R.N. Richmond, TS	H. Creech, TS
TWENTIETH	Sep-Oct 1991	Port Vila, VA	C. Mortimer, VA	S. Tongilava, TG	B. Page, UK	A. Sherwood, TS
TWENTY-FIRST	Sep-Oct 1992	Nuku'alofa, TG	S. Tongilava, TG	A. Simpson, FJ	H.G. Greene, US	A. Sherwood/J. Eade, TS
TWENTY-SECOND	Oct 1993	Suva, FJ	A. Simpson, FJ	M. Kaminaga, MI	R.N. Richmond, TS	A. Sherwood, TS
TWENTY-THIRD	Sep 1994	Majuro, MI	J. Kabua, MI	Nat. Rep. Australia	D. Pickrill, NZ	R. Howorth, TS
TWENTY-FOURTH	Sep-Oct 1995	Suva, Fiji	D. Ritchie, AU	C. Brown, CK	D. Pickrill, Canada	R. Howorth/L. Bukarau, TS
TWENTY-FIFTH	Oct 1996	Rarotonga, CK	R. Newnham, CK	G. Ayin, FSM	A. Macfarlane, UK	L. Bukarau/R. Howorth, TS
TWENTY-SIXTH	Sep-Oct 1997	Nadi, Fiji Islands	B. Rao, FJ	G. Ayin, FSM	D. Tappin, UK	L. Bukarau/R. Howorth, TS
TWENTY-SEVENTH	Sep-Oct 1998	Suva, Fiji Islands	S. Anefal, FSM	Nat. Rep. Guam	D. Tappin, UK	L. Bukarau/P. Fairbairn, TS
TWENTY-EIGHTH	Oct 1999	Nadi, Fiji Islands	T. Barrett, NZ	K. Ruaia, Kiribati	T. Barrett, NZ	L. Bukarau/P. Fairbairn, TS
TWENTY-NINTH	Sep-Oct 2000	Tarawa, Kiribati	K. Ruaia, Kiribati	M. Kaminaga, RMI	K. Ruaia, Kiribati	L. Bukarau/P. Fairbairn, TS

Abbreviations used: AU - Australia; CK - Cook Islands; FJ - Fiji Islands; KI - Kiribati; MI - Marshall Islands; NZ - New Zealand; PN - Papua New Guinea; RMI - Republic of Marshall Islands; WS - Samoa; SI - Solomon Islands; TG - Tonga; TS - SOPAC Secretariat; TU - Tuvalu; VA - Vanuatu; UK - United Kingdom; UN - United Nations; US - United States



Participants at the Official Opening of the 29th SOPAC Session at the Otintaai Hotel, Tarawa, Kiribati.

OPENING ADDRESSES

ADDRESS BY HONOURABLE MR EMILE SCHUTZ

Minister of Natural Resources Development of the Government of the Republic of Kiribati
on the Official Opening of the SOPAC 29th Annual Session

Our honoured guests from abroad; the National Representatives of SOPAC Governing Council member countries, Members of your delegation, the Director of SOPAC Secretariat, Mr. Alfred Simpson, the Chairman of STAR Meeting and Scientist members of the STAR Meeting, Observers from our CROP agencies, supporting Government and Institutions, Colleague Ministers and your wives; Heads of Members of the Diplomatic Corps; Permanent Secretaries and your wives; Invited Guests; Friends; Ladies and Gentlemen,

Since we last hosted the SOPAC Governing Council Session 10 years ago in 1990, we had lost hope of hosting the Session for the second time because of the increased membership to eighteen countries and the need to rotate the hosting of the Session between the members. But your decision last year to accept our proposal to host this year's Session has allowed us to come together to continue our celebrations for the new Millennium. For us, there could have been no better timing than this occasion.

On behalf of the Government and the people of the Republic of Kiribati, I am therefore privileged and honoured to receive and welcome you all to Kiribati for the SOPAC Governing Council 29th Annual Session.

I want to take this opportunity to welcome, especially those who have come to Kiribati for their first time. In particular, I want to acknowledge the efforts of quite a number of scientists from abroad who have come for the Science, Technology & Resources (STAR) technical meeting which started on the very day you arrived last Tuesday and ended yesterday, and who have also come for the Joint Plenary and TAG meeting to be convened tomorrow morning and on Monday. I know that for most of the scientists who are with us today, this is their first time to visit Kiribati, and I can understand that travelling to Kiribati from abroad can be difficult. But equally, I hope that it can also be rewarding in various other ways and that you find your visit on this occasion most memorable.

I would also like to recognize the presence of observers from supporting governments, organizations and institutions who have also taken time out of their busy schedule to join us during this Session. Your participation does reflect your continued support to the organization which means a lot to us - the SOPAC

member countries. It remains for the organization therefore to play active roles to execute decisions in the most effective manner possible without placing its members in a more disadvantaged position.

One of the unique features of the SOPAC Session is that it allows the integration of scientists, technical bureaucrats and policy advisors to debate constructively in a series of well structured meetings of STAR, TAG and Policy. Whether or not we are conscious of it, I believe this is one of the strengths of SOPAC which might need integrating in the meeting formats of our other regional organizations. As a Minister responsible for non-living resources, I sometimes feel the need for possible integration of some kind of ministerial meeting with the science meeting within the existing framework. Perhaps the idea might be premature at this stage but the reality is that a well-informed decision is conditioned by a sound knowledge of a subject matter in question which we do not always obtain in a timely manner, whether it be coastal erosion, waterlens and supply issues, aggregate for construction purposes, or land and seabed mining. A lot of times we spend on taking stock of events such as hurricanes and other natural disasters after they have happened rather than being able to respond effectively to them when they occur. Again, this is because we lack the knowledge and details about such events.

The underlining issue here, we must note, is the question of application. Until we can apply what we know, we would never be able to achieve our needs for our people. The application of science, or geoscience for that matter for our purpose, is and should remain our principal objective in SOPAC. This will continue to remain a formidable challenge to the SOPAC Governing Council and I would encourage all of us, including our scientists interested in SOPAC work program, and policy makers alike to address this question as a matter of priority. The satisfaction of SOPAC work program can only be achieved if it improves the standard living of our people wherever they may be, whether in the outer islands, villages, towns, or in other remote locations.

The theme of your STAR Meeting which is "...the role of geoscience in reducing vulnerability of Pacific communities to climate variability, energy, coastal and ocean issues...", which would become the guiding theme for this year's Annual Session, could not have

been better selected. However you interpret it, the theme calls for improved knowledge about our natural environment and the non-living natural resources available to us. It calls for revision of our school curriculum so that we may be able to begin the process of learning about these issues at a much earlier stage of childhood. It also calls for the need to adapt ourselves to changes that are happening to our physical environment. And it also speaks of the need for support at the political level for capacity building in this area - a matter which we have taken for granted for too long in the past years.

The agenda that you have before you is quite loaded and heavy. Some of the issues you will discuss and make a decision on will set important foundations for the future development, of not only SOPAC as an organization, but also of the individual member countries and the entire region as a whole. These include the proposal for possible integration of the work programs of the Secretariat for the Pacific Community (SPC) and that of SOPAC. Without pre-empting decisions on this matter, I believe that what is important for us is that the programs and services, which we have agreed amongst ourselves, are delivered in the most cost-effective manner possible. We must be decisive in our undertakings but more importantly we must be accurate and practicable in our approach. To achieve these is not an easy task: we must continue to work together as one family of nations in the Pacific region. This would mean putting aside our individual positions on the issues in the agenda and concentrate more on our common interests, our common needs and requirements, and our common visions and aspirations for the good of our peoples.

Tomorrow you will have the opportunity to visit Abaiang island - one of our nearby atolls. This is a rare opportunity designed to familiarize you, in particular those of you who may have never had the opportunity of visiting an atoll environment in your lives. The question of applying geoscience in our work program becomes a driving force for us to arrange the visit. I would hope therefore that you take advantage of the visit and that you find time to explore, understand and appreciate the different natural constraints that we are faced with on a daily basis. The

situation on Abaiang atoll would not differ greatly from what one may find in the remaining atolls in Kiribati. And I believe similar situations can be found in other atolls in the Pacific region, something upon which we may be able to build a common approach to address the special problems of living on an atoll. Again, I would encourage that you all visit the island!

As we are also preparing for the forthcoming 31th Pacific Forum Meeting in three weeks' time, I would hope that the outcomes of your deliberation during your Session would provide an important basis and background information needed to highlight the importance of developing the non-living resources of our Pacific region which should add ingredients needed for the formulation of a dedicated regional ocean policy for all of us. I would also like to believe that your Session on this occasion becomes one of the memorable highlights of the chain of events in our continued celebrations for the new millennium.

In closing, I want to acknowledge the tremendous contributions made by supporting governments and institutions in allowing Kiribati to host this year's SOPAC Governing Council 29th Annual Session. In particular, I want to thank the SOPAC Secretariat for coordinating assistance needed for this Session and all the staff and personnels who have been working behind the scene in getting this Session off the ground to where we are today.

Indeed, I wish to thank the Council members for putting your trust to us to host this year's Session in Kiribati in spite of budget constraints that such undertaking would have on us. But I do hope that in spite of those constraints, you are able to achieve what you want to do during this visit and that you are able to understand better our problems and natural constraints and difficulties.

Having said that, it is now my pleasure and honour to declare, on behalf of the Government and the people of the Republic of Kiribati, the SOPAC Governing Council 29th Annual Session, open.

Thank you.

RESPONSE TO OPENING ADDRESS BY HE MR ENELE SOPOANGA

Tuvalu High Commissioner to the Fiji Islands
at the Official Opening of the SOPAC 29th Annual Session

The Minister for Natural Resources Development of the Republic of Kiribati, the Honourable Emile Schutz, Honourable Ministers from the Government of the Republic of Kiribati, the Director of SOPAC, Alfred

Simpson, Distinguished Representatives, Science and Technical Friends of SOPAC, Your Excellencies members of the Diplomatic Corps, Ladies and Gentlemen.

I am sure it is by design, and certainly not a coincidence, that I, as the only overseas visitor here who speaks acceptable I-Kiribati, have been assigned the task to give the vote of thanks to the opening address by you, Sir, the Honourable Emile Schütz. I do have the pleasant honour to perform that task, and to say our "karaba-raba ae moan te bati nkoimi kain I-Kiribati ni bane".

On behalf of the SOPAC Governing Council Members, its Secretariat Staff, and on behalf of all of us gathered this morning I thank you and the Government and People of the Republic of Kiribati for your warm hospitality in hosting the 29th Session of the SOPAC Governing Council.

For a smaller island country like Kiribati to play host to a big group of visitors such as us, it is far from being easy – especially when the group is a mix of scientists, engineers, technicians and bureaucrats. I believe therefore that I echo the sentiments of us all in expressing our most sincere appreciation to you, Sir, and the Kiribati Government for the excellent arrangements you have made for us since our arrival, and those that I am sure we will continue to enjoy during the rest of our stay on Tarawa.

I also thank you, Honourable Minister, for sparing your valuable time to open this meeting, and for the most enlightening message you have conveyed to us in your opening speech, and the challenges to which you have drawn the attention of the Council. Your address, which correctly referred to the need to focus on appropriate application of knowledge drawn from the science and technology, and to issues of

SPC/SOPAC integration, has certainly inspired us in our task as we meet over the next few days to deliberate on the work of SOPAC.

The holding of the Council's session here in Kiribati, however, could not have been more appropriate. At the close of the century, it not only presents Council with the golden opportunity to relate directly SOPAC's work activities with the reality of challenges confronting many of SOPAC Member Countries. In a way, this annual session also underscores the significant importance of SOPAC to its individual members, and in particular to smaller island/atoll countries in addressing issues affecting the very basis of their survival.

There is also another important aspect. And that is the need to ensure that increasing global integration through digital innovations and trade do not erode our traditional and cultural values, the foundation of our survival in these small islands. The cultural items ably demonstrated and performed by the school children this morning, speak volume of how important it is to ensure that application of knowledge from science is conscious of these values.

As the Governing Council, we greatly value this opportunity to meet on Tarawa and I am sure this opportunity and the wisdom and inspiration from your words will further strengthen our collective support to the work of SOPAC.

I wish the Government and the People of Kiribati "te mauri, te raoi ao te tabo moa".

Thank you

ADDRESS BY THE HONOURABLE MS JANE MULRYAN, ON BEHALF OF THE OUTGOING CHAIR

HE Mr Tia Barrett, New Zealand High Commissioner to the Fiji Islands on the Official Opening of the SOPAC 29th Annual Session

It seems to be a habit that Kiribati holds the Governing Council of SOPAC every ten years. The first occasion was in October 1980, the second in October 1990, and now this 29th session on the eve of October 2000. As the hosts of last year's session, held in Nadi, New Zealand is pleased to congratulate the Government of Kiribati on taking up the challenge once again. In doing so, Kiribati has shown that it is possible for smaller member countries of our organisation to host these important meetings.

The Chair of the 28th session, Mr Tia Barrett, who is our High Commissioner to Fiji, Nauru and Tuvalu, asked me to convey to you all his greetings and best wishes for a successful meeting in Tarawa.

In our opening address last year, New Zealand stressed the need for cooperation in the march towards progress. SOPAC provides the framework through which specialised scientific and technical expertise can be turned to the benefit of communities in the Pacific. We are fortunate too that we have a dedicated group of men and women to service our region. Their commitment deserves our fullest acknowledgment and unswerving support and New Zealand commends the staff, from the Director down, for their contribution to the development of our region. In particular we should commend the commitment they showed in maintaining the work programme in spite of the recent events in Fiji.

We will spend the next week under the able leadership of our hosts, Kiribati, reviewing the work of the organisation and scrutinising the programme and budget for the next twelve months. I will reserve New Zealand's comments on these aspects for the appropriate points in the proceedings.

There are some important decisions to be made in the forthcoming session. We will, of course, be choosing who will lead SOPAC for the next three years, and it is pleasing to see that we have some strong candidates coming forward. We also need to decide what is to be done about the proposal to integrate SPC and SOPAC. The report by the consultants is before us and we can look to that to give us a lead. But we will need to listen also to what the SPC's governing body has to say about this crucial matter before we take a final decision. Another issue will be the proposals newly arrived from the CROP Working

Group on Remuneration set up by the Forum Officials Committee late last year to harmonise salaries and conditions of service across the organisations that serve our region. The gestation period has been disappointingly long but some useful work has resulted and as the first of the governing bodies to take a look at this we have an opportunity to set the trend.

We have an interesting agenda of work ahead of us and my delegation for one looks forward to participating in the detailed discussions.

In concluding, I take this opportunity to thank the Secretariat for its support to the New Zealand Chair during his year of office. I also welcome the appointment of Professor John Collen of Victoria University of Wellington as Chair of STAR. Finally, may I wish the new Chair, Kiribati, all the very best for the forthcoming session and for the next twelve months.

INTRODUCTORY REMARKS BY ALFRED SIMPSON

Director of SOPAC Secretariat at the Official Opening of the SOPAC 29th Annual Session

Chair, Distinguished National Representatives on the SOPAC Governing Council, Excellencies, Representatives of CROP, Supporting Governments & Agencies, Distinguished Guests, Ladies & Gentlemen on behalf of the Secretariat may I warmly welcome you to the 29th Session of the SOPAC Governing Council hosted here in Tarawa by the Government of the Republic of Kiribati.

At the outset I would like to thank our outgoing Chair, His Excellency Mr Tia Barrett, NZ High Commissioner to Fiji for his support and guidance over what has been an interesting and at times trying 12 months. I hope the NZ delegation can convey our appreciation to both the High Commissioner and the NZ Government.

Mr Chairman, most of us have been here since Tuesday and there are a few who arrived even earlier to attend the Regional Energy Meeting. Without exception we have been overwhelmed with the welcome afforded us and impressed with the efficiency and professionalism with which your small team has organised our stay and staged this Annual Session.

Those of us who were in Nadi last year remember the skepticism expressed by many when you announced that your Government would be hosting us in Tarawa in 2000. I raise this issue because it has been no mean feat in terms of logistics, organisation and financial resourcing. If this is an indication of your ability and tenacity then, indeed, SOPAC has a true and proven champion to guide its Council through the next twelve months.

Chair, several here, including me, return for what will be our second Council meeting in Kiribati. The last time I was here was in 1990 when I led the Fiji delegation. I raise this because every time we come to Tarawa we seem to have before us an issue of vital importance relating to the future of SOPAC. At the 1990 meeting, some of you may remember that the Agreement or the Constitution establishing SOPAC as a fully-fledged, regional, intergovernmental organisation was opened for signing. Your government was amongst a few that participated in the historic event.

SOPAC, in its various forms, has been around for 28 years now, but I don't think there has been a comparable period in its history to match the growth and the achievements of the past decade. Ten years after that meeting we return again to consider again the continued existence or otherwise of SOPAC as we know it.

Consideration of the report on the matter of the SOPAC-SPC Integration calls on the Governing Council to make one of the most important decisions it has made in recent years: A decision that is not only crucial for SOPAC but one that might have far reaching impact on regional organisations in general.

Chair, I am indeed conscious of the need to be focussed and, in the interests of saving valuable time, to be brief. I therefore return to my task under this Agenda Item; essentially to speak to Document AS29/5.1 and to introduce the parts of the Director's Report. Document AS29/5.1 not only contains a written introduction penned some months ago, but also

in the 5 Attachments, provides a summary of the staffing, our equipment or operating tools and certain aspects of our efforts in the area of capacity building. A list of reports and publications together with cruises in the region provide a snapshot of work by the Secretariat and our scientific partners.

It is not my intention to revisit all the issues raised in the documentation that you have before you. Other Agenda items will provide an opportunity to address key issues such as donor support, staff remuneration, as well as to consider in detail some of the major initiatives and directions on which we have embarked.

In previous years I have addressed the role of the Secretariat, the Governing Council and our member countries in the work of SOPAC, and how together we will make a difference to the lives of the Pacific peoples.

This year I would like to acknowledge the role and the input from the scientific community and the unstinting service from our technical advisors. Those who drafted the SOPAC Constitution showed great insight or vision in defining a special role for the TAG or Technical Advisory Group; a role that in recent times we have verged on taking for granted. I am grateful to the SOPAC-SPC Integration study team for not only highlighting this unique arrangement we have with the scientific community, but also for suggesting how it might be a model for other organisations.

Chair, I feared that in moving this meeting away from the more regular air routes we might lose the interest of our technical advisors. Unlike member country participants, members of TAG and those who attend STAR aren't obliged to attend our meetings. I am pleased to report that although numbers this year might be slightly down, the high quality of presentations in STAR has been maintained. Might I, on behalf of the Secretariat, thank the two previous Chairmen of STAR, Drs Chuck Helsey and Keith Crook for their invaluable service to SOPAC and science in the region. Later we will hear from the new STAR Chair, Professor John Collen. We are indeed fortunate to have someone of his standing and with his regional experience to take over the reins.

Chair, SOPAC's programs and projects in the member countries have benefited from science and, more specifically, marine scientific research conducted by

our STAR and TAG partners. Having acknowledged the great benefits that have resulted from past cooperation, I would bring to the attention of this meeting that all is not well and so would like to issue a word of caution.

Our relationship with the scientific community should be best described as being largely symbiotic. Our partners carry out their work in our member countries to achieve their scientific objectives and we gain from the scientific results, observations and new data. The region faces many climate change issues and questions about the marine environment, and it seeks answers to the sustainable development of its living and non-living resources. These are issues that might shape or even underpin the very future of the region.

On our own we do not have the capacity, nor are we likely in the future, to replace what the outside community presently provides. As I said all is not well. Some countries are becoming reticent to allow outsiders in and some sections of the scientific community are threatening to take their expertise and resources elsewhere. No side is blameless but if the issue is not resolved soon there will be no winners.

I am glad to report that this is the one dark cloud that hangs over us. I have raised it because of its importance to our work in the region.

However, to end on a positive note I trust that Council in its review and deliberations over the next few days will note that there is much in the two parts of the Director's Report to Council to show that SOPAC has taken on board many of the lessons from the past, it is in good stead and essentially should be able to look forward to a bright future.

Chair, as I stated in my written Introduction, the last six months have not been particularly easy for the Secretariat. I therefore would like to place on record my gratitude and admiration for the way in which the staff conducted themselves during what we often trying times. The fact that deadlines were met for the distribution of most of the documentation inspite of power cuts and other distractions attests to their high level of professionalism.

Finally, I would like to thank the Governing Council for the opportunity over the last three years not only to lead such a team but more importantly to serve the region.

Thank you and Koraba.



Sunrise, Abaiang Island, 1 October 2000.



SUMMARY RECORD OF THE TWENTY-NINTH ANNUAL SESSION

1. Opening

1. The Twenty-ninth session of the South Pacific Applied Geoscience Commission (SOPAC), including its Technical Advisory Group (TAG) and the Science, Technology and Resources Network (STAR) was held in Tarawa, Kiribati, 26 September – 4 October 2000.

2. A traditional elder, Unimwane, welcomed delegates and called the meeting to order.

3. The **Outgoing Chair**, His Excellency Mr Tia Barrett (New Zealand) presented his apology and was represented by Ms Jane Mulryan (New Zealand Delegate) who invited Pastor Pepine Iosua to say the traditional opening prayer.

4. Honourable Mr Emile Schutz, Minister of Natural Resources Development of the Government of the Republic of Kiribati opened the 29th Session of SOPAC. His opening remarks are produced in full in this proceedings volume. His Excellency Enele Sopoaga, Tuvalu High Commissioner to Fiji responded to the opening address on behalf of the Council.

5. Governing Council, all participants and invited guests were then treated to a stirring traditional dance performance by the Temanoku School Dancing Group.

6. In his **Outgoing Chair** remarks, which were read out by Ms Jane Mulryan, His Excellency Tia Barrett congratulated the Government of the Republic of Kiribati on hosting the meeting as it showed that it is possible for smaller member countries to host important meetings. He stressed the important decisions that would be required to be made at the meeting and took the opportunity to thank the Secretariat for its support to the New Zealand Chair during his year of office.

7. Delegates from the following member countries were in attendance: Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu. New Caledonia attended as an associate member. A full list of participants is appended as Appendix 1.

8. The following supporting governments attended as observers: People's Republic of China, France, Japan, Korea, Taiwan/ROC, and the United Kingdom. The following CROP organisations were represented: Forum Fisheries Agency, Forum Secretariat, South Pacific Regional Environmental Programme,

University of the South Pacific and the Secretariat of the Pacific Community.

9. Other Institutions, which were represented, are fully documented in the List of Participants (Appendix 1).

2. Elections

2.1 Chair and Vice-Chair of SOPAC

10. Mr Kaburoro Ruaia, National Representative of the Republic of Kiribati was elected Chair with acclamation.

11. The representative of Marshall Islands His Excellency Mr Mack Kaminaga was elected Vice-Chair of SOPAC in accordance with the Rules of Procedure.

2.2 Chairs of STAR and TAG

12. The Governing Council accepted STAR's nomination of Professor John Collen of Victoria University to continue as Chair of STAR and the appointment of Mr Faatoia Malele of Samoa as Vice Chair.

13. The Chair advised the meeting that he intended to chair the joint meeting of Council and TAG.

2.3 Appointment of Rapporteur

14. Ms Lala Bukarau was appointed Rapporteur with assistance from SOPAC staff and TAG advisors as necessary.

3. Agenda and Working Procedures

3.1 Adoption of Agenda

15. The Governing Council adopted the provisional agenda as presented in AS29/3.1 (*Provisional Agenda*). The agenda is attached as Appendix 2.

3.2 Appointment of Drafting Committee

16. An open-ended drafting committee was appointed comprising Marshall Islands, Australia, Federated States of Micronesia, Kiribati, Tuvalu and Fiji as the

core group to oversee the production of a Summary Record of Proceedings. According to the Rules of Procedure, Marshall Islands was appointed Chair of the Drafting Committee.

3.3 Appointment of Sub-Committees

17. Chair advised that all matters would be taken to full Council in avoid the need for sub-committees, with the exception of item 10.1 Director's Appointment. For this matter an Ad Hoc Sub-Committee of the whole Council would meet in camera.

4. Representation

4.1 Designation of National Representatives

18. The Chair invited response from all member-country delegates to confirm the information given in paper AS29/4.1 Rev.1 (*Designation of SOPAC National Representatives*) that was circulated. The amended full list is attached as Appendix 3. Amendments were made to the paper as follows: Samoa made changes to all their contact addresses, and Tuvalu named Mr Elisala Pita, Permanent Secretary for Natural Resources Development, as the new National Representative to SOPAC for Tuvalu.

4.2 Membership Issues

19. There were no membership issues

5. Director's Annual Report (Part 1a)

5.1 Introduction

20. The Director introduced his Annual Report to the Council and remarked that we live in challenging times in the region. He stressed the continuing need for SOPAC programs to be able to make a difference to the lives of the people in the Pacific and not just be seen as a center of excellence. He mentioned the improved management practices within the organisation and acknowledged the excellent work that the staff had done during the recent difficulties experienced in Fiji. The Director's introductory remarks are reproduced in full in this proceedings volume.

6. Statements

21. Member countries tabled statements that generally complimented SOPAC on their efforts during the

recent difficulties in Fiji and appealed to donors not to let those events influence their level of support to SOPAC.

22. Statements from other delegates expressed their support and congratulations to SOPAC for the work that is being done in the region

6.1 Statements from Member Countries

23. These statements are tabled in full in Appendix 4.

6.2 Statements by CROP Organisations

24. These statements are tabled in full in Appendix 5.

6.3 Statements from Supporting Governments and International Agencies

25. These statements are tabled in full in Appendix 5.

6.4 Statements from National Institutions

26. These statements are tabled in full in Appendix 5.

7. Director's Annual Report (Part 1B)

7.1 Issues Arising from the 28th Session and Special Session, 26th November, 1999

27. The Secretariat introduced paper AS29/7.1 and Council noted the actions taken.

7.2 Summary Report of 2000 Donor Support

28. The Secretariat tabled the Summary Report of 1999 Donor Support (AS29/7.2).

29. The Secretariat also informed Council that Italy had just announced its support of US\$100,000 for the Environmental Vulnerability Index project.

30. Australia highlighted that the range and diversity of the donor support was encouraging. It indicated the success of the promotion and delivery of the work program activities. Australia also mentioned that SOPAC's situation is similar to that of the Secretariat of the Pacific Community a few years ago whereby the organisation strengthened its program

delivery and attracted more support – a trend which should be applauded.

31. Council members individually noted increased financial support from donor and partner agencies and expressed deep appreciation for the generous support from Australia, New Zealand, Fiji, Canada, People's Republic of China, Commonwealth Fund for Technical Co-operation (CFTC), European Union, France, Japan, Korea, New Caledonia, Norway, Taiwan/ROC, United Kingdom, United Nations (UNDP/UNEP/UNESCO), United States of America and the new donors like Ireland and Italy.

32. Council requested the Secretariat to write to individual donors expressing Council's deep appreciation for the generous support received.

7.3 Financial Report 1999

33. The Secretariat tabled the 1999 Financial Report (AS29/7.3).

34. Following a few issues of clarification raised by Council Members, the Chair requested the Secretariat go through the Management Letter and advise Council on the remedial actions taken by the Secretariat. On the issue of the Receivables, the Secretariat made mention of the fact that it was seeking Council's decision on the proposed write off. Council agreed that the Secretariat write off that sum of money.

35. Samoa requested that the values of items written-off be provided as this was a requirement under the Financial Regulation 19 where a report of the written-off assets and the values was to be tabled before Council. The Secretariat undertook to provide the values of all items written off to Council before the end of this meeting.

36. Council accepted the 1999 Financial Report.

7.4 Report on 2000 Accounts to 30 June

37. The Secretariat introduced the Report on 2000 Accounts to 30 June (AS29/7.4). The Secretariat highlighted to Council the importance of the payment of contributions by member countries for the support of the Work Program and in the eliciting of support from donors.

38. The Chair commented on the need for Member Countries to honour their commitment to the organisation. The Chair also recognised the administrative difficulties some of the Member Countries may have in clearing their contributions. The Chair urged Council members to follow-up on their outstanding contributions.

39. Tonga referred to its comments at the last Annual Session where Tonga had highlighted their difficulties in making payments and that this would be evident in years to come. Tonga, however, assured Council that they would follow-up on their contributions upon return to Tonga.

40. Vanuatu advised Council that they would clear their contributions before the end of the year.

41. Niue advised Council that their Budget had just been approved and gave the assurance that their outstanding contributions will be cleared.

42. Cook Islands advised that they had a similar case to that of Niue and assured Council that their contribution would be paid.

43. Marshall Islands suggested that to assist in the clearing of payments, reminders sent be copied to Council Members missions in Suva so that they may follow-up. Cook Islands asked that reminders be copied to his office as well as the national representative.

44. Council recognised the advance payment by the Federated States of Micronesia and Marshall Islands, as reflecting their commitment to SOPAC. Council noted the report and urged those member countries who have yet to pay their arrears in contributions to do so at the earliest opportunity.

7.5 Summary of New Project Proposals

45. The Secretariat presented paper AS29/7.5.

46. SPREP commented that it was encouraging to see a number of proposals and requested an update on the status of the energy project on ocean energy. The Secretariat reported that there had been no further progress and the project had yet to be rewritten or resubmitted for funding. SPREP advised Council that there are several energy initiatives being undertaken in the Caribbean together with a major proposal for the development of several OTEC pilot projects around the world and that there had been reference to the Pacific as being a part of this multi-million dollar project. Council noted the remarks made and advised the Secretariat to follow up on these international developments.

47. Marshall Islands expressed concern on the capacity of the Secretariat to carry out all of the projects proposed as there has been no increase in staff numbers. The Secretariat took note of the concern and explained that all project proposals were self-sustainable and have in-built the necessary capacity requirements for their implementation. The Secretariat further elaborated that a lot of the funding proposals

were to secure funds for priority work which had been identified by member countries but had no budgetary allocations with which to carry out the work.

48. The Secretariat advised it was trying to improve the overall management of the organisation as a priority and a workshop was being planned for the Secretariat to develop a business plan, for more efficient ways to conduct its business.

49. Council noted the concern expressed by the Federated States of Micronesia that the newer members of the Pacific ACP group of nations not be overlooked in the work planned for implementation under the EU LOME IV Second Protocol SOPAC Project. The Secretariat clarified that FSM's concern be addressed under Agenda item 7.6.

50. Tuvalu expressed deep appreciation to the donors for their support of the new proposals, and commended the Secretariat for their efforts. Tuvalu reminded the Council of the need for Members to match this support from donors through honouring membership contributions and paying fees to SOPAC in good time. Tuvalu also emphasised the ongoing need for capacity building in-country under the new proposals for the sustainability of project activities at the national level.

51. Council noted the excellent work by the Secretariat in developing and following up on the project proposals.

7.6 EU Lome IV Second Protocol SOPAC Project

52. The Secretariat briefed Council on progress of the EU-SOPAC Project proposal. It was noted that the project review consultant, Dr Sandy MacFarlane had recently been to the Pacific to determine whether SOPAC had the capacity to implement the project, also whether countries had the capacity to receive the project, and to assess the sustainability of the project. The consultant was currently preparing a draft financing proposal.

53. Tonga sought clarification on budgetary allocations relating to the implementation of the project in member countries.

54. The Secretariat advised that the project proposal budgetary details for year one are provided in paper AS29/7.6 Suppl.1 (*Reducing Vulnerability of Pacific ACP States through Island Systems Management*).

55. Kiribati reaffirmed their support for the project and the recommendation before Council and endorsed the proposal activities to address the important issues of aggregates, water and natural disasters.

56. Council reaffirmed its endorsement of the SOPAC Project being considered by the European Union and requested the Secretariat to advise the consultant's reviewing the project of this decision. Council members of the Pacific ACP States re-committed their governments' full participation to ensure sustainability of the project and its outcomes. Council further recognised the recent increase in the Pacific ACP membership and noted the interest expressed by those countries in this project. Council agreed that the Secretariat work with the RAO and the EU Suva Office to develop a Phase II project under the post- Lome regional funding arrangements once those arrangements become clear.

7.7 Member Country Profiles

57. The Secretariat tabled the member-country profiles (AS29/7.7) and provided a briefing on them. It was highlighted that these profiles are 'living' documents and were designed to be used to promote the issues and work being done by the SOPAC Secretariat in member countries. Users were encouraged to provide feedback to the Secretariat on changes to situations in country to facilitate the update of the information in the profiles, scheduled for 2002. Council was also informed that the member-country profiles would be accessible on the SOPAC website.

58. Governing Council noted completion of the Country Profiles and agreed that individual countries and the Secretariat use them in the promotion of the role of SOPAC in regional development.

JOINT COUNCIL - TECHNICAL ADVISORY GROUP (TAG) SESSION

59. The Chair of Joint Council/TAG Session, Mr Kaburoro Ruaia, welcomed everyone to this session and reminded everyone that participation was open to all. He encouraged participation by all Members and TAG advisors.

8. Miscellaneous Reports

8.1 1999 Annual Report Summary

60. The Secretariat presented paper AS29/8.1. The Council noted the 1999 Annual Report Summary and agreed to use it in promoting the work of SOPAC.

8.2 CROP Summary Record and Report

61. The Secretariat presented paper AS 29/8.2 and its supplementary document.

62. Fiji sought clarification on the relationship between CROP and member governments and on the issues put forward to CROP. The Secretariat highlighted that CROP was formed to increase cooperation between regional organisations to ensure that collaborative efforts are made in addressing the common issues. The issues to be addressed are driven by the Governing Councils of the various regional organisations.

63. New Caledonia asked why the CROP decided to defer until 2001 the important issue of the analysis of the value of regional organisations to member countries. Australia also questioned this, noting the number of regional organisations and the importance of avoiding duplication.

64. Following expressed concerns for clarifications that couldn't be answered by the summary document before Council, the representative of the Forum Secretariat informed the meeting that a copy of the full Record of the CROP Meeting was available to Council.

8.3 STAR Chair Report

65. The STAR Chair presented his report to the Joint Council/TAG Session. This report is tabled in full as Appendix 8 of this proceedings volume.

66. The geohazards section was the largest section of the STAR meeting which included dealing with the science of the recent tsunami events in Papua New Guinea and Vanuatu. He also advised that the working groups for Energy, Water, Geohazards, GOOS, and Coastal and Nearshore met during the 2000 STAR Session.

67. Council especially noted the STAR Chair's personal impressions that papers presented at STAR Sessions were 1) trending towards the applied direction of research; 2) being built on community involvement and most importantly; and 3) that SOPAC results had applications in the larger scientific community and that he strongly urged SOPAC scientists to publish their work in international scientific journals so the wider scientific community could be aware of the wealth of scientific information in the Pacific region. He offered STAR and TAG assistance to SOPAC scientists in this regard.

68. Council noted the report of the STAR Chair and endorsed his encouragement to SOPAC scientists regarding the publication of their work for the benefit of the wider scientific community.

8.4 Draft Poverty Policy

69. The Secretariat presented paper AS 29/8.4 and its supplement.

70. After a free-flowing exchange of concerns and endorsements, Council noted the good effort by the Secretariat in taking the matter of the relevance of SOPAC's work to poverty alleviation this far.

71. Council noted the concerns expressed by a number of TAG advisors regarding the SOPAC Poverty Policy paper and endorsed their recommendations to:

- a. have the document retitled: "Technical Factors Contributing to Poverty and Poverty Alleviation: SOPAC's Approach and Methodology";
- b. that the three major headings within the document read as follows: "Aspects of the Poverty Issue" (page 1, top); "Some Poverty Linkages in the Pacific" (page 1, bottom); "SOPAC's Approach and Contribution" (page 2, bottom);
- c. that, after revision, the document be released and distributed throughout the SOPAC region; the distribution to include individuals, organisations and institutions involved in poverty alleviation. And that an accompanying letter from the SOPAC Director be attached, inviting comments and indicating SOPAC's interest in contributing its technical expertise to poverty alleviation;
- d. that the Secretariat report to Governing Council at its 30th Session on developments and new initiatives arising from this process; and
- e. encourage the Secretariat to ensure that documents intended for general release, that treat politically-sensitive societal issues or may have legal implications, be peer-reviewed externally by suitably qualified experts, before release.

9. Director's Annual Report (Part 2) Work Program Report 1999-2000 and Draft Work Program and Budget 2001

72. Consideration of the sub-items under Agenda item 9 were not done in the order in which they appear in the Approved Agenda; however, for the purposes of this Summary Record, the original numerical order is adhered to.

9.1 Mineral Resources Unit

73. The Secretariat presented the Mineral Resources Unit (MRU) work program.

74. Kiribati requested their inclusion in the next phase of the SOPAC/Japan Decpsca Minerals Program (in particular the Line Islands).

75. Japan replied that the current 3-year work program is set but indicated that there are likely to be two additional 3-year programs in which Kiribati may be included in the next phase of the program.

76. The Secretariat highlighted the important contribution that Japan has made to mineral exploration in the region and their commitment to continue their work beyond 2002. The Secretariat also highlighted that the placement of a Japanese expert within the Secretariat has been critical in helping to direct the further development of the Deep Sea Mineral Program. The Secretariat acknowledged the contributions made by Korea, France, Australia, Germany and others in this area of research noting the need to continue with this cooperative work with new SOPAC members (Niue and Nauru) whose waters are still unexplored.

77. Marshall Islands expressed their appreciation for the work proposed by Japan in the Marshall Islands waters in the current phase of the SOPAC/Japan Deep Sea Mineral Program. The representative also expressed appreciation for Korea's work in the same area.

78. Papua New Guinea highlighted the importance of minerals as part of their economy and expressed support for the continued mineral work in the region and sought assistance from donors in dealing with the issues that may arise in the upcoming closure of Ok Tedi mine. The Secretariat was requested to facilitate this process by organising a workshop noting that this may be of interest to other member countries.

79. Fiji supported the request made by Papua New Guinea for assistance with information on mine closure. Fiji expressed their appreciation to Japan for their work and highlighted the importance of interlinkages between mining, poverty and sustainability issues particularly in light of land ownership. Fiji noted the natural overlap between the Ocean and Deep-Sea Mineral Program.

80. Greenpeace expressed their willingness to participate in the development of a master plan for the environmental impact assessment of hydrothermal deposits which was listed as a task under the Deep Sea Mineral Program.

81. The TAG Advisor from KORDI informed Council that they were in the process of developing a strategic plan and will be looking at further work in the region. He also confirmed that Korea gives high priority to exploration for deep sea minerals in the region.

82. The TAG Advisor from IFREMER queried the selection of sites by Japan for the Deep Sea Minerals Program and offered assistance as the institute had a wealth of published and unpublished information

that could assist member countries in decision making for site selection.

83. Tonga requested clarification from the Secretariat on four issues:

- Their omission from the deep sea minerals policy development task in the 2000 Work Program
- Their omission from the second stage of the SOPAC Japan Deep Sea Minerals Program
- The progress of the development of petroleum brochures for Tonga
- The progress on mineral work on 'Eua (TO 99.031).

84. The Secretariat informed Tonga that the deep-sea minerals policy development was a three-year program and work for Tonga is still to be undertaken. Tonga has already been recommended for inclusion in the next phase of the Deep Sea Minerals Program. The Secretariat indicated that the petroleum brochure would be available in October. Tonga was informed that the mineral work for 'Eua has been programmed for next year.

85. The TAG Advisor from JAMSTEC indicated that they would be willing to cooperate with IFREMER by sharing data, noting the importance of biological communities and that these should be included in an environmental assessment of deep sea mining.

86. Vanuatu acknowledged the efforts of the Mineral Resources Unit, and asked if funding was the cause of the lack of implementation of the ground magnetic study at Santo.

87. The Secretariat advised that though training was a high priority for this activity, no country counterpart could be identified, so the task had been deferred.

88. Samoa noted the difficulty in obtaining support for mineral work in Samoa because of its unfavourable geological location, and also expressed support for the continuation of the Deep Sea Minerals Program and the close cooperation between various agencies involved in exploration.

89. New Caledonia noted that the Southwest Pacific region remains largely unexplored and it is important to encourage cooperation and continuation of this exploration. With the evolution of new technology and ideas in petroleum exploration, gas hydrates has emerged as a potential resource in the Southwest Pacific.

90. TAG advised on the importance of deep-sea biological communities and potential importance not just for pharmaceutical but in other industrial applications. TAG informed the Joint Council/TAG Session

that a submersible program (MarBEC) at the University of Hawaii was being developed to bring live specimens back for culture and analysis.

91. TAG recommended that the Secretariat engage a benthic biologist for a short-term attachment, possibly from Canada, to assist island countries developing policy in this area.

92. The Secretariat recognised the importance of biological communities associated with deep-sea mineral deposits and that there were several issues relating to these biological communities with respect to the sampling and analysis. The Secretariat noted the need for the CROP Marine Sector Working Group to decide which organisation should be responsible for this issue and to ensure that information and advice are made available to member countries.

93. The Secretariat informed the Joint Council/TAG Session that member countries in developing economic resource policies should take advantage of short-term attachment schemes offered by Overseas Development Institute (ODI), Australian Youth Ambassadors and CUSO.

94. The STAR Chair suggested that SOPAC consider attendance at AAPG and informed Council that posting data on the web could also promote the potential of hydrocarbons in the region.

95. Australia highlighted that attendance to the AAPG may not be that beneficial as the number of visitors to the Pacific booth in the last AAPG was limited and noted that most information relating to the petroleum work program is now disseminated and accessed via the internet.

96. The Secretariat noted Australia's experience and indicated that they would explore other avenues for promoting petroleum potential in the region.

97. The TAG Advisor from KIGAM informed the Joint Council/TAG Session that they were in the process of approaching AGSO to obtain hydrocarbon data on the Vanuatu area.

98. The Joint Council/TAG Session noted and endorsed the Mineral Resources Unit Work Program activities proposed by the Secretariat for 2001.

9.2 Water Resources Unit

99. The Secretariat introduced the Water Resources Unit (WRU) and highlighted its activities in water resources assessment, water demand management, and water and sanitation. Those themes reflected the development of water resources, the delivery of water and the impacts on the use of water.

100. The Secretariat described the projects within the Water Resources Unit, stressing the need for in-

creased public awareness and training, noting improvements to water quality and quantity were important to improving public health and contributed to poverty alleviation.

101. The Secretariat highlighted World Water Day initiatives as an awareness-raising activity, noting the collaboration with SPREP and UNESCO. Events for the next year in which the World Water Day will be dedicated to Water and Health will be under the global leadership of WHO.

102. The Secretariat outlined that future proposed regional and national activities would include projects on groundwater assessment (Kiribati, Nauru, Cook Islands, Marshall Islands, Vanuatu), leak detection (Cook Islands, Marshall Islands, Niue, Nauru), hydrological monitoring networks (Vanuatu, Samoa), water supply (Tuvalu), training attachments (Vanuatu, Fiji) and sanitation projects (Federated States of Micronesia, Marshall Islands, Tonga).

103. Future plans for collaborative regional projects were mentioned including the development of a Drought Index, the development of a Vision for Water and Sanitation in the Pacific (WSSCC), the development of a Strategic Action Plan on sewage (GPA, SPREP) and activities dedicated to World Water Day (WHO, SPREP).

104. The Secretariat indicated that the staff of the Water Resources Unit consisted of a hydraulic engineer, a sanitation specialist, a hydrogeologist and a water quality expert.

105. Samoa acknowledged the assistance of the European Union in a water project and the upgrading of Samoa's hydrological monitoring system. Samoa expressed its appreciation for the assistance from NZODA and NIWA in establishing a program that included capacity building and equipment.

106. Samoa acknowledged with gratitude assistance from JICA in working with the Water Unit on a project on Savai'i, noting that the study was near completion.

107. Samoa commended the work carried out by SOPAC and the good use of limited resources and noted its intention to develop larger bilateral programs and opportunities indicating future work would be needed on Savai'i.

108. Kiribati thanked the Water Resources Unit for their work in the past year particularly for the water resources assessment made for Banaba.

109. Kiribati, Marshall Islands and Vanuatu referred to the Star Water Working Group report that identified the need to address the continuing staff shortages in the Water Resources Unit.

110. The Secretariat responded noting that it expected to have additional staff available and that the

appointment of the Unit Head had been delayed. The Secretariat indicated that there would also be additional staff provided through the proposed EU project as well as the Skills for Development project funded by DFID. In addition, there was an opportunity under the International Waters Project for further staff augmentation.

111. The Secretariat was optimistic that staff shortages would be resolved as other funding opportunities evolved, noting that extra support could be provided at low cost under the Canadian (CUSO) scheme.

112. The STAR Chair presented the recommendations of the Star Water Working Group Report (Annex) noting:

- Last year's ENSO workshop and the need for a follow-up workshop specifically for hydrologists.
- The need to build on existing programs in the region for training in hydrology.
- The continuing shortage and discontinuity of staff in the Water Resources Unit.
- The availability of information through an information network.
- The need for a collaborative effort to develop a drought Index for the region.
- The need for a collaborative effort by regional organisations to develop a Vision for Water and Sanitation in the Pacific.
- That steps be taken to reduce vulnerability to drought through public awareness.
- The importance of alternative water supply opportunities such as desalination.

113. USP highlighted its ability to provide assistance in water analysis and offered to facilitate SOPAC's use of its well-staffed and well-equipped chemistry department laboratories and will facilitate this assistance because of the special relationship USP has with SOPAC. The Secretariat confirmed that it was already using this facility.

114. New Caledonia requested more information regarding the drought Index, asking specifically as to what time frame was necessary for developing such a study and for a description of the benefits and a date for implementation.

115. The Secretariat advised that the endorsement for the drought Index had been established at the El Niño Workshop held in Nadi, Fiji, October 1999. It was envisaged that the drought Index could be developed cooperatively with Australia, New Zealand and other regional research organisations like UNESCO. The project is to be developed in the next year and a workshop to disseminate the knowledge on drought indices will be organised at a later stage.

116. The Marshall Islands thanked the Secretariat for water projects to be implemented during the year and for including the leak detection project in the 2000/2001 Work Program.

117. SPREP referenced the GEF/International Waters Program and its details, noting that the project had just commenced, with staff being recruited, noting opportunities for cooperation in projects and pilot projects. SPREP noted the opportunities for SOPAC to leverage other funding from this initiative. The Secretariat informed the meeting that SOPAC has not been involved in the final development of the International Waters Project and stressed that the member countries should advise the manager of the project that SOPAC needs to be involved in the selection of projects relating to freshwater.

118. The Secretariat raised the issue of sustainability of the four pilot water resources projects of the GEF International Waters Project. The Secretariat suggested that, where possible, projects could piggy-back on other bilateral projects or on SOPAC's existing program so as to ensure project continuity.

119. Niue thanked the Secretariat for its past assistance and asked for clarification as to whether the solar water pump project was now within the Water Resources Unit or Energy Unit. The Secretariat confirmed that the project is currently within the Energy Unit.

120. FSM advised the meeting of the cholera outbreak in Pohnpei despite the fact that there had been a lot of emphasis placed on water projects. FSM also highlighted that the outer islands were still experiencing water shortages and registered their interest in desalination plants.

121. The Secretariat noted the overlap in responsibilities between the Water Resource Unit (WRU) and the Disaster Management Unit (DMU) and WRU's proposed involvement in a survey by SPC on Health and Environment in FSM funded by NZODA as a result of their recent cholera outbreak. The Secretariat further noted that funding had transferred from traditional water supply to sanitation, and now, to hygiene issues.

122. The Secretariat noted the need to keep SOPAC informed of country bilateral projects so that assistance and support can be available later after the core component of the program and projects are completed. The Secretariat welcomed Samoa's offer to work closely with SOPAC in this area.

123. The Secretariat noted progress with development of activities within the private sector and their assistance with the coordination of activities, noting the development of Pacific Water Association (PWA).

124. Tonga requested clarification on the duplication of projects included in both the 1999 Work Pro-

gram and the 2000 Work Program. Tonga noted the success of the Australia funded water resources project in the Ha'apai Group and are willing to help and provide information to other atoll nations with similar problems.

125. The Secretariat suggested that Tonga should provide details of its concerns to the Water Resources Unit so that these can be addressed. The Secretariat detailed the development of a sanitation project for Popua in Tonga and the possible collaboration of SOPAC in a Food and Agriculture Organisation (FAO) water resources assessment in Tonga.

126. Vanuatu thanked the Secretariat for their work, noting the contribution to their water program. Vanuatu recommended that distribution of the Water News Bulletin should be reactivated. Vanuatu recommended further that an inventory of water expertise around the region be compiled for use by members so as to increase the percentage of Pacific island national consultants involved.

127. Vanuatu requested Kiribati to provide the Secretariat information on desalination plants currently in use in Kiribati, and that this information be distributed to all Council members.

128. Kiribati provided a description on the two desalination plants currently in use in Tarawa.

129. The Joint Council/TAG Session noted the STAR recommendations and agreed that they be added to Paper AS29/9.2.1 (*Strategic Action Plan on Municipal Wastewater in the Pacific*).

130. In addition to the STAR recommendations, World Meteorological Organisation (WMO) suggested that SOPAC member countries inform the Secretariat and donor agencies on plans for future project proposals so as to avoid duplication and suggested that member countries should keep contact details current with the WMO on expertise available in the field of water resources. The Secretariat informed that recommendations on these lines were to be added to the final text.

131. SPREP considered that member countries who are signatories to the Climate Change Convention should be involved in the proposed workshop on the drought Index, noting that technology transfer within the climate change debate was important and that it has been identified as a priority. SPREP advised the member countries to make the most of windows of opportunity associated with climate change.

132. The Joint Council/TAG Session noted and endorsed the recommendations of Paper AS29/9.2.1 on the development of a Strategic Action Plan on Municipal Wastewater in the Pacific.

133. The Joint Council/TAG Session noted and endorsed the Work Program activities proposed by the

Secretariat for the year 2001 and the STAR Water Working Group recommendations (see Appendix 6).

9.3 Energy Unit

134. The Secretariat introduced the Energy Unit staff and Program (AS29/9.3). Program activities are divided into Resource Assessment Programs and Projects. The Secretariat advised that specific programs and activities for the Energy Unit were provided in the documents. The Secretariat also highlighted the other related regional energy programs and the coordination between these programs noting that the SOPAC energy program was focusing on resource assessment, energy policy, database, and energy efficiency and conservation.

135. The Secretariat noted with concern Tonga's country statement and had checked the energy program, noting that the Secretariat had contributed to Tonga's national program by providing:

- Training attachment for one staff of the Tonga Energy Unit to the Fiji Department of Energy and the SOPAC Energy Unit (Ref: TO 1999.041 and TO 1999.042),
- assistance in the construction of institutional wood stoves,
- ongoing assistance with energy database,
- solar hot water systems monitoring, and
- technical publications.

136. The Secretariat also noted certain ongoing activities with the Tongan Energy Unit namely:

- the schools' energy program,
- rechargeable battery program and
- wood stoves evaluation.

137. The Secretariat highlighted that at this year's STAR Energy Working group meeting, Ms Apisaki Makasini Soakai, Energy Planner, Tonga Energy Unit was elected as the chair.

138. Tonga commended the efforts of the Energy Working Group (EWG) and made reference to the task for technical assistance and training (RT1999.038) and requested assistance from SOPAC in the preparation of their climate change communication documents. Tonga suggested that energy activities be more project-based citing the SPC project on solar household systems (150 systems) in the Ha'apai Group. Tonga considered this type of assistance as more beneficial to its poverty eradication program and would like to see more projects and financial assistance given rather than focussing on energy policies.

139. The Secretariat introduced the paper (AS29/9.3.1) *CROP Energy Working Group*, highlighting that an EWG had been established to provide a forum for other CROP organisations and observers to provide a coordination and advisory role for energy activities so as to avoid duplication and identify gaps in the CROP organisations' programs.

140. SPREP queried whether the first meeting in Nadi could be termed a CROP EWG as he could not recall whether SPREP was represented or not. The Secretariat clarified that a SPREP representative was present and therefore the group constituted the initial CROP EWG meeting.

141. The WMO suggested that CROP organisations adopt a broader understanding of the relationship between climate and energy. The variability of climate from global to regional and even local scales, affects the demands for, and efficiency of, production of much of the energy used. Design and planning of macro- to micro-scale alternative power generation systems, require reliable long-term records of climatic elements such as temperature, wind, solar radiation, and precipitation. WMO further suggested that CROP organisations and the Energy Working Group recognise the critical importance of national climate observing networks to the characterisation of climate on the local, regional and global scales, in order to address the full spectrum of climate/energy applications. Therefore, calling for urgent actions to address the issues of declining national observing networks and the inadequate infrastructure, and recommending full implementation of the capacity building activities envisioned in the UNFCCC COP Decision 5/CP.5.

142. The Joint Council/TAG Session noted the establishment of the CROP Energy Working Group and the progress made.

143. The Secretariat introduced paper (AS29/9.3.2) *Preparation of a Regional Energy Position Paper for CSD9*, noting that the paper had been developed to almost-finalised text during the recent Regional Energy meeting (REM2000) and would in its final form following consideration and endorsement by the SPREP, FOC and SPC governing bodies.

144. Kiribati noted that Annex A of the paper needed minor changes with respect to information relating to Kiribati.

145. The Secretariat clarified that Annex A remained to be completed as not all countries participated in the REM 2000 and that this Annex would be finalised as updated information was received from member countries.

146. SPREP recommended that the CSD9 paper be treated as draft final paper and the opportunity be

provided for countries and other CROP organisations to make necessary amendments where applicable following their respective council meetings.

147. The Secretariat clarified that the paper still had a process to go through before being finally submitted to the CSD Secretariat. This included presentation to the SPREP, FOC and SPC council meetings for endorsement. The paper would eventually be presented to the CSD Secretariat by the Forum Secretariat by the end of the year, and there will be opportunities to incorporate any additional suggestions.

148. The Joint Council/TAG Session endorsed the paper noting that amendments still remained to be made to Annex A.

149. The Secretariat introduced paper (AS29/9.3.3) *Demand Side Management Project*, noting that UNDESA were in the process of identifying and appointing a Technical Advisor under the project. It was anticipated that the project would commence early 2001.

150. The Joint Council/TAG session meeting noted the progress with the establishment of this project.

151. The Secretariat introduced paper (AS29/9.3.4) *Regional Biomass Resource Assessment*, explaining that the funding provided only covered the training component of the program and that additional funding was required to meet the consultancy component. The Secretariat confirmed that a funding project proposal had been completed and forwarded for approval. The Secretariat anticipated that the project would commence early 2001 and were continuing with the identification of a suitable consultant.

152. The Secretariat introduced paper (AS29/9.3.5) *Pacific Island Renewable Energy Network (PIREN)* and noted the commitment made by the Kiribati Minister of Works and Energy in Malaysia during the UNESCO meeting (September 2000) to host a similar meeting with emphasis on Pacific Island countries. The Secretariat noted that the CROP EWG could assist the government of Kiribati in organising the above meeting and would formulate a position paper on the issue.

153. SPREP noted the importance of having a regional centre of renewable energy established in the Pacific as this had been the approach taken by other regions such as the Caribbean to assist in capacity building especially for renewable energy technologies and applications. SPREP further expressed the need to start developing a project proposal to move the project forward, adding that this project had been proposed for a number of years and should be progressed. SPREP encouraged the Secretariat to progress this issue and actively seek funding for this project.

154. The Secretariat noted that the CROP EWG could assist the Government of Kiribati in the formulation of a proposal and position paper for the regional UNESCO meeting in Kiribati.

155. Samoa noted their concern on the lack of co-ordination of energy programs in the region citing that many organisations were implementing different energy programs. Samoa stated that having all energy programs co-ordinated by a single entity would assist in program management and also enhanced donor-recipient relationship. Samoa suggested that member countries needed to be clear on what activities were being offered.

156. The Joint Council/TAG Session noted the current SOPAC/UNESCO cooperation on renewable energy ongoing activities to establish this project and the limited progress as at August 2000 with establishing the Pacific Islands Renewable Energy Network (PIREN).

157. The Secretariat introduced paper (AS29/9.3.6) *Capacity Building on Technological and Economic Integration of Wind Energy and other Relevant Renewable Energy Technologies into the Electricity Systems of Pacific Island Countries*, noting that the project was progressing as scheduled and the curriculum had been endorsed by the USP Senate.

158. USP advised that the steps to include the wind energy post-graduate course into the USP calendar had been approved, noting that the USP had a Physics/Technology Energy Team for research and consultancies. The USP acknowledged the good working relationship that had been established between USP and the Secretariat.

159. SPREP commended the project and noted that this would lead to enhancing capacity building in wind energy in the Pacific and may act as leverage for funding wind energy and other renewable energy developments in the region. In response to SPREP's query on whether the wind turbine would be available for the commencement of the course in 2001, the Secretariat confirmed that a proposal had been forwarded to the Forum Secretariat for consideration and approval of the use of a site identified within their compound. The Secretariat further noted, that this request had not been confirmed or rejected by the Forum Secretariat and that there were teacher-training courses to be convened prior to the course being available at USP.

160. The Joint Council/TAG Session noted there was a need to reprogram activities under the project "Capacity building on technologies and economic integration of wind and other relevant renewable energy technologies into the electricity systems of Pacific Island Countries" due to Fiji's current situation.

161. The Secretariat introduced paper (AS29/9.3.7) *Model Training Program for the Pacific Islands on Sus-*

tainable Use of Renewable Energy for Water Pumping, noting that this project had been prepared on the basis of an earlier project in PNG and would be implemented jointly with the SOPAC Water Unit.

162. The Joint Council/TAG Session noted and endorsed the current initiative to establish a regional project for "Model Training Program for the Pacific Islands on the Sustainable use of Renewable Energy for Water Pumping".

163. The STAR Chair introduced the STAR Working Group recommendations (AS29/9.3 Infor. 1) relevant to energy activities and recommended that the Joint Council/TAG session consider the report for adoption, noting the recommendations and in particular the need for additional staff.

164. SPREP supported the Secretariat's initiative to carry out a Pacific Regional Energy Assessment (PREA 2000) as it would provide an up-dated review of the Pacific Island countries energy situations and noted that the last major regional energy assessment was done 10 years ago.

165. Vanuatu requested the Secretariat to undertake a review of their National Energy and Rural Electrification Policy to be completed by November so that it could be tabled in parliament before the end of the year. The Secretariat noted the request made by Vanuatu.

166. The Joint Council/TAG Session noted and endorsed the Work Program activities proposed by the Secretariat for the year 2001 and the STAR Energy Working Group recommendations (see Appendix 6).

9.4 Coastal Unit

167. The Secretariat presented the work program and outlined the expertise and activities of the Coastal Unit and the co-operation and interaction with other units in general and Information Technology Unit in particular.

168. The Secretariat noted that there are 3 professional staff, 2 research assistants, an Australian Youth Ambassador attachment for 3 months and a French Honours student undertaking 5-month research attachment.

169. The Secretariat described aggregate related tasks that included work completed in Federated States of Micronesia, Fiji, Nauru, Samoa and Tuvalu. The Secretariat also highlighted the work completed in Vava'u, Tonga that consisted of a marine aggregate study over a two-week period including seismic, bathymetry and drilling surveys.

170. The Secretariat detailed coastal related activities in Cook Islands (Aitutaki - bathymetric data-

base development in GIS), Federated States of Micronesia (advice on the preparation of a scope of works required for an environmental assessment for a new power plant in Pohnpei), Kiribati (South Tarawa - mapping to assess vulnerability to sea level rise; Kiritimati Atoll - circulation modeling; Abaiang - circulation modeling), Marshall Islands (development of GIS from previous mapping of the coastal geology), and Nauru (coastal mapping for erosion assessment).

171. The Secretariat outlined training activities that included training of a second multi-beam survey team (5 surveys in Fiji were completed); beach profiling in Fiji and assistance to USP through a number of lectures in coastal processes.

172. The TAG Advisor from International Oceanographic Commission (IOC) noted there were several pilot projects identified at the recent GOOS meeting in Apia and encouraged the Coastal Unit to work closely with the Ocean Unit to integrate with relevant GOOS projects.

173. The STAR Chair noted that the Coastal and Nearshore Processes Working Group identified problems associated with aggregate mining and recommended investigating aggregate extraction from alternative sources such as fore-reef slope. The STAR Chair highlighted the value of beach profiling, and noted that there is no comprehensive understanding of sediment processes for any single atoll. He recommended that funding be identified to undertake a multi-disciplinary approach in studying the whole sediment budget for a single atoll in order that the results could be applied regionally.

174. The TAG Advisor from BGS emphasised the value of multi-beam technology in identifying alternative aggregate resources and proposed the following recommendation which was agreed to:

TAG, noting the evidence now available from PIC's on the location of marine aggregate resources outside of those now being utilised that are rapidly becoming exhausted or extraction of which is environmentally unfriendly, recommends that the Secretariat give every assistance to the PIC's in accessing these new resources, because extraction of these may well be less damaging to the environment than those already in use.

175. Marshall Islands indicated they need assistance to develop an economic resource proposal with methodology to assist the government to move forward with the commercial sector on developing the alternative marine aggregate deposits identified from earlier SOPAC work.

176. SPREP commended the work carried out by the Coastal Unit in developing the scope of works for

the EIA for the new Pohnpei power plant and in the vulnerability and adaptation task in South Tarawa where these were collaborative efforts.

177. Samoa acknowledged the work undertaken by the Coastal Unit and thanked, the representative of KIGAM for work undertaken while encouraging further work in Savaii to assist in development of a second township. Samoa stated that an area in and around Apia is to be declared a reserve where aggregate extraction will be phased out. In order to assist in defining the area, further baseline data and an update of the coastal mapping for monitoring the restoration of the area were requested.

178. The Secretariat recommended that consideration should be given to determining synergies with the current World Bank/Samoa-funded Infrastructure Asset Management Project.

179. The TAG Advisor from KIGAM confirmed that coastal mapping in Savai'i would continue and that support would be ongoing.

180. Fiji commended the Coastal Unit for developing state of the art techniques for shallow-water mapping and noted the constraints of limited equipment and human resources for the large number of projects being proposed.

181. New Caledonia acknowledged the high quality of work carried out during two recent surveys and inquired whether SOPAC would be considering developing digital seismic acquisition capabilities. The Secretariat confirmed that the idea was under consideration.

182. The representative from Kiribati commended the work of the Secretariat in Abaiang lagoon. He went on further to request assistance with aggregate work in South Tarawa.

183. The Secretariat provided an overview of the activities of the Coastal Unit and noted that there are numerous examples in the region of bilateral engineering projects where the recipient has insufficient experience in coastal processes and the end result has been a negative impact on the environment. The Secretariat stressed the need to ensure integration in coastal processes in the region.

184. The Secretariat noted the requests from Kiribati and Samoa. The Secretariat advised that Recommendation 6 of Coastal and Nearshore Processes Working Group report should be considered as a high priority.

185. The Secretariat highlighted the shortage of experienced specialists to staff the Coastal Unit, noting that only the position of Marine Geophysicist was secure through Australia multi-year support. China and Comsec/DFID fund the two geologists in the Unit.

186. The Secretariat highlighted the resources indicating that while it may take only a few days to complete a swath-mapping survey in a location and size such as Suva Harbour; to carry out a survey of an atoll like Abaiang is a difficult logistical exercise. The Secretariat has a limited amount of equipment and sought interest from the TAG in donating surplus survey equipment for use in the region.

187. The TAG Advisor from BGS suggested to the meeting that island work programs should be formulated to take account of the close relationship between aggregate activities and coastal erosion. In this context, the islands should be viewed as "systems" and projects formulated accordingly. To make better use of the data acquired he suggested that scientists from research organisations and universities with interests in the region cooperate in scientific studies.

188. The Council endorsed the Coastal Unit work program and adopted the STAR Coastal and Nearshore Processes Working Group recommendations (see Appendix 6).

9.5 Hazard Assessment Unit

189. The Secretariat introduced the Hazards Assessment Unit (HAU), stressing new initiatives in regional and international networking as well as current and pending developments. The Secretariat also reported on attendance at various regional and international meetings. The Secretariat highlighted the close collaboration between HAU and DMU as illustrated in the new DFID-funded community vulnerability project in Vanuatu and Solomon Islands, and made reference to the need for funding and support for the proposed Regional Centre for Applied Seismology.

190. The Secretariat noted the development of modern hazard and risk assessment methodologies in conjunction with AGSO Australian Cities, NZIGNS, and the French organisations A2EP, BRGM and LDG. Furthermore the Secretariat mentioned the upcoming presentation by A2EP of the results of the French-funded project on tsunami and earthquake risk in Suva Harbour, Fiji Islands. The Secretariat detailed its participation in the Asia-Pacific Regional Working Group of the Global Disaster Information Network (GDIN), and its planned collaboration with US DOD agencies engaged in similar activities in the Southwest Pacific.

191. The Secretariat went on to outline the links between the HAU, other SOPAC Units and external organisations with the DMU in terms of the newly developed SOPAC disaster management network

noting projects underway with the Asia-Pacific Regional Working Group that will benefit both the wider region and the Pacific Island Countries.

192. The Secretariat presented the outputs of HAU for the past year, including comprehensive hazard and disaster spatial information databases for Apia, Honiara, Nuku'alofa, Port Vila, and Suva, and outlined various scientific publications and reports relevant to the work of HAU.

193. The Secretariat commended the initiatives by the countries in identifying areas of potential co-operation with SOPAC HAU. These include Samoa's initiatives on earthquake microzoning, approaches by the National Fire Authority of Fiji on building collapse and the Suva City Council on town planning. The Secretariat also mentioned the co-publication of quality international journal papers by counterparts in Tonga and the Solomon Islands, and the country initiatives on all-risks urban studies by Vanuatu and Papua New Guinea.

194. The Secretariat then reminded the meeting that Pacific Cities is not a funded project, but rather a conceptual co-ordinating mechanism tying together hazard, risk and disaster management studies to achieve total risk management in densely populated urban areas at high risk. The stated goal is to empower Pacific Island communities to mitigate loss of life and damage to infrastructure from natural and man-made hazards.

195. The Secretariat presented a summary of Pacific Cities activities, using a different example of the type of work being done in each of the five currently active cities, and illustrated the concept of layered GIS databases.

196. The STAR Chair tabled the STAR Working Group paper AS29/9.5.info.1 Geohazards/Tsunami Working Group Meeting.

197. Marshall Islands noted that HAU appeared to be concentrating its work on large volcanic islands. He also asked if the Unit also intended to work on low-lying islands in regard to the high frequency of typhoons in that country. The Secretariat noted the request and informed Council that, up until now, the project had primarily focused on areas with many and diverse hazards and with large populations at risk for most effective use of a limited budget. The Secretariat further elaborated that there was no reason why the same methodologies would not work in low-lying islands and assured the Joint Council/TAG that the Secretariat has every intention of applying the techniques in these areas as funds become available. The Secretariat further indicated that within the Island Systems Management philosophy contained in the EU project proposal, Kiribati and Tuvalu

will benefit from similar work there. It further suggested that new ACP members, which include the Marshall Islands, may also benefit in the near future from similar work as indicated in AS29/7.6, Suppl. 1 "Reducing Vulnerability of Pacific ACP States through Island Systems Management" paper.

198. Samoa acknowledged the work completed and expressed appreciation to the HAU. Samoa regretted that some of the components of the project could not be implemented due to lack of funding indicating it will actively seek bilateral funding for WS99.020 (Apia DTM Generation) and WS99.023 (Incorporation of Apia Demographic Database and Census Information in GIS). Samoa believes it is important to complete the remaining components of Pacific Cities.

199. Samoa further indicated that in 2001 a national census will take place, and offered that this information could be included in the database for Pacific Cities.

200. Samoa referred to the USGS and other seismology programs in-country and commended the STAR Working Group recommendations which state that funding be sought for the establishment of a Regional Centre in Applied Seismology. Samoa suggested that the Secretariat could assist in coordinating the retrieval of global seismic data available from the various seismic networks of the region.

201. The Secretariat thanked Samoa for taking such a positive and active role in seeking funding for various tasks proposed under Pacific Cities. The Secretariat indicated that JICA is also interested in cooperating and supporting the concept of a regional seismology centre in countries where they are installing new telemetered seismic networks.

202. Fiji requested clarification on the availability of a product that could be used as a planning guide for distribution in member countries.

203. The Secretariat highlighted that the intention of the project was to pass the data on in a coherent form and that some data had already been used by counterparts. The Secretariat highlighted the need for implementation of in-country risk management systems to ensure sustainability of the exercise. The Secretariat agreed to distribute CD-ROMs containing the current data-set to countries as soon as possible, while recognising that continuous upgrading of such information is a necessary part of maintaining an effective hazards database.

204. Tonga highlighted that some projects were lacking funding support, and appreciated the work of Samoa in looking for funding for the Secretariat to carry out their national tasks under the Pacific Cities project. Tonga also requested clarification regarding finalising incomplete project components.

205. The Secretariat highlighted the amount of work done last year for Nuku'alofa, including GPS surveying to re-locate land surveys; re-situating cadastral data on the Pacific Cities GIS database; searching for historic hazard records, incorporating summarised boreholes into the database, peer-review, modification and completion of the GII-USAID report on seismic microzoning and conducting assets surveys of Nuku'alofa buildings. The Secretariat also acknowledged that shortfalls in the proposed Work Program were due mainly to lack of funding and indicated that this would be made up within the next year.

206. BGS noted that two tsunami events were reported in the STAR Working Group paper but that one more event had occurred in French Polynesia. BGS recommended that the Secretariat may want to consider adding tsunami mitigation into the HAU program in recognition of the increasing awareness of tsunami events in the region. BGS offered assistance in writing the project framework and in looking for funding and resources. The Secretariat thanked BGS for its suggestion and offer of assistance.

207. The Secretariat presented paper AS29/9.5.1 'Catastrophe Insurance Proposal' describing the historical inception of the proposal by the World Bank, in conjunction with Australia, to investigate the provision of adequate catastrophe insurance for the region. The Secretariat traced the evolution of the proposal through the FEMM meetings in Apia in 1999 and Niue in 2000.

208. The Joint Council/TAG noted the establishment of the Catastrophe Insurance proposal, and encouraged Australia to support the conduct of a pilot study in one country by SOPAC. Depending on the outcome of the Pilot Project, SOPAC would prepare and develop an appropriate regional proposal.

209. The Joint Council/TAG noted and endorsed the Work Program activities as proposed by the Secretariat for 2001 and the STAR Hazards Working Group recommendations (see Appendix 6).

9.6 Ocean Unit

210. The Secretariat introduced the new Marine Affairs Adviser to the Joint Council / TAG Session and advised that the incumbent was appointed to the position, under the Taiwan/ROC Government funding, in mid-May 2000.

211. The Secretariat introduced the Ocean Unit's Work Program and outlined the key issues for future work as marine scientific research, maritime boundaries delimitation including the preparation of claims beyond the 200 nautical mile limit, coastal and open ocean observing systems and ocean and marine min-

eral policy. The Secretariat advised the Joint Council/ TAG Session that specific issues would be discussed as working papers.

212. The Secretariat reported the main decisions from a meeting convened on marine scientific research (MSR) issues, as part of the 29th SOPAC Annual Session. These decisions were to develop a detailed proposal to seek funding for a regional workshop on MSR in the Pacific region and to engage research scientists and organisations working in the region to assist the Secretariat to identify the reporting gaps in existing data and information.

213. The TAG Advisor from JAMSTEC noted the introductory remarks of the Unit and expressed appreciation for the strong emphasis on the issues of ocean observing systems, particularly the TRITON & ARGO projects. The Advisor expressed concern about the damage and loss of expensive instrumentation being deployed in the region and encouraged co-operation from the countries.

214. FFA informed the Joint Council/TAG Session of the importance and value of the buoy system being deployed in the region, noting that the buoys communicated through their networks, emphasising in particular the need to protect this valuable equipment. FFA suggested that member countries reinforce this advice through their fisheries agencies to ensure that the importance and value of these buoys to every country is understood.

215. The Secretariat indicated that there has been some difficulty in preventing damage to buoys, as the fisheries Vessel Monitoring System (VMS) has a confidentiality clause making reporting damaged buoys impossible.

216. The TAG Advisor from JAMSTEC indicated that, in addition to the provision and analysis of data, they recognised the need for developing capacity in the region for planning and management purposes. Consequently, JAMSTEC are now offering an eight-week training course on data collection, analysis and applied field training related to ocean observing systems. He also requested guidance from member countries and the Secretariat on the duration for the proposed training.

217. The Joint Council/TAG Session noted the long-term ocean observation systems of TRITON and ARGO have provided useful oceanographic data to the region in understanding both physical oceanography and long-term climate change issues, recommending that member countries make every effort to secure ocean observation instruments from international organisations, who may no longer require such equipment.

218. The Joint Council/TAG Session noted JAMSTEC's initiative to organise a training workshop for ocean observing systems in the region and that due to human resource limitations in the SOPAC region, course organisers should consider planning courses for a duration of four weeks and consider increasing the number of SOPAC member-country participants, where possible.

219. Marshall Islands stated that as part of their licence agreements with Distant Water Fishing Nations they had included information on the importance of the buoys that are deployed in their waters and the need for the fishing vessels to protect these instruments.

220. The TAG Advisor from JAMSTEC noted that they had developed an educational brochure for the TRITON system and suggested that other countries may wish to utilise this to educate their fishers. JAMSTEC also indicated that Papua New Guinea and the Federated States of Micronesia had distributed information to fishers as part of licensing agreements and that this has been successful in reducing the amount of damage to buoys.

221. Fiji noted the linkages between the Minerals and Ocean units of the SOPAC Work Program, requesting that more effort be given to investigating the extent and value of existing marine scientific research information in the SOPAC Cruise Database. Fiji further highlighted their interest in the development of an offshore mineral policy, emphasising the conflicts between private exploration and marine scientific research, and expressed interest in finding ways of benefiting from both exploration and research.

222. The Secretariat indicated that the SOPAC Cruise database will be fully evaluated in the 2000/2001 work program.

223. Tonga expressed its appreciation for the overview of the Work Program provided by the Secretariat. Tonga indicated New Zealand was currently seeking MSR permits to work in Tonga's EEZ and sought clarification on the following two outputs of the Ocean Work Program for the 2000/2001 concerning RT 1998.003:

- Determination of extent of the continental shelf – recognising that funding was being sought, Tonga expressed concern as to whether funding would be secured, given the limited time left for completion of this work [currently 5 years].
- Development of offshore mineral policy – Tonga sought clarification on the similarity of outputs for task TO 2000.003 and a firm indication that work would be carried out promptly.

224. The Secretariat indicated that funding for task TO 2000.003 from the New Zealand government is primarily for a desk study to determine what information exists, in order to develop a full action plan and a more detailed proposal for work to be undertaken to prepare a claim for submission to the Commission on the Limits of the Continental Shelf. The Secretariat noted the marine mineral policy task (RT 1998.003) was to be addressed in the 2000-2001 work program of the Minerals Unit.

225. The Secretariat confirmed that Article 76 of UNCLOS provides only a limited timeframe to lay claim to continental shelf areas and stated that any proposed survey work would be heavily reliant upon donor funds, emphasising that the current secured funding from New Zealand would cover a desk study of available information.

226. The Secretariat advised that the 10-year rule under UNCLOS Article 76 is expected to be on the agenda of the next meeting of the States Parties in 2001 and clearly indicates international recognition of the need to discuss this issue for many developing countries and small island developing countries, who are having difficulty in meeting this deadline.

227. FFA reported that the IHO meeting on boundaries in 1999 examined specifications for claims for extensions to the continental shelf and those attending were advised that countries should increase political lobbying in the UN to raise awareness of difficulties with the time constraints. FFA also indicated that New Zealand has tendered for deep seismic surveys of their continental shelf and suggested that with the boundaries of Tonga and Fiji being immediately adjacent to New Zealand, New Zealand may wish to consider the possibility of extending these surveys.

228. The Secretariat elaborated on the joint project proposal for delimitation of maritime boundaries for Fiji and Tonga, which was approved by France and advised that although the project had been approved for 2000, the proposed survey had been cancelled due to the redeployment of funds.

229. The TAG Advisor from IFREMER indicated that they were willing to assist the Secretariat in the preparation of proposals for individual SOPAC member countries, to establish claims to the outer limits of their continental shelves. IFREMER informed the Joint Council/TAG Session that the RV *Marion du Fresne II*, which is equipped with state-of-the-art swath mapping technology, will be coming to New Caledonia in 2002, indicating that this provided an opportunity for member countries.

230. The Secretariat noted the current ODP initiatives in the region and the need to follow-up on the products of this work. The TAG Advisor from the University of Hawaii drew attention to the presence on the current ODP cruise of Dr Loren Kroenke who

is the longest-standing TAG advisor to SOPAC, hence missing his first SOPAC Annual Session.

231. The Secretariat introduced paper (AS29/9.6.1 Suppl.1) "Crop Marine Sector Working Group Regional Ocean Policy in the Pacific", noting that the fourth meeting of the Marine Sector Working group of the CROP convened in Apia in August 2000, decided that the regional ocean policy would be developed incrementally. A paper will be prepared by a research fellow from USP, who will be seconded to the Forum Secretariat over six months from November 2000 to April 2001.

232. The Joint Council/TAG Session noted the progress made by the CROP Marine Sector Working Group in developing a Regional Oceans Policy.

233. The Secretariat introduced paper (AS29/9.6.2 Suppl.1) "Transfer of the Maritime Boundaries Project from the Forum Fisheries Agency to SOPAC", advising that the draft transfer paper had been prepared and is currently being considered by FFA before being passed on to AusAID. The Secretariat introduced the draft logframe matrix, noting that it provides a summary of the draft proposal.

234. Kiribati, Marshall Islands, the Federated States of Micronesia and Samoa provided an update on the status of their maritime boundary delimitation work and expressed their appreciation to Australia for their funding support. Further, they urged Australia to continue their funding, following the transfer of the Maritime Boundaries Delimitation Project including the Maritime Coordinator from the FFA to SOPAC, stating that this is a priority in future work programs.

235. The Cook Islands expressed their support for the SOPAC Work Program highlighting the importance of the information gathered through the delimitation of their offshore boundary, noting that this has assisted them not only in meeting the obligations of UNCLOS but also in the administration and management of their living and non-living marine resources. The Cook Islands also noted the importance of the maritime boundaries delimitation project in the region, particularly as the assistance and advice has helped to identify inadequacies and anomalies in existing data.

236. Tuvalu expressed their strong support for SOPAC's work and the transfer of the project, requesting that AusAID support the facilitation of this transfer. Tuvalu indicated that transfer of maritime boundaries delimitation project to SOPAC will ensure an update of hydrographic charts in Tuvalu area which are based on very old data. Tuvalu registered its expectation of being able to meet its obligation under the UNCLOS with this project under SOPAC.

237. Vanuatu and Tonga sought clarification as to the resources that would be made available to the

project when the project was transferred to SOPAC. The Secretariat responded indicating that a new project proposal had been developed for submission to AusAID at their invitation reiterating that a summary of the project proposal has been provided in the logframe matrix. The Secretariat advised that the proposed project would be for three years with an indicative budget of approximately AUD1 million, indicating that discussions between the FFA and SOPAC are underway to ensure timely project transfer.

238. The Secretariat referred to the successful transfer of the Disaster Management Unit program from UNDP to SOPAC and noted the transparency of the process in terms of the development of a new project proposal and funding. The intention is to use this process for the transfer of the Maritime Boundaries Delimitation Project from the FFA to SOPAC with AusAID assistance.

239. The Joint Council/TAG Session noted that FFA and SOPAC are in the process of finalising the proposal to AusAID for the transfer of the Maritime Boundaries Project and strongly endorsed the timely transfer of the project from the FFA to SOPAC.

240. The Secretariat introduced paper (AS 29/9.6.3 Suppl.1) "Global Ocean Observing System: Pacific GOOS Initiatives".

241. The STAR Chair suggested that AS29/9.6 Info.1, outlining the summary and recommendations of the GOOS Working Group Meeting be considered together with paper AS 29/9.6.3 Suppl 1.

242. Samoa expressed their appreciation for being chosen to host the Pacific GOOS Coastal Workshop convened in Apia in August 2000 and expressed their strong support for the recommendations of the workshop.

243. The TAG Advisor from IOC provided a summary of the key outcomes from the GOOS Working Group AS29/9.6 Info.1 and outlined the recommendations from the Working Group Meeting. The Joint Council/TAG Session endorsed the following recommendations of the GOOS Working Group (see Appendix 6).

244. The Joint Council/TAG Session noted and endorsed the recommendations of the Pacific GOOS Coastal Workshop convened in Apia, Samoa on 16 and 17 August 2000 as follows:

- 1) that, since the central and western Pacific Ocean is largely within the EEZs of Pacific Islands nations, that they agree to:
 - concur with plans for ships and aircraft coming into their collective EEZs and help facilitate access into their EEZs, for float deployment;

- provide assistance in identifying potential opportunities for float deployment from vessels of opportunity such as fisheries and patrol craft and identify a point-of-contact for deployment and for science and applications; and

- promote and Argo Program in the region, to ensure the early deployment of Argo floats in the Central and Western Pacific Ocean.

2) that more detailed project documents be developed from the following concept papers, by champions from the region, and that funding be sought to implement these:

- Reef Health Monitoring at Pacific Island Dive Tourism Sites;
- Monitoring the Quality of Coastal Waters at Selected Regional Sites; and
- Monitoring Systems for Mariculture Initiatives in the Marshall Islands and Kiribati.

245. The Joint Council/TAG Session noted and endorsed the Work Program activities proposed by the Secretariat for the year 2001 and the STAR Working Group recommendations (see Appendix 6).

9.7 Human Resources Development Unit

246. The Secretariat presented the Human Resources Development Unit work program highlighting the regrettable loss of both the Training Coordinator and the Assistant Training Coordinator during the year and acknowledge Comsec and BGS support for these positions.

247. The Chair invited comment on the program from USP. USP stated that the absence of the Training Co-ordinator and Assistant Training Co-ordinator at this Annual Session was a cause for serious concern and confirmed that USP would continue to support the Earth Science and Marine Geology Course and confer the award as a USP Certificate as long as SOPAC required. Further comments by USP are included in the USP Statement in Appendix 5.

248. The Secretariat noted the good relationship with USP and the progress made with some difficult issues and requested that small island states support the geosciences through identification of suitable high school graduates and provide appropriate avenues for employment of graduates. The Secretariat further noted that there could be an imbalance of graduates favouring professions such as legal and accounting and encouraged member countries to allocate at least one scholarship every two years to geology-based training as there had been minimal attendance at ESMG courses from small island states.

249. Samoa noted that the ESMG was an excellent bridging course and thanked the Secretariat and USP for accepting their national students and regretted that they had left due to the events in Fiji.

250. The Secretariat with USP's endorsement recommended that Council thank CFTC for its continued funding of the Training Co-ordinator position and urged CFTC to approve future funding. Council also acknowledged with gratitude CFTC's continued funding of the Certificate in ESMG and urged CFTC to consider funding beyond the current certificate program cycle. USP strongly supports SOPAC Council's request to CFTC.

251. The Chair noted that the Kiribati Minerals Officer is a one-person office and recognised the need for strengthening this facility through further training.

252. The Joint Council/TAG Session endorsed the Human Resources Development Unit work program and adopted the recommendation by the Secretariat and USP.

9.8 Information Technology Unit (ITU)

253. The Secretariat introduced the Information Technology Unit (ITU) (AS29/9.8). The objectives of the unit are to provide technical support for the establishment and maintenance of data management capabilities and for the electronic exchange of information.

254. The Secretariat advised that Myriam Gallois from New Caledonia joined SOPAC as the GIS and Remote Sensing Officer in August 2000 and noted that this position, traditionally French funded had been vacant for some 16 months. Anna Elaise, the Information Technology Officer who also undertakes Webmaster and Network Administrator duties and has been a Secretariat staff member for 10 years has resigned and will depart in November 2000 to join the International Seabed Authority in Kingston, Jamaica as their Webmaster. The Secretariat wished her all the best in her new career.

255. The Secretariat presented the work of the Unit in Information Communication Technologies (ICT) and Geographic Information Systems and Remote Sensing (GIS/RS), and summarised the regional and member country tasks completed, started or proposed.

256. The Secretariat presented the task completed for the International Seabed Authority in ICT Evaluation and advised that the PACPOL project undertaken in collaboration with SPREP was progressing satisfactorily.

257. The Secretariat highlighted its participation in IT-PACNET and the annual CROP IT Working Group, and advised that the Secretariat had become the Pacific regional member of the International Society for Photogrammetry and Remote Sensing (ISPRS) in July 2000. The Secretariat further noted that IT-PACNET 2000 was hosted in Tuvalu through their generous support and that it had been proposed that Niue host the 2001 meeting.

258. The Secretariat advised its commitment to developing ICT and GIS/RS activities within the region through newsletters, web sites, mailing lists, help desk, participation in the Fiji GIS/RS User Group and encouragement in the establishment of national user groups in other member countries.

259. The Secretariat reported the completion of the Fiji Forest Export Marketing System (FEMS) which has now been adopted by the International Tropical Timber Organisation (ITTO) as a model for other countries world-wide, noting the tasks completed for the Fiji Forestry Department under the ITTO funded Landowner Awareness Project for multimedia production and pre-harvest inventory.

260. The Secretariat advised that the Tonga Electric Power Board (TEPB) presented their GIS for Power Utilities system at a Pacific Power Association (PPA) meeting in Brisbane during August 2000. This system had been developed with assistance from SOPAC. TEPB was awarded the most outstanding presentation of the meeting. The representative from the Pohnpei Power Utility has elected to adopt and customise the system for use in the other states of Federated States of Micronesia.

261. The Secretariat provided the SOPAC Data 2000 CD to all member countries and advised that it was the responsibility of the national representative to provide copies to other national sectors.

262. The Secretariat noted that the first images from the new generation of high-resolution satellite images would be utilised for 1:10,000 mapping and would be acquired for Tonga in the next few months. These images that have multi-disciplinary use enabling the utilities and mapping agencies to enhance their respective GIS-based systems as well as providing valuable information for SOPAC's forthcoming erosion protection work.

263. The Unit presented TAG papers AS29/9.8.1 through AS29/9.8.5 for information and consideration by Council.

264. The Secretariat indicated the importance of installing a standby generator in relation to the power problems in Suva and sought funding assistance from donor organisations.

265. Kiribati acknowledged the work by the Unit in establishing Internet and Intranet communications for the Ministry of Natural Resources Development (MNRD) that was invaluable for arranging this Annual Session and assisting MNRD on duty travel.

266. Tonga thanked the Unit for its presentation and highlighted the LAN/WAN project that was not completed before this Annual Session due to lack of Secretariat resources and requested that this be completed this year. Tonga also requested a fellowship attachment to assist in implementing this task as well as an attachment from the Land Information System.

267. Tonga further requested that the data provided to the Secretariat by Japan on work conducted in Tonga waters be sent to them as soon as possible as Tonga was keen to use the data in developing their fisheries. The Secretariat explained that the data requested by Tonga was from a GIS-based system supplied by MMAJ that did not meet regional standards and that the size of the databank prohibited distribution via normal media. The Secretariat further noted that there would be considerable work in converting and extracting this data into a usable format. This work would be done in co-operation with the Ocean Unit subject to funding.

268. Federated States of Micronesia acknowledged the support of the Secretariat and AusAID in GIS/RS and the extension of its previous tasks to other states. It was requested that other units at SOPAC consider a similar funding strategy to implement their activities in the FSM states.

269. Fiji thanked the Secretariat for its excellent work carried out for the Department of Forestry and requested information on the status of the proposed Native Land Trust Board (NLTB) project. Fiji noted that satellite imagery may be more cost-effective than airborne image data and asked if the Secretariat has advised the relevant departments on the technical issues.

270. The Secretariat stated that NLTB requested the Secretariat to assist in development of a rapid technology to identify landowner boundaries and assist in sourcing funding. The Asian Development Bank (ADB) was identified as a suitable funding source for the project but although the project was approved the funding it is still pending due to the recent events in Fiji. The Secretariat stated that the technology issues of imagery had been addressed, noting that all airborne systems are expensive in Pacific Island countries due to cloud cover and resultant high standby costs. The Secretariat noted that proposed assistance to Fiji by a commercial company establishing a remote sensing centre providing free software and training in image analysis would commit Fiji to prohibi-

tive imagery acquisition costs, as they would use aircraft as the sensor platform.

271. Fiji highlighted the problems in ownership of remote sensing data collected and the importance of co-ordination between national agencies to ensure more effective use of data.

272. The Forum Secretariat requested an additional recommendation to paper AS29/9.8.1 "The Council endorses agreement with the principles and recommendations of the Forum Communication Action Plan 1999 that are intended to facilitate development of a Pacific Information Economy".

273. The TAG Advisor from the University of Hawaii stated that access to SOPAC's web site is unusable for data dissemination due to inadequate bandwidth, acknowledging that the problem does not lie within the Secretariat and requested Fiji to address the problem.

274. Cook Islands, Chair of the PCGIAP Pacific Group, apologised to the Secretariat for the non-participation by the Secretariat to the Kuala Lumpur meeting as the UN agency responsible for funding mistakenly believed that the Secretariat was a donor organisation. The PCGIAP Chair stated that he will attend a meeting in November and will report on the outcomes to the proposed November meeting organised by the Secretariat for the Pacific Group where funding is dependant on AUSLIG. Cook Islands noted that some countries involved in PCGIAP are prepared to provide funding for the Secretariat and Pacific countries for scholarships.

275. The Joint Council/TAG Session endorsed AS29/9.8.1 (*Bridging the Information Exchange Divide*) as amended and AS29/9.8.2 (*Opportunities from INET Conference*), AS29/9.8.3 (*Developments in Remote Sensing*), AS29/9.8.4 (*GIS Open Source Development*) and AS29/9.8.5 (*PCGIAP Pacific Group Activities*).

276. The Secretariat requested that member country representatives obtain e-mail access as a high priority to assist in information dissemination.

277. The Joint Council TAG recommended that the national representatives copy all appropriate correspondence to other national contacts.

278. Samoa noted the importance of compatible GIS across all national government organisations.

279. The Secretariat advised on the difference between the GIS software products and the data and stated CROP has standardised on software but the consolidation of the data is a critical issue for effective and sustainable development of GIS based information systems within the Pacific. The Secretariat further highlighted the SOPAC GIS Policy Paper that

had been endorsed by Council at the 28th Annual Session. The Secretariat advised that a common GIS is the foundation of Island Systems Management and this methodology was the one to be employed under the project proposed for EU funding for the ACP states.

280. The Joint Council TAG recommended that the Secretariat continue to promote "Island Systems Management" to facilitate effective development of regional and national of GIS initiatives.

9.9 Disaster Management Unit (DMU)

281. The Secretariat introduced the new Head of the DMU and papers (AS29/9.9.1 and Suppl. 1), DMU Disaster Management Project, endorsed by the 9th Pacific Regional Disaster Management Meeting in Niue in early September. The Secretariat also noted the preparation of the project design development and consultation process that began in March 2000 with various stakeholders and was concluded at the Niue meeting.

282. The Secretariat described how all member countries were considered as stakeholders in the DMU project except for PNG, which was part of a separate bilateral AusAID funded project. This project will be linked closely to the SOPAC DMU in terms of methodologies and approaches.

283. The Secretariat noted secured funding for the project from Australia, New Zealand and UK/DFID and thanked them for their contributions.

284. The Secretariat described the four basic components of the DMU project, establishing the disaster management unit, project management; knowledge management; program support services; and partnerships.

285. The Secretariat discussed the project status and the DMU Work Program for the remainder of 2000 and 2001, noting that the project was designed by stakeholders to meet their identified needs and requiring ownership by both the DMU and participating countries. The Secretariat called for the support of countries to identify their program priorities for 2001 and commended the project document to the meeting as an effective framework for the future of disaster and risk management within the region.

286. SPREP welcomed the establishment of the DMU at SOPAC and identified the potential for SOPAC and SPREP to collaborate on climate change and sea-level rise issues.

287. Samoa expressed its gratitude to Australia, New Zealand and DFID for funding the Disaster Management program and noted Samoa's representation at

the Niue meeting. Samoa confirmed its intention to address the issue of donor coordination with regard to the implementation of disaster management programs. Samoa mentioned the joint Samoa-American Samoa Disaster Awareness activities that would be taking place in mid-October 2000.

288. Australia requested clarification on how a working relationship might be accomplished in terms of the new disaster management unit within SOPAC – considering the relationship between the SOPAC Pacific Cities concept, the AGSO Australian Cities Project, and with the DMU at the centre of the framework.

289. The Secretariat advised that DMU can integrate with a number of other scientific disciplines within SOPAC, noting that some of the projects will have a hazards as well as a disaster management human activity component and could usefully interact with the AGSO Cities Project.

290. The Joint Council/TAG Session endorsed the SOPAC Disaster Management Unit Project Design Document and as agreed by the 9th Regional Disaster Management Meeting in Niue, urged the Secretariat to develop a 3-year implementation plan without delay.

291. Cook Islands welcomed the Unit Head and mentioned the recent USARPAC/PDC/COE disaster assessment and preparedness exercise in Rarotonga, suggesting that SOPAC acquire the newly published report from the exercise.

292. The Secretariat indicated that it had invited a USARPAC representative to the Niue meeting who was familiar with the existing bilateral collaboration with the Cook Islands and Samoa.

293. The Secretariat asked National Representatives to remind other focal points to avoid duplication of effort and to create situations where SOPAC work could at least supplement bilateral aid programs. The Secretariat advised that reciprocal visits and MOUs had been arranged with US DOD organisations and was looking forward to productive collaboration in the future.

294. Tonga supported the recommendations of paper AS29/9.9.1 Suppl. 1. Tonga also expressed regret at the circumstances, which resulted in their non-attendance at the Niue meeting but indicated that it would like to support the new program.

295. Tonga commented on the importance of the issue of duplication raised by the Secretariat asking that in future correspondence and information from DMU and WRU to the office of the National Representative and information on collaboration with other contact points be provided well before the SOPAC Annual meeting.

296. The Joint Council/TAG Session reinforced the need for SOPAC to operate through National Representatives for crosscutting issues and for National Representatives to keep SOPAC informed of developing bilateral issues.

297. Tonga welcomed the opportunity for a proposed workshop on National Disaster Planning to be conducted by DMU staff.

298. Tonga asked what proportion of the indicated project funding was secured. The Secretariat referred to the program-funding document noting that although the Work Program activities were yet to be detailed, there was close to FJ\$1 m available.

299. The Secretariat noted that New Zealand, Australia, UNDP, and DFID provided representatives on the committee supervising the project document development which was carried out by an Australian consultant and later peer reviewed by New Zealand. It further commented on the benefit of the donors' representatives co-operating and gaining ownership in the process of developing the DMU and recruiting a DMU Head.

300. The Secretariat stated that although UNDP indicated its commitment to future funding, it has yet to quantify this commitment.

301. USP welcomed the Secretariat's vision of professionalising disaster management training in the Pacific, indicating that there were courses at USP that could be tapped into. It looked forward to a new venture in preparing resource people properly trained in degree courses containing elements of disaster management.

302. Kiribati stated that they were represented at the Niue and the report submitted at the meeting contains the priority needs of Kiribati in disaster management. Kiribati acknowledged the assistance of Australia, New Zealand and UK in supporting the development of the DMU program.

303. Vanuatu acknowledged the new DMU and the work of HAU extending its appreciation to Australia and New Zealand, noting the importance of empowering communities to manage their own affairs and linked this with a need for a person in-country to deal with hazards. Vanuatu indicated that it looked forward to the future work of DMU.

304. The Secretariat introduced the paper AS/29/9.9.2 Suppl. 1 "Developing a Regional Mechanism to address Humanitarian Response needs during Civil Crisis Situations" and indicated that, given the limited time available for its development, it could not be considered a definitive document. The Secretariat asked the Joint Council/TAG Session to note the development of the framework described in the docu-

ment adding that the supplementary paper had been discussed extensively in the recent meeting in Niue.

305. The Joint Council/TAG Session noted the development of the framework for assistance to members in addressing needs during times of crisis, considering recommendations that may have implications for broadening SOPAC's mandate in disaster management, and decide accordingly.

306. The Secretariat introduced paper AS/29/9.9.3 9th Pacific Regional Disaster Managers Meeting "Summary Report" noting the success of the meeting and encouraged members to assist the NDMO's. It furthermore encouraged members to assist the NDMO's to ensure that their country program presentations at the annual meetings contained enough detail to allow for valuable interaction with other NDMO's.

307. The Joint Council/TAG Session accepted the Summary Report of the 9th Pacific Regional Disaster Managers Meeting and the key conclusions and recommendations.

308. The Joint Council/TAG Session noted and endorsed the Disaster Management Unit work program as proposed by the Secretariat for the year 2001.

9.10 Publications and Library Unit

309. The Secretariat introduced the Publications and Library Unit and thanked New Zealand for purchasing the equipment required for developing and implementing SOPAC's Virtual Library. The Secretariat also advised that all historical data and reports would be put into the Virtual Library, in PDF format, over the next six months, following delivery and installation of remaining software which is currently on order. The Secretariat aims to have these reports freely available and accessible through the SOPAC web site.

310. The Secretariat thanked the USP for their assistance in the marketing of SOPAC publications and advised that the mailing list was updated during the year and 200 of the original mailing list of 900 remain. The Secretariat stressed that SOPAC's web site is very important and that readership appears to have more than doubled since its development. The Internet has become the main mode for report dissemination and management.

311. Member-country publications are considered Work Program priorities for the Publications and Library Unit. Even though promotional work had suffered since the events, in Fiji, in May 2000, the Secretariat continues to recognise promotional work as an important part of the Publications and Library Unit's work program.

312. Joint Council/TAG commended the continuing high standard of publications produced by the Publications and Library Unit and Samoa recommended that countries use the services of the SOPAC Librarian to assist in the upgrade of their relevant library holdings.

313. The Director advised that all publications produced by the Secretariat passed across one desk. He encouraged TAG advisors to consider sabbaticals or attachments to the Secretariat, for scientific editing. He also raised the issue of the publication of the late Stuart Kingan's memoirs. Stuart Kingan, a longstanding member of the SOPAC Family, passed away in January 2000. He announced that the Secretariat would endeavour to publish this biography, subject to the consent of the Kingan Family.

314. Council approved the proposed Work Program for the Unit for the year 2001.

9.11 Environmental Vulnerability Index (EVI)

315. The Secretariat introduced the Environmental Vulnerability Index paper (AS29/9/1/1) highlighting Tonga's Prime Minister, Prince Ulukalala Lavaka Ata's call at the UN General Assembly for countries to recognise and support SOPAC's work on the environmental vulnerability index, welcoming its inclusion as a factor for determining their economic vulnerability and the LDC criteria, recognising that Small Island Developing States are vulnerable to environmental changes.

316. The Secretariat highlighted the directions for Phase III of the EVI project.

317. Tonga stated that it supported the project, noting however that there had not been any deliverables to Tonga regarding this project.

318. Australia questioned the specific advantage of excluding human vulnerability in the development of the EVI considering many of the indicators looked at the human environment. Australia also questioned the use of the EVI as a tool to measure sustainable development given that it does not include community vulnerability. Australia also stated its concern over the short time frame planned for the completion of Phase III of the project.

319. The Secretariat stated that its mandate has been focused on the natural environment as many other international initiatives addressed human vulnerability issues including community vulnerability. The Secretariat added that the health and impact of human activities on the environment were captured in the EVI indices. These effects are directly related to the vulnerability of the environment, since the basis for sustainable development is the environment. The EVI is deemed to be useful for monitoring sus-

tainable development over time. The Secretariat stated that it will have a workable tool developed by the completion date with data only from a selected number of countries.

320. SPREP stated that they did not support the concept of a single number representing environmental vulnerability; however, they endorsed the process of collecting environmental vulnerability data and information which can be very useful for vulnerability studies of the countries. SPREP looked forward to the continued involvement with SOPAC in this area of work.

321. USP congratulated SOPAC for the speedy and timely approach to the start of the EVI project, and hoped that initiatives like this can become part and parcel of the undergraduate and postgraduate programs at USP.

322. USP confirmed that it was establishing the Pacific Centre for Environment and Sustainable Development (PacESD), and that, apart from research and consultancy, one of the Centre's purposes would be to act as a centre of information for students.

323. New Zealand noted that it had been pleased to be involved with the EVI project from the beginning. It acknowledged that the project had grown at a rapid rate and commended the Secretariat for its success in attracting funds from non-traditional sources.

324. Samoa commended the Secretariat for their work on EVI and cautioned on the deterministic or probabilistic approach of the EVI tool. Samoa noted the capacity building course implemented by USP and asked if there were linkages between the Pacific Island Climate Change Assistance Program (PICCAP) and EVI approaches as the indices were interlinked.

325. The Chair noted the discussion relating to choice of factors and indicators used to measure environmental vulnerability.

326. The Council noted with appreciation the progress of the EVI project and acknowledged the generous donor support, recognising that the UN Economic and Social Commission is being responsive to the special case of vulnerability of Small Island developing states.

9.12 Council/TAG Other Business

327. The Chair, on behalf of Council, thanked the Chair of STAR for his work at the meeting in facilitating the meeting of scientists. He went on to thank the scientists for their contributions, and all the members of working groups whose help was invaluable to Council's decision-making.

328. The Director thanked the Secretariat staff, in the presence of Council, for their efforts in the face of

the recent events in Fiji, in preparing the Work Program and session documentation. He particularly highlighted the Program Manager's coordinating role in the innovative working arrangements that staff had to adopt to meet the Council papers' mailout deadline.

329. The Director also took the opportunity to thank the STAR Chair and all the TAG Advisors for their input in the deliberations, expressing the hope that the new role of TAG will continue to crystallise at the next SOPAC meeting. The Director expressed Council's gratitude at the valuable input of this distinguished group of scientists into the SOPAC Work Program discussions.

330. The Chair echoed the Director's remarks and closed the Joint Council/TAG meeting.

10. Establishment and Administration

331. Consideration of the sub-items under Agenda item 10 were not done in the order in which they appear in the Approved Agenda. However, for the purposes of this Summary Record, the original numerical order is adhered to. Council also considered Items 10.1, 10.2 and 10.4 *in camera*.

10.1 Director Appointment

332. The Chair informed Council that there were five candidates of which three were short-listed for this position. Following discussions members unanimously approved the appointment of the incumbent, Mr Alf Simpson, for another term.

333. Marshall Islands expressed their gratitude to Tonga and Australia for putting forward their short-listed candidates which clearly showed interest in the organisation, and supported the decision *in camera* which truly demonstrated the Pacific way of arriving at a consensus decision.

334. Tuvalu, noting the importance of the issue of appointing the CEO of the Organisation, joined the Marshall Islands in congratulating Alf Simpson for his reappointment as Director of SOPAC. He thanked Australia and Tonga for their cooperation in withdrawing their respective candidates who were well qualified. They also thanked Fiji for its contribution to SOPAC in availing the services of trained technical people such as Alf Simpson, noting the importance of continuity to important regional activities through the renewal of his appointment.

335. The Director expressed his appreciation for the support of Governing Council in their decision to reappoint him as Director of SOPAC for another term. This decision clearly showed their confidence in the

direction SOPAC was going. The Director acknowledged that the success of SOPAC was due, not only to himself, but to his staff. The Director indicated that as a precondition to his acceptance he would like Council to note that the position is regional in nature and that he should not be penalised for being a Fiji national, but should be treated the same as any other national being appointed to a regional post.

336. The Chair noted his comment and stated that Council would consider this. The Chair on behalf of Council congratulated the Director on his appointment.

10.2 Deputy Director position

337. The Secretariat introduced the paper AS29/10.2

338. The Chair advised that Council had discussions on this matter *in camera*. Deliberations took note of the reasons in the past for the post not having been filled and recognised the need to now fill the position. In doing so the Program Manager position would be left vacant hence budgetary implications of the reinstatement of the Deputy Director position would be negligible.

339. The Council decided to fill the Deputy Director position and advertise in 2001 for appointment by Council at its 2001 Annual Session.

340. The Council agreed to extend the current Program Manager's term until the Deputy Director was settled in post in order to ensure continuity. The Council decided to defer decision on the recommendation to keep the Program Manager position in the long term.

10.3 CROP Remuneration

341. The Secretariat presented paper AS29/10.3 and its supplement.

342. The Council invited the Chair of the FOC Remuneration Sub-Committee, and the Forum Secretariat as Chair of the CROP Remuneration Working Group to brief Council and provide an update.

343. Tuvalu, as Chair of the FOC Remuneration Sub-Committee briefed Council on the status of the remuneration exercise, reminding Council that the FOC and SOPAC Governing Council Special Session in November 1999 had endorsed the twelve recommendations of the Consultants Report except that relating to the use of AUD \$ instead of SDRs.

344. The Forum Secretariat briefed Council on progress with the implementation of the remuneration exercise and pointed out three issues. 1) that

although the entire exercise was aimed at harmonising the conditions of service and salary scales, it has been recognised that total harmonisation may not be possible in all cases due to local market conditions. 2) that although base salaries may be harmonised, the total remuneration package is most important. 3) that the abolition of the international market allowance was considered premature at this stage but there had been agreement to phase this out in the medium term due to the flexibility in the new remuneration structure.

345. Australia accepted all the recommendations of the CROP Working Group Report but noted the importance of a cost neutral outcome and expressed concern with the recommendation relating to use of SDRs. Australia noted that the Secretariat had expressed previously the difficulty of planning and managing a budget in Fiji dollars when the bulk of the salary commitments were in SDRs and, as the first Governing Council to consider the final CROP report, it might be useful to send clear messages on the inappropriateness of SDRs to the FOC.

346. The Secretariat indicated SDRs were not an issue for the current remuneration exercise, in that any foreign currency would create difficulties for the Secretariat if it differed from the currency in which SOPAC does business (Fiji Dollar).

347. Tonga indicated to Council that they are facing difficulties in terms of budgetary cuts. Tonga expressed that they would be willing to agree with any consensus decisions on increasing membership contributions as a result of implications of the remuneration exercise but would like to highlight their finance constraints.

348. The Chair reiterated to Council that the issue here was to harmonise and noted the point made by Tonga and mentioned that this was a concern shared by many member countries.

349. Council agreed to accept the CROP Working Group recommendations and advised the Secretariat to proceed with implementation. Those recommendations are as follows:

1. Adoption of the salary ranges set out at Attachment B of the Working Group Report from 1 January 2001 (with scope for seven points only within the range if organisations preferred);
2. Adoption of the Harmonised Conditions of Service set out in Attachment C of the Working Group Report;
3. Adoption of the process for establishing CEO benefits set out in Attachment D of the Working Group Report;

4. Adoption of Australian Public Service (APS) base salaries and the CROP harmonised conditions package as a basis for the assessment of Total Remuneration. Further consideration to be given to Total Remuneration packaging when the APS Total Remuneration costs are known;
5. Job sizing and market appraisal for a sample of positions to be undertaken internally every year and externally every three years;
6. CROP Governing Boards were urged to consider ways that tax treatment of CROP staff salaries should be harmonised;
7. Hardship allowances for any particular location to be set by the appropriate managing body and to apply to all CROP organisations staff posted to that location for any significant period;
8. Organisations should adopt Performance Contracting based on the principles at Attachment F of the Working Group Report;
9. Consideration should be given to the adoption of the Fiji Government scheme where support staff at the top of the range be given a further bonus each year, equivalent to an increment, but only awarded in the case of continued highly-satisfactory performance;
10. Consideration should be given by governing boards to the award of increments to CEO's following the establishment of set objectives and the provision of regular reports from the CEO;
11. (Not relevant to SOPAC) Forum Secretariat staff should be placed on annual renewable contracts;
12. Current SDR and USD local currency stabilisation measures arrangements, including payment in local currency to be maintained. Organisations should be given flexibility in their administration.

350. The Council directed the Secretariat to engage in discussions with the Fiji government on the tax treatment of professionals on contract who are Fiji nationals employed by the Secretariat.

351. The Secretariat presented AS29/10.3 Suppl. I Part B to Council.

g) Validation of job-sizing exercise

The Council accepted the validation of the job sizing exercise carried out to date as summarised in Table 1. Council noted that this would be an ongoing exercise subject to internal review annually and external review every three years.

ii) Long-term nett costs

Tuvalu expressed their appreciation for the clear presentation made by the Secretariat of the details and implications of the long-term nett costs of the remuneration exercise. Tuvalu also supported the recommendations proposed and commended the recommendations to Council.

The Council accepted that the long-term nett costs of the new remuneration structure were considered negligible by comparison with the current structure.

iii) SOPAC provisional salary scales for 2001

Council accepted the SOPAC provisional salary scales for 2001 noting that professional salaries as expressed in Fiji dollars fluctuate with the SDR/FJD conversion rate.

iv) Impact of new remuneration structure salaries on the 2001 budget

The Council accepted the budget implications of implementing the new remuneration system on 1 January 2001 which are within limits for the Secretariat to manage as far as salaries were concerned.

v) Other benefits of the new remuneration system

Fiji requested clarification on the implications in the budget of the provision of benefits under the new remuneration package and whether there were any major increases in the budget.

352. The Secretariat indicated that there were no major impacts to the budget except for two items as noted (small increases in housing and superannuation).

353. Tuvalu expressed their support for the recommendation and for changes to the Staff Regulations to be reported to Council next year.

354. The Council endorsed the application of the benefits as listed in the Working Group Report and would adjust its Secretariat regulations accordingly.

355. Australia asked whether the decisions made by Council could be overturned by the FOC and asked whether it would be necessary to hold a Special Session to discuss any substantial changes made by the FOC.

356. The Secretariat indicated that FOC had taken the lead on this issue and that the Governing Council has been proactive in their involvement in this process. It was suggested that any decisions made by Council could be commended to FOC. The Secretariat further advised that FOC deliberations on this matter would focus on implementation for the Fo-

rum Secretariat as the CROP-wide decisions were made by FOC in December last year and individual governing bodies were now responsible for implementation in the organisations involved.

357. Tonga indicated concern in commending the report to FOC as it may appear to pre-empt the decision of FOC.

358. The Chair noted that this exercise has taken an extended period and several CROP organisations have been involved.

359. Fiji suggested that a recommendation be agreed upon that recognises the good work that has been undertaken and commending it to FOC and other CROP governing bodies involved for their decision.

360. Council agreed to all recommendations of the CROP Working Group Report for implementation on 1 January 2001 and commended it to FOC and other CROP governing bodies involved.

10.4 The SPC-SOPAC Relationship : A Planning Sequence for Integration

361. The Director introduced the subject and paper AS29/10.4 and its supplement. He reminded Council of their decision from last year and of the basic underlying principles which motivated him and the Director-General of SPC to make submissions to their respective governing bodies regarding the merger. He drew Council's attention to the action that was required of them after considering the final Consultants' report (AS29/10.4 Suppl. 1).

362. After a full discussion with Consultants during which many issues were raised, Council thanked the Consultants for their comprehensive report and briefing. Council agreed that more time was needed to consider this issue of SPC-SOPAC integration Study because most members had only very recently received the final report. Council further agreed that the issue be considered at its next annual session thereby allowing for full consideration in capitals. Council asked the Secretariat to convey this deferral decision to the SPC Secretariat.

363. Subject to SPC/CRGA similar decision, Council also agreed that SOPAC and SPC secretariats work together over the next year to ensure that member countries' concerns, particularly those raised with the Consultants, are more fully explored and addressed.

364. A full record of the discussion of Council under this agenda item is in Appendix 8 of this Proceedings volume.

10.5 Draft SOPAC Business Continuity Plan : a response to the impact of the Fiji political crisis on the operations of the Secretariat

365. The Secretariat introduced this agenda item (AS29/10.5) which described the difficulties that the organisation had faced during the recent events in Suva and how a number of weaknesses in the systems and processes within the organisation had been identified.

366. The Secretariat then highlighted the need for business continuity planning to ensure that if the need arises in the future, for whatever reason, the organisation can continue in a business-as-usual mode as much as possible.

367. The Secretariat indicated that there was sufficient intellectual capacity and understanding of risk-management practices within the organisation to be able to develop a business continuity plan internally but that a reserve of up to \$10,000 should be set aside for any external assistance should that need arise. The Secretariat also indicated that this was a proactive response to what had been a negative situation in Suva and that it was consistent with the organisational approach to embrace new management systems and practices.

368. Cook Islands commended the initiative and hoped that other member countries would show their support as well. Cook Islands also asked if the Coastal Unit expert from China who went on extended leave had returned to Suva. The SOPAC Secretariat advised that this person had now returned to SOPAC.

369. The University of the South Pacific highly commended the SOPAC response to what had happened in Suva and indicated that as other CROP organisations had also suffered there could have been a coming together of these organisations on this issue. Forum Secretariat responded that they were not aware of CROP organisations coming together on this issue.

370. Tuvalu described the impact of the situation on their High Commission in Suva and indicated that it would have been very difficult to bring organisations together during that time. Tuvalu also commended SOPAC for the development of the paper as being very important for not only SOPAC but for other CROP organisations as well and that there was a strong need for such planning.

371. The Secretariat commented that the situation in Suva was a wake-up call in terms of looking at all of the risk exposures facing the organisation and how these risks can be minimised through the development of an effective business continuity planning process.

372. Council endorsed the development of a Business Continuity Plan to be presented to Council at the 2001 meeting.

10.6 Status of Ratification of SOPAC Constitution

373. The Secretariat updated the Council on the status of those member countries who have deposited their instruments of ratification; noting that the Federated States of Micronesia, Guam, Republic of the Marshall Islands, Papua New Guinea, Solomon Islands, Tonga, Tuvalu and Vanuatu have yet to do so.

374. The Federated States of Micronesia, Republic of the Marshall Islands, Tonga and Tuvalu all assured Council that they will try to deposit their instruments of ratification as soon as possible.

375. Council urged the remaining members to ratify the amendments as soon as practicable.

10.7 Rules of Procedure

376. The Secretariat introduced paper (AS29/10.7) on the review of the Rules of Procedure with respect to hosting annual sessions.

377. The recommendations made by the Suva-based Subcommittee were as follows:

- (i) Council reaffirm its 1997 decision that costs to a host government as a result of electing to host "in capital" should be borne by that government.
- (ii) Council endorse the amendments to the Rules of Procedure as follows:
 - Para 4: replace the phrase "South Pacific Organisations Coordinating Committee (SPOCC)" with "Council of Regional Organisations in the Pacific (CROP)";
 - Para 5: replace the phrase "The venue shall be in one of the member countries" with the following: "For budgetary purposes each annual session should be held in Fiji. Nonetheless, the host government in any year has the prerogative to host in country but any additional costs should be borne by that country not the organisation".
 - Para 11: delete the first sentence "The normal venue for all Council Session will be Commission Headquarters".
- (iii) Council note the financial implications to the membership contributions of including in the

SOPAC budget the \$20,000 provided for in recent years by the host government when the meeting has been held in Fiji. This matter to be considered further when approving the work program and budget.

378. Council adopted the above recommendations.

10.8 Reappointment of Contract Staff since 28th Session

379. The Director reported to Council (AS29/10.8) that the current Publications Coordinator had completed her six years of service, and he was reporting her reappointment to Council, according to the SOPAC Staff Regulations. Council noted the new contract of the Publications Coordinator.

10.9 Application of International Market Allowance (IMA)

380. The Director presented paper AS29/10.9 in the context of the current remuneration review process and drew Council's attention to the recommendation to abolish the IMA, as one of the objectives of the review process was to rid the system of the anomalies for which the IMA was first established.

381. Tuvalu, as Chair of the FOC Remuneration Sub-Committee, concurred with the Director's remarks and recommended that Council take the action as recommended in the paper.

382. Council agreed, that having accepted the process for implementation of the new remuneration structure, the IMA be abolished and the SOPAC Staff Regulations be amended accordingly. Council also noted that the decision to abolish the IMA would not affect the current contract to which it has been applied.

10.10 SOPAC/SPC/TCSF Headquarters "Pacific Village"

383. The Secretariat presented paper AS29/10.10. Following the opening remarks by the Director, the Chair invited Fiji to give Council a progress report.

384. Fiji stated that the matter was under Cabinet consideration. Fiji added that an allocation of FJD \$2 million has been budgeted to finalise the drawings and for site work. Fiji also said that the completion date of 2003 still stood.

385. SPC stated that the renewed commitment from Fiji despite the recent events in Fiji is an indication

of upholding its international and regional commitment.

386. Council noted the progress and expressed deep appreciation to Fiji for its increased support and commitment.

10.11 Status of MOU's with other organisations

387. The Director presented paper AS29/10/11 for Council's noting.

388. Cook Islands as Pacific Chair of Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP), informed the meeting that the President of the PCGIAP was planning to call on the Director of the SOPAC Secretariat in the near future for the purpose of working out mutually beneficial arrangements for the association between PCGIAP and SOPAC.

389. Council noted the status of MOUs and LOAs with other organisations.

11. 2001 Work Program and Budget

11.1 Reserve Fund Ceiling

390. The Secretariat introduced paper AS29/11.1 and indicated that this paper was in response to the recommendation that the Reserve Fund Ceiling be reviewed annually. The Secretariat advised that the consideration of closure of the Secretariat as an element to be factored into the determination of the Reserve Fund Ceiling indicated that \$400,000 as the ceiling was appropriate.

391. Council endorsed the recommendation put forward that the Reserve Fund Ceiling of F\$400,000 was adequate for 2001 and that this ceiling continue to be reviewed annually.

11.2 Justification for services provided from funds generated from income-earning activities

392. Secretariat introduced paper AS29/11.2 and said that this was in response to a Council request that a review be done annually. The Secretariat said that the paper was in essence similar to the paper tabled in the previous year except for the 4th option for the funding of a Remote Sensing Specialist. The Secretariat also drew the attention of the Council to Table 3 of the Proposed Work Program for 2001, in Part 2 of the Director's Report, advising that the line item 'Other Revenue' represented the funds generated from income-earning activities.

393. Tonga sought clarification as to whether the positions would become permanent ones which would mean being funded from Work Program sources.

394. Secretariat in response said that the positions were being funded from the income they generated and that it was not the intention to establish a line position for these positions in the Optimal Structure.

395. Council endorsed the recommendation that the Secretariat use the funds generated from income-earning activities in 2001 for the purposes of:

- i. retaining the services of the Network Development Developer;
- ii. supporting a second coastal survey team in the event that no Work Program funds are available for the deployment of such a team;
- iii. use the income generated from the use of the Shallow-water Swath Mapping System to further offset the cost; and
- iv. support the position of a Remote Sensing Specialist.

11.3 Appointment of Auditor

396. The Secretariat tabled paper AS29/11.3. Nauru sought clarification as to whether the recommendation was based on the cost factor only. The Secretariat explained that the recommendation was based on both the cost and quality factors.

397. Council endorsed the recommendation that Ernst & Young be appointed as the Auditor for the years 2000 and 2001.

11.4 Approval of 2001 Work Program and Budget

398. The Secretariat drew Council's attention to the first 17 tables of the Director's Report Part 2 which summarise the 2001 Work Program and Budget. The Secretariat distributed a revised budget to reflect the new XB funds pledged since the circulation of documentation six weeks before the Annual Session. The Secretariat drew the attention of Council to Tables 1 to 5 and added that the Council will need to decide on the proposed 12.6% increase in Membership Contributions for the year 2001.

399. Fiji supported the increase in Membership Contributions and sought clarification on the make-up of the 12.6% increase. The Secretariat responded that 12.6% increase includes 1.6% increase in the budget for hosting the Annual Session, 8% increase for the projected movement of the SDR/FJD exchange rate and the 3% increase for the Consumer Price Index.

400. Marshall Islands appreciated the Secretariat's explanation for the make-up of the increase and endorsed the 12.6% increase in Membership Contributions.

401. Tonga advised Council that while it would go with the consensus, it was concerned with the increasing trend in Membership Contributions which may reach a level it could not afford.

402. Cook Islands, whilst noting the changes in the percentage make-up of the Program Budget allocations as a result of the next XB funding, sought clarification on the decrease in the Environmental Science and National Capacity Development Programs. The Secretariat explained that the variations to the budget allocations to the mentioned programs were due to: New Zealand funding for the Disaster Management Unit increased by F\$200,000 and the annual grant increased by F\$71,000 which has been allocated to the Hazards Assessment Unit; DFID funding of F\$143,000 towards the Water Resources Unit; Korea in-kind funding of F\$20,000 each for Minerals Resources Unit and the Coastal Unit; CUSO in-kind funding of F\$115,000 for Water Resources Unit and Italian funding of F\$208,333 for the Environmental Vulnerability Index.

403. Samoa noted the explanations provided for the increase and accepted the increase in Membership Contributions.

404. Vanuatu advised Council that while it will go with the consensus, it will find it difficult to meet the increase due to financial constraints.

405. Federated States of Micronesia endorsed the proposed budget.

406. Tuvalu endorsed the proposed budget and confirmed its commitment to honour its obligations.

407. Papua New Guinea stated that it had budgeted its Membership Contribution based on the indicative figure for 2000 and that it would be difficult to meet the difference for 2001.

408. Australia advised Council that its position was that it would like to see the 'same nominal' applied to the Budget each year but accepted that this does not always work. It noted the make up of the 12.6% increase in Membership Contributions and commented that the 8% increase due to SDRs were a concern as was the 3% due to CPI. Australia also mentioned that the Secretariat would need to be vigorous with 'cutting its cloth' according to its resources and that the Secretariat and the Governing Council should think creatively to manage the overall upward trend in the budget.

409. The Secretariat referred to Table 13 which gave a breakdown of the RB funding according to Work

Program and Personnel costs, and explained that there were two options to consider if it was to 'cut its cloth to suit'. These were either reducing personnel or reducing work program activities funded under the RB. The Secretariat also mentioned that the SDR/FJD exchange rate was beyond its control and that a fundamental problem to address was the fact that the salaries of professional staff are contracted in SDR whilst the business at SOPAC is conducted in Fiji Dollars. A better way of doing business would be to have the salaries and the finances expressed in one currency.

410. Council adopted the proposed 2001 Work program and Budget as amended.

12. Other Business

Hosting of Session by an Associate Member

411. New Caledonia advised that as an Associate Member they had maintained a low profile in the budgetary debate. However, New Caledonia would like to seek clarification from full Council as to whether an Associate Member could host an Annual Session.

412. The Chair highlighted to Council that it was his understanding that hosting of Annual Sessions is rotated alphabetically. He also indicated that the costs to host the Session in capital are borne by the host country. The Chair asked the Secretariat to provide Council with a list outlining the order in which member countries were to be given an opportunity to host in coming years, the Secretariat did so.

413. The Secretariat indicated that the Constitution did not disqualify associate members from hosting an Annual Session and that the only clause applicable to Associate Members is that they do not have a right to vote.

414. The Director noted that the Chair of the Annual Session is accorded to the host country. He further advised that legal advice would need to be sought on the issue of the Chair as this position is identified for members. The Secretariat indicated that they would seek clarification on this issue and advise Council at the next Session.

415. Cook Islands noted that legal opinion also be sought on Article 3 Section 2 of the Constitution. FFA offered their legal section services to assist in clarification on this issue.

416. Council agreed that the Secretariat prepare a paper for Council, for consideration at the next Session.

Nauru membership query

417. Nauru queried if any amendments would be made to the Constitution to reflect Nauru's full member status to SOPAC. The Secretariat responded, advising that the Schedule in the Constitution was for founding members only and that Nauru was duly noted as a joining full member.

SOPAC Chair at FOC

418. The Director informed Council that SOPAC would take advantage of the fact that the Chair of SOPAC is also to host the upcoming meeting of FOC, it provided an excellent opportunity to flag issues of concern to the governing Council at this political forum.

419. The Chair thanked the Secretariat and advised that Kiribati would gladly take up matters to FOC on behalf of SOPAC.

420. The Secretariat raised the issue of Marine Scientific Research and particularly the International Argo Program, advising that a letter had been circulated to respective Governments requesting timely approval for the deployment of Argo buoys. Advanced blanket approval by countries will facilitate the deployment of buoys in the region, which would benefit all SOPAC member countries.

13. Venue and Date of 30th Annual Session

421. The Chair invited Marshall Islands whose turn it was to host the next Annual Session to inform Council of their intentions regarding the 30th SOPAC Annual Session.

422. The Marshall Islands advised that they are willing to host the next Annual Session and that they would take up the challenge of having a meeting that is as successful as the 29th Annual Session hosted by Kiribati.

423. The Secretariat suggested 24 September 2001 as a possible date to convene the 30th Annual Session. The Marshall Islands responded that they would like to consider possible dates and advised that they would liaise with the Secretariat on the exact timing of the 30th SOPAC Annual Session and advise Council accordingly.

14. Adoption of Agreed Record of Proceedings

424. Council agreed to adopt the Record of Proceedings as amended.

15. Closing

425. The Chair thanked everyone at the meeting for their good-natured disposition that contributed greatly to the smooth running and great success of the meeting. He thanked the Vice-Chair in his role as Chair of the Drafting Committee, for getting the Record of the Meeting out in good time. And he closed his remarks by thanking the Secretariat for getting their part of the arrangements properly acquitted to allow Council to make good decisions on the matters before them for consideration.

426. The Director picked up the sentiments expressed by the Chair and thanked firstly, the Technical Advisory Group along with the supporting governments and agencies for their presence at the meeting, and their continued commitment to the organisation. He went on to thank the Drafting Committee for the task of compiling the Summary Record of the Meeting. He commended the smooth conduct of the business of Council in approving the Work Program and Budget, the coming year clearly showing signs of a growing, viable and successful organisation. He expressed gratitude for being given another 3-year term to lead an organisation that had challenges and big developments directly ahead of it. He saved the best for last, when he expressed the heart-felt thanks of Council and all the participants to the host country.

427. The Director expressed the overall sentiments of the Meeting that the Government of the Republic of Kiribati deserved the highest of praise for the excellent arrangements and especially for the 'Abaiang experience'. The Chair was commended for the sheer drive it took to bring the meeting to Tarawa against all counsel and skepticism from all quarters, the moment he made their desire to host the 29th Session public. The Ministry of Natural Resources Development team was applauded by the whole Meeting for the huge success of the SOPAC 29th Session.

428. Tuvalu also wanted to record on behalf of the participants their huge debt of gratitude for the 'Abaiang experience'. Participants had the opportu-

nity to visit and enjoy the hospitality of the island and its people. Tuvalu wanted Council's expression of the deepest appreciation to be conveyed to the people of Abaiang for an unforgettable experience.

429. The Director then presented gifts for the Honourable Minister of Natural Resources Development to the Chair and to the staff of the Ministry responsible for hosting the Session. Special mention was made of Naomi Atauea's role behind the scenes as the key person in the Ministry who was the Chair's right-hand person for the running of the 29th Session of SOPAC. The Chair was highly acclaimed for his own role, through which he could personally claim the accolade for setting a high benchmark indeed for the Forum Meeting to match when the Government of the Republic of Kiribati would host the Forum Meeting later on this month.

430. Samoa gave a vote of thanks on behalf of Council to the host country, and especially the Chair for his able leadership in steering the business of Council through its 29th Session. She also expressed the appreciation of Council to the Secretariat for the arrangements at the conference office which all contributed to the conclusion of a highly successful meeting.

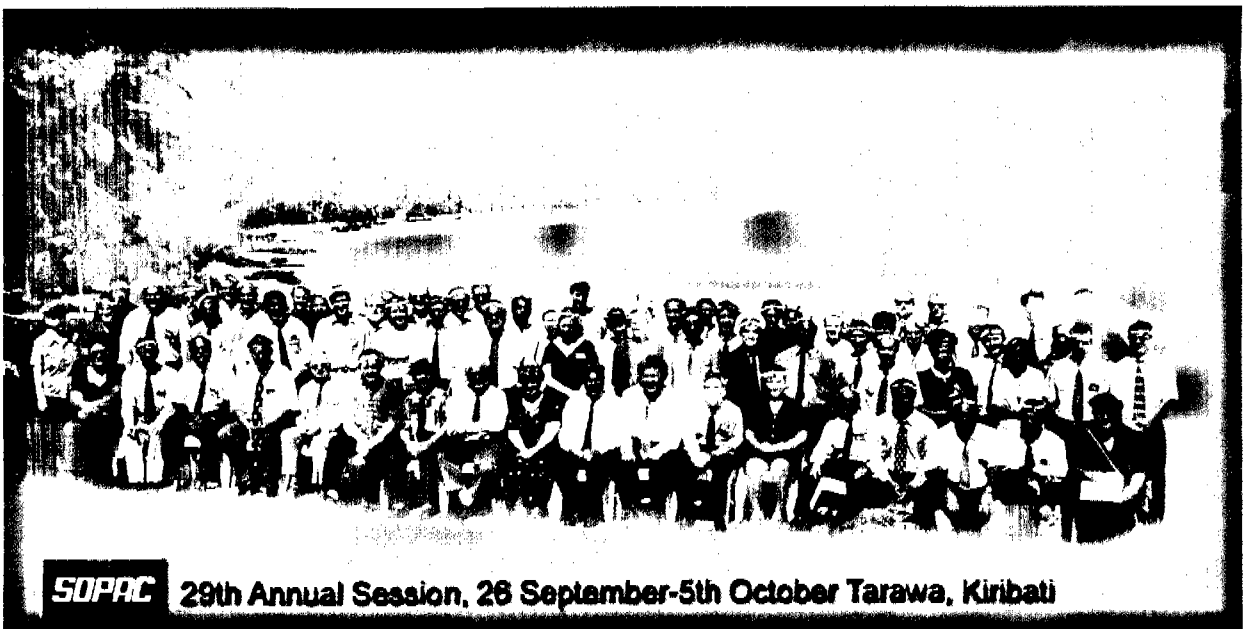
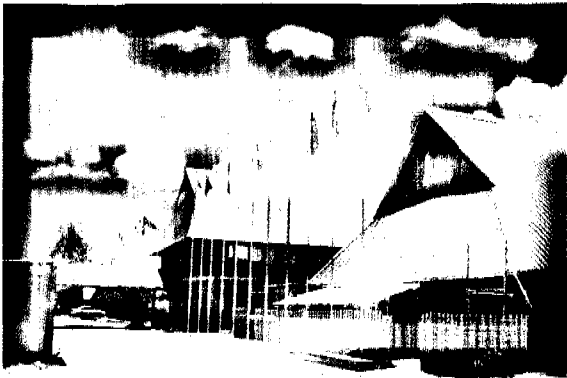
431. The Chair concluded the closing remarks by expressing his own gratitude to his behind-the-scenes team, especially to Naomi, and Honourable Minister Schutz who was always supportive from the outset in their efforts to make a good show of the SOPAC Session. He also acknowledged that SOPAC was well received by the Kiribati people because the momentum for the nation's preparations for hosting the Forum meeting had already set in. He expressed regret that partnerships between nations and agencies could be fraught with political tension and he was grateful that, at least, in a technical organisation like SOPAC, political differences could be set aside in the interest of the efficient delivery of technical services to the peoples of the Pacific.

432. The Chair declared the SOPAC 29th Session formally closed at 13.20, this 4th day of October, 2000.

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TARAWA ALBUM 2000



SOPAC 29th Annual Session, 26 September-5th October Tarawa, Kiribati

APPENDIX 1

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APPENDIX 2

AGENDA

STAR SESSION

SCIENCE, TECHNOLOGY AND RESOURCES NETWORK (STAR)

The main theme for the STAR Session will be:

"The role of geoscience in reducing vulnerability of Pacific communities to climate variability; energy, coastal and ocean issues"

OPENING SESSION OF GOVERNING COUNCIL

1. OPENING
2. ELECTIONS
 - 2.1 Chair and Vice-Chair of SOPAC
 - 2.2 Chairs of STAR and TAG
 - 2.3 Appointment of Rapporteurs
3. AGENDA AND WORKING PROCEDURES
 - 3.1 Adoption of Agenda
 - 3.2 Appointment of Drafting Committee
 - 3.3 Appointment of Sub-Committees (should any be necessary)
4. REPRESENTATION
 - 4.1 Designation of National Representatives
 - 4.2 Membership Issues
5. DIRECTOR'S ANNUAL REPORT (Part 1a)
 - 5.1 Introduction
6. STATEMENTS (The intention is that these statements be tabled for inclusion in the Proceedings, and not presented verbally in full)
 - 6.1 Statements from Member Countries
 - 6.2 Statements by CROP Organisations
 - 6.3 Statements from Supporting Governments and International Agencies
 - 6.4 Statements from National Institutions
7. DIRECTOR'S ANNUAL REPORT (Part 1b)
 - 7.1 Issues Arising from 28th Annual Session and Special Session, 26th November 1999
 - 7.2 Summary Report of 2000 Donor Support
 - 7.3 Financial Report 1999
 - 7.4 Report on 2000 Accounts to 30 June
 - 7.5 Summary of New Project Proposals
 - 7.6 EU Lome IV Second Protocol SOPAC Project
 - 7.7 Member Country Profiles

JOINT COUNCIL - TECHNICAL ADVISORY GROUP (TAG) SESSION

Member countries and other delegates discuss the SOPAC Technical Work Program

8. Miscellaneous Reports
 - 8.1 1999 Annual Report Summary
 - 8.2 CROP Summary Record and Report
 - 8.3 STAR Chair Report
 - 8.4 Draft Poverty Policy

9. DIRECTOR'S ANNUAL REPORT (Part 2) Work Program Report 1999-2000 and Draft Work Program and Budget 2001
 - 9.1 Mineral Resources Unit
 - 9.2 Water Resources Unit
 - 9.3 Energy Unit
 - 9.4 Coastal Unit
 - 9.5 Hazard Assessment Unit
 - 9.6 Ocean Unit
 - 9.7 Human Resources Development Unit
 - 9.8 Information Technology Unit
 - 9.9 Disaster Management Unit
 - 9.10 Publications and Library Unit
 - 9.11 Environmental Vulnerability Index (EVI)
 - 9.12 Council/TAG Other Business

GOVERNING COUNCIL POLICY SESSION

(Items in this session could be restricted to Member Countries and CROP Organisations if the items require only Council consideration. Otherwise this session will be open).

10. ESTABLISHMENT AND ADMINISTRATION
 - 10.1 Director Appointment
 - 10.2 Deputy Director position
 - 10.3 CROP Remuneration Working Group Report
 - 10.4 The SPC-SOPAC Relationship : A Planning Sequence for Integration
 - 10.5 Draft SOPAC Business Continuity Plan: a response to the impact of the Fiji political crisis on the operations of the Secretariat
 - 10.6 Status of Ratification of SOPAC Constitution
 - 10.7 Rules of Procedure
 - 10.8 Reappointment of Contract Staff since 28th Session
 - 10.9 Application of International Market Allowance
 - 10.10 SOPAC/SPC/TCSP Headquarters "Pacific Village"
 - 10.11 Status of MOU's with other organisations

11. 2001 WORK PROGRAM AND BUDGET
 - 11.1 Reserve Fund Ceiling
 - 11.2 Justification for services provided from funds generated from income earning activities
 - 11.3 Appointment of Auditor
 - 11.4 Approval of 2001 Work Program and Budget

12. OTHER BUSINESS

13. VENUE AND DATE OF 30th ANNUAL SESSION

14. ADOPTION OF AGREED RECORD OF PROCEEDINGS

15. CLOSING

APPENDIX 3

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APPENDIX 4

STATEMENTS BY MEMBER COUNTRIES

AUSTRALIA

Australia remains a strong supporter of SOPAC and its work. Its numerous and varied activities bring great benefit to the island countries and territories. We should like to draw particular attention to the continued high standards of leadership provided by SOPAC Director, Alf Simpson. The new management approach implemented by Mr Simpson continues to pay dividends in terms of organisational performance.

It goes without saying that the past year has been a particularly difficult one for our region. In testing times such as these, regional cooperation assumes an even greater importance, and bodies such as SOPAC have a vital role to play in promoting this cooperative spirit. It is a testament to the professionalism of SOPAC staff that the organisation managed to function effectively throughout the crisis in Suva, in what were extremely trying conditions for both staff members and their families.

Perhaps the biggest issue facing SOPAC at the moment is the possibility of a merger with the Secretariat of the Pacific Community (SPC). While the costs and benefits of such a merger will no doubt be carefully weighed by the two bodies' member countries and territories, Australia believes it helpful to note that the important work being done by SOPAC need not be jeopardised under a merged organisation. This key point is made in the first draft report of the integration study, prepared by Savenaca Siwatibau and Philipp Muller. The report notes members' strong support for the continued integrity of SOPAC programmes and foresees no need for them to be dramatically reworked. Without wishing to anticipate a consensus in favour of integration, and acknowledging the concerns some members may have about a merger, Australia hopes that members will focus not on what might be lost through such a move, but on what might be gained. We believe a successful merger would allow for the continuation of SOPAC's excellent work within a more efficient, streamlined structure.

From a SOPAC perspective, one of the consequences of the recent political upheaval in Fiji has been the added delay to planning for the 'Pacific Village' project. Regardless of SOPAC's future status, the eventual co-location of its staff with those of the SPC and other regional organisations continues to make sense.

General Australian Scientific Activities relevant to SOPAC in 2000

CSIRO activities

Ray Binns and his team at CSIRO's Division of Exploration and Mining continue their research on seafloor hydrothermal activity in the eastern Manus Basin, PNG. This is directed towards understanding ore-forming processes in a modern, submarine, felsic volcanic environment, and applying the knowledge to mineral exploration in equivalent ancient ore provinces. A sampling cruise with RV *Franklin*, in early 2000, recovered some spectacular polymetallic sulphide deposits, including a one-tonne zinc-silver chimney. Ocean Drilling Program Leg 193, with Dr Binns as co-chief scientist, will drill these systems in November-December 2000. In addition, Brent McInnes used *Franklin* in early 2000 to study forearc seamounts in PNG and the Solomons, and got some wonderful video footage of Kavachi volcano erupting.

AGSO activities

Geohazards: The AGSO geohazard program directed by Wally Johnson and John Schneider is continuing to foster and maintain contact with SOPAC's Pacific Cities Vulnerability work. AGSO Cities Project is disposed towards offering support for SOPAC research activities, the group will be represented at the STAR meeting by Dr Matt Hayne.

Liaison between the AGSO Cities Project headed by Dr John Schneider and the SOPAC Pacific Cities Project headed by Dr Graham Shorten has proved mutually beneficial. Attendance and presentations at the "Disaster Prevention for the 21st Century" conference held in Canberra from the 1-3 November 1999 from both projects was strong. Following this conference AGSO was host to two GIS analysts from the Pacific Cities Project who were researching Risk-GIS methodologies developed within the AGSO project. Ongoing monthly meetings between Mr Ken Granger and Dr Shorten have established a solid framework thereby enabling the projects to develop in parallel with similar objectives and research techniques. This commonality between the projects was highlighted at the "Coordinating Committee for Coastal and Off-shore Geoscience Programmes in East and South-

east Asia" conference in Japan in February with presentations delivered by both projects.

Magnetic Observatories in the SW Pacific: AGSO continued its geomagnetic repeat station work program in the SW Pacific and the most recent survey in May 2000 re-occupied stations at Noumea, Honiara and Kavieng, PNG, a new station was also established at Vanimo, PNG. It is intended that these four stations will continue to be key sites in AGSO's repeat station network and will be re-occupied every one to two years.

The newly established geomagnetic observatory in Noumea, run by IRD, was visited in order to tie the observatory data record to that of the Noumea repeat station. The observatory was about to undergo re-location and when it has been re-established it will play an important role in monitoring the geomagnetic field in the region.

A gap in global geomagnetic observatory coverage still exists in the SW Pacific, which means that the quality of geomagnetic information from the region is not as high as other parts of the globe. Establishment of new observatories in the region should be encouraged.

AGSO Marine activities: In the past year AGSO has been involved with IFREMER in four swath-mapping cruises of RV *L'Atalante*:

- The French ZoNeCo 5 cruise on the northern Lord Howe Rise, designed mainly for resource purposes, was led by Jean-Marie Auzende. This acquired full swath-mapping coverage and underway geophysical data over the northern Fairway Basin, and extended the area known to be covered by a bottom-simulating reflector (BSR) to cover 50,000 km². The BSR suggests that gas hydrates are widespread, and sediment domes visible in the seismic data suggest that either salt or organic-rich shales are present at depth in the basin. Some gas in sediment cores is being analysed at AGSO, and appears to be thermogenic. Altogether this evidence indicates some petroleum potential. The initial results were published in *Comptes-Rendu Academie Sciences, Paris, Sciences de la Terre et des Planètes* 2000, 330, 209-215.
- The cooperative IFREMER-AGSO FAUST 2 cruise in deep water east of Norfolk Island, mainly for Law of the Sea purposes. AGSO's co-chief scientist was Phil Symonds. An area of 190,000 km² was mapped, showing bathymetric complexity controlled by structural movement and seafloor spreading.
- A contract survey off over 160,000 km² of south-eastern Australia, led by Peter Hill, mainly for the

Australian regional marine plan of the area. This was largely on the continental slope and was used to plan a follow-up biological and geological sampling cruise led by CSIRO's Marine Division.

- A contract survey over 140,000 km² of the southern Macquarie Ridge region, southeast of Australia, led by George Bernardel, for Law of the Sea and marine park purposes. This region of oceanic crust is strongly influenced by seafloor spreading and strike slip movement along the southern extension of New Zealand's Alpine Fault.

Funding for this work came from France, Environment Australia and AGSO, and produced accurate maps of about 500,000 square kilometres of Australian territory, 10% of the land area of Australia.

AGSO was heavily involved in taking 4500 m of sediment core on ODP Leg 189 off Tasmania, a study of tectonic, climatic and oceanographic changes as Australia rifted and drifted away from Australia and the Tasmanian gateway opened. The cores almost completely covered 75 million years of earth history in an area that helped drive the global climate change from Greenhouse to Icehouse conditions during the Cainozoic. Neville Exon was the AGSO co-chief scientist. The preliminary results are on the web at <http://www-odp.tamu.edu/publications>.

AGSO's next survey in the Southwest Pacific will be one on RV *Franklin* in late 2001, mainly just south of the Zonoco 5 cruise in the Fairway Basin on the Lord Howe Rise. This will be a seismic and sampling cruise with New Caledonian cooperation, led by Neville Exon.

SOPAC Petroleum Data Bank in Canberra

The part-time SOPAC data manager, Peter Butler, is based at AGSO, and he has continued to catalogue, organise and publicise the extensive Southwest Pacific geophysical (largely seismic) data collection held there in a regional repository. All the digital data are stored commercially in Canberra, and the paper data at AGSO. The data catalogues and brochures have been undergoing up-dating for copying to digital format. The data base has some 4200 seismic tapes and 1700 seismic sections and maps.

Outputs in 2000

- Retrieval of seismic tapes, maintaining availability, and updating of data for hydrocarbon assessment and promotion of data packages to the oil industry.
- Making available data in the form of seismic tapes, transparencies, reports and maps to petroleum

exploration companies, consultants etc. and advertising through the distribution of brochures.

- Updating of the Solomon Islands and Tonga petroleum brochures with the digital versions available October 2000.
- Representation at the APPEA Meeting in Brisbane.

Proposed Outputs in 2001

- Continue the digitising of the brochures and catalogues. (Dependent on funding.)
- Continue to run the data bank to provide information on petroleum prospects as requested.
- Retrieval of seismic tapes, maintaining availability, and updating of data for hydrocarbon assessment and promotion of data packages to the oil industry.
- Making available data in the form of seismic tapes, transparencies, reports and maps to petroleum exploration companies, consultants etc. and advertising through the distribution of brochures.

SOPAC Booth at APPEA 2000

A SOPAC booth was mounted at the Australian Petroleum Production Exploration Association conference in the Brisbane Exhibition and Convention Centre, South Bank, Brisbane, Queensland in May 2000. The exhibition was opened on Monday morning with Dr. Patrick Coleman, Consultant and Peter Butler, Data Manager in attendance. During the next 3 days, only 17 persons attended the booth. These mostly came from service companies to the oil industry; three were explorationists interested in the petroleum prospects of the South West Pacific. Generally interest was continuing but the visitors could not see any work in the region in the near future. If petroleum prices remain high, attitudes to exploration in the South Pacific frontier region could change.

The oil industry and the wider community now use the internet to distribute information to clients. The vast majority of exhibitors had computerised visual displays using GIS, multimedia, web sites etc. The oil industry is very e-commerce orientated.

Urban & Coastal Impacts, Seabed Mapping & Characterisations

The UCI project team within AGSO is conducting projects which are both compatible with and com-

plementary to the Coastal Unit and Environmental Program within SOPAC.

UCI was involved in the Australian LOICZ (Land Ocean Interfaces in the Coastal Zone) program and provided data and insights into the form and function of temperate, sub-tropical and tropical estuaries. Two manuscripts were published in the LOICZ Australian Program Report. One manuscript reported on a simple parameter to characterise types of Australian estuaries, while another reported on a nutrient budget for a mature wave-dominated estuary.

UCI is currently involved in the National Land and Water Resources Audit of Australian estuaries and waterways. We are mapping a suite of facies for all Australian estuaries to be used for resource assessment and environmental protection. We are also developing multirelational databases to capture a wide variety of geoscience data to be linked with physical and biological databases. A UCI team is developing conceptual models of facies (biological habitats) formation and erosion, and nutrient cycling in estuaries and coastal waterways. We expect in the near future to be developing bathymetric models of Australian estuaries and GIS capabilities.

UCI has been continuing its work in estuarine, coastal water and sediment qualities including, benthic geochemistry, notably phosphorous and nitrogen cycling, to examine processes occurring on the seafloor which play an important role in controlling eutrophication in coastal waterways. Continuous profiling analysers have been used to trace sewage discharge into the sea and toxicant discharges (petroleum hydrocarbons) from offshore production discharges. The EVI Project being conducted by SOPAC is compatible with UCI activities and we support its continuation within SOPAC.

During the new calendar year the UCI team will be joining the CRC (Cooperative Research Centre for Estuaries and Coastal Waterways). Through this centre, UCI will be participating in multidisciplinary ecosystem projects to assess estuarine and coastal resources for resource management and protection.

AGSO is involved with Environment Australia in the development of Regional Marine Plans for the Australian continental shelf, as part of its responsibilities under LOS activities. UCI will be working with the Seabed Mapping & Characterisation Project within AGSO Marine Program to investigate processes of sediment transport and facies developments, in an assessment of resources of the Australian shelf. Bathymetric models are being developed as part of this work, and GIS capabilities will examine relationships between sediment facies, bathymetry and renewable marine resources.

COOK ISLANDS

My dear Colleagues, Kia Orana. To the Government of Kiribati and Government Representatives; all SOPAC National Representatives; the STAR Members and Presenters; the Chair Persons of All Working Groups; the Convenors of Sessions; the Chairman of the STAR Session

On behalf of the Government of the Cook Islands and its people, I say Kia Orana and Greetings to you all.

A special mention and acknowledgement to the Director of SOPAC, Mr Alf Simpson and the Secretariat of SOPAC, the technical advisers, the logistics experts in all areas pertaining to the work of SOPAC, Greetings to you all.

To the Outgoing SOPAC Host Country and the Incoming Host Country

The Cook Islands Government would also like to extend their generous gratitude and appreciation to the Government of New Zealand, as the outgoing Host Country, for its contribution to the work of the Pacific Islands Country's through the SOPAC Secretariat.

The Cook Islands Government would also entertain greetings and a warm welcome, to the Host of the 29th SOPAC Annual Session, the Government of Kiribati, and its National Representative, who, with the assistance of SOPAC, enabled this Annual Session to eventuate.

At this point in time, I wish to convey to the Government of Kiribati and its people, The Cook Islands Government's best wishes for the future, in your capacity as Chairman of the SOPAC Community and its member Pacific Nations, for the coming year and to congratulate the Government of Kiribati for the offer to host such a unique Organization.

Ladies and Gentleman, Distinguished Delegates, Kia Orana.

Mr Chairman, in view of the SOPAC Activities in the Cook Islands involving the following modules:

- *Water Supply and Resources*
- *Energy*
- *GIS and Lands Information Technologies*
- *Marine Resources*
- *Coastal and Foreshore Protection*
- *Technical Advisory Facilities*
- *Environmental Activities*

We would like to commend the SOPAC Secretariat for the successful implementation of the projects, that was approved by the Council in the last year.

There certainly are projects pending and the Cook Islands Government appreciates the efforts by the Secretariat in pursuing the appropriate measures in ensuring that Task are facilitated.

Of particular interest, was the initiatives taken by the Ministry of Works, collaboration with the Environment Service and Council, with the assistance of SOPAC, in proposing an Integrated Coastal Management Plan for the Island of Rarotonga and eventually, the Cook Islands as a whole.

Other projects are in place, but those can only be achieved through dialogue and understanding of the prioritized needs of the member countries.

I would also like to take this opportunity to express our sincere gratitude to the various Governments and Institutions for the support and contributions rendered to the Cook Islands through the SOPAC Secretariat, over the last 12 months.

The Cook Islands Government would like to take note of the recommendations and options devised during the Working Group Sessions and would reserve comments until the appropriate agenda items, if at all warrants a feedback.

STAR Session

This session is of importance to the Cook Islands, as the science-related topics certainly evolves around mitigation issues. The Cook Islands is the Vice Chair to the particular component of the Water Resources Unit Working Group.

PCGIAP Pacific Group

During the 28th Annual Session, this particular component was approved by Council to assist and foster the needs of the Pacific Island Member Countries in Mapping and GIS related issues, where funding is available.

The 28th Annual Session also noted that the Cook Islands representative to the Annual Session, Mr Keu Mataroa was Vice Chairman for the Pacific Group of the United Nations Cartographic Conference - Permanent Committee for GIS Infrastructure in the Asian and Pacific Region (UNRCC - PCGIAP).

Mr Mataroa was endorsed as the Chairman for the Pacific Group for the year 2000-2001, where Fiji was endorsed as Vice Chairman.

At this meeting, Mr Mataroa was also elected as an Executive Board Member for the PCGIAP for three years. (Attached).

Mr Mataroa also did a PowerPoint presentation on the Mapping, GIS and Crisis in the Pacific Region in entertaining sustainable development for the regions.

In conclusion, Mr Chairman, The Cook Islands Government would like to again show their appreciation, to the SOPAC Secretariat, and the host country for ensuring and enabling us to participate in the very important meeting, as the needs and concerns for each member country in SOPAC is addressed in detail where and when required.

Indeed, I as the Cook Islands Alternate National Representative and my colleagues, Mr Atatoa Herman, Mr Mata Nooroa and Mr Tangi Terecapii, have enjoyed the Session insofar as fellowship and unity is concerned and to date, is certainly enjoying the atmosphere and company of all participants from around the Pacific and our colleagues from around the world.

Kia Orana e Kia Manuia.

FIJI ISLANDS

Thank you Mr Chairman for allowing us to make a few comments during this the opening session of the 29th annual session of SOPAC. In the spirit of letting everyone have the time to make their statements today, I will be brief and leave detailed comment on aspects of work programs and other matters to their relevant sessions. Please let me congratulate you on your appointment as Chair for this session and for the upcoming year.

For sometime now the annual session has been held in Fiji for reasons of cost, but this year due to your generosity we have decided to come to Kiribati. This visit affords us the opportunity to visit project sites, to compare notes and to find out first hand how you grapple with some of the formidable problems of development in the smaller Pacific Islands states.

As you know many of us seem to be continually trapped in a cycle of disappointment such that no sooner we are recovering from one problem then we are saddled with another. In Fiji we have had one of the longest droughts in history, followed by large floods and this year a political crisis, all within a short span of three years. When we relate these to some of our more distant developed partners to justify the cause of retaining some foreign aid or trade concessions; they seem hardly to understand. It is through the scientific methods such as the vulnerability index or of risk management that better understanding and more transparency and account-

ability could be achieved. And we commend SOPAC for some their definitive work in this area.

It would be remiss of me not to mention at the outset the political events of May 19 as they have been made prominent in the international media. Some of the underlying causes of these problems have been commonly identified in other Pacific island nations in recent deliberations. These include ethnicity, land disputes, economic disparity between major groups and the overall lack of confidence in governance. They are difficult issues to tackle but not impossible. They require some understanding on everyone's part. The events and its associated fallout have affected and continue to affect work programs and the economy overall. Let me assure you however, that Fiji is committed to its move towards recovery.

The support of SOPAC is crucial in this recovery in terms of the continued provision of its technical assistance. We remain strong in our support of SOPAC, its work programmes and the philosophy behind the setting up of this regional scientific organisation. Whilst we are in support of SOPAC-SPC integration we believe this is a path that must be carefully considered without compromising the original core functions of SOPAC which is excellence in applied earth-science delivery.

Our thanks also go to the many donor agencies and nations whose assistance both in cash and kind have enabled the completion of SOPAC tasks.

Following on from our concerns to this Council last year at Nadi, we are pleased to note the reintroduction of Marine matters through the appointment of a full-time Marine Scientific Research Officer on staff. We are grateful indeed to SOPAC for the reintroduction of this program, one that we have considered to be of major significance to the regional members all of whom are maritime nations. In regards to the marine sector we are also greatly encouraged by the decision of the Japanese Government and the Metal Mining Agency Japan to undertake additional Marine Scientific Research in the Pacific including work during 2001 within the Fiji EEZ and wish to convey our deep appreciation for consideration of our requests.

Fiji regards information collation/dissemination and training (read capacity building) as extremely important core areas of SOPAC responsibility and would like to urge that capacity building be part and parcel of every project undertaken. The past few years have seen the SOPAC role grow from traditional areas of strict geoscience to encompass energy, disaster management, water, environment and related areas of expertise. These changed aspects have been at times difficult to handle for one National Representative with his/her own particular brand of expertise and I would like SOPAC to perhaps consider an earlier

proposal for the development of national contact persons for information dissemination and program implementation within areas of specific expertise in addition to the National Representative. This would not only help better facilitate the decision making for SOPAC but also develop a wider range of community support for its programmes. Science has its own arcane calling but the development of intermediary support would help bridge the gap of understanding between the scientific community and the common people at large.

At home, the continued low gold price coupled with the events of May 19 have not helped mining and mineral exploration activity. The downward trend in exploration activity seen from early 1998 has continued and has recently been followed by contraction of activity at the Emperor Gold Mine. On a brighter note the Government has recently awarded a major tender to Nittetsu Mining Co. Ltd. of Japan to undertake a 5-year program of exploration at Namosi. Fiji is looking forward to a resurgence of exploration activity in the new millenium and is determined to put in place competitive fiscal, legislative and related policies and procedures to attract further investment.

In closing I would like to take the opportunity to thank the outgoing chair New Zealand for their work over the past year and once again the donor agencies who through either bilateral means or via contributions to regional agencies have contributed to development and implementation of SOPAC and Fiji's work programs over the year.

Vinaka Vakalevu

FEDERATED STATES OF MICRONESIA

On behalf of the FSM delegation and the Honorable Sebastian Anefal, our current national representative to SOPAC, I wish to first convey Mr Anefal's regrets for missing out on another valuable opportunity to be personally involved in further sharing and agreeing upon priorities that SOPAC can adopt to further improve on the quality of life and environment of our peoples.

Mr Chairman, our delegation wishes to congratulate you on assuming the seat and also to convey our government's continuous support at this meeting and during this term. Our sincere gratitude and appreciation also extends to the outgoing chairman for his able leadership in the past year.

We come to this meeting with a renewed sense of dedication and commitment to work closely with SOPAC in fulfilling our tasks as identified by our people. We are truly grateful to the SOPAC Director and staff for their unquestionable dedication to the

work program and for their patience and understanding in cooperating not only with the people at our National government but also with those within our autonomous State governments. We value the diversity and autonomy of the States of our nation and certainly are grateful that the SOPAC Secretariat is able to appreciate this situation and has been accommodating in its work with us. We wish to stress again as we have done in previous sessions that though we need to keep the current focus of the in-country work, similar programs must be extended to the principle main islands in the western portion of the country, namely Chuuk and Yap States. This can only be shown by implementing project proposals in those States as well.

Our work of course, cannot be successful without the generous support of our donors and/or developed country partners who have shown their interest in our islands and provided the invaluable human and financial resources to effectively implement our work. We also recognize that the transfer of technologies can be another valuable contribution from our partners.

We see SOPAC as an efficient conduit for the effective transfer of technologies from such partners. This is an essential element for the sustainable development of our islands. We hope to see this role of SOPAC continue to be strengthened and as you can see from our tasks, we have placed emphasis on projects which involve the use of such technologies which we are less privy to. For example, one of the priority tasks for this year involve the survey of our continental shelf, a task which we certainly do not have the capacity to implement.

Some of the technologies being received with great enthusiasm in the FSM relate to filling the most crucial deficiency and that is regarding information. These include GIS and remote sensing, information systems and databases, and surveys and assessments. We continue to place priority on such means to effectively gather and process information to support effective decision making.

The capability to understand and implement such technologies also require training, a service which SOPAC has effectively provided, however, we would like to see more consideration and support towards the provision of long-term training for our locals in the fields with which SOPAC is concerned. Without such training schemes and transferring of technology, we will continue to be heavily dependent on outside assistance.

Mr Chairman, please allow me to reiterate as we did last year, our concerns regarding climate change and the associated sea level rise and natural calamities. We welcome the continuous support of SOPAC in helping us understand this phenomenon and hope-

fully to adapt to its impacts. We are also trying to do our part in reducing our emissions of greenhouse gases and therefore are looking forward to more cooperation with SOPAC and others in the area of renewable energy.

Mr Chairman, I thank you for this opportunity and wish to conclude by thanking the government and people of Kiribati for hosting this gathering. We look forward to a successful meeting.

KIRIBATI

Firstly, I wish to acknowledge the kind remarks by the delegates who had already spoken before me, and say that Kiribati is very pleased to assist SOPAC in hosting the 29th Annual Session of the SOPAC Governing Council.

We take advantage of this session being convened here in Kiribati, and as you can see, we have a good representation of the various Ministries of the Government, and particularly those concerned bodies having projects with SOPAC. The STAR meetings conducted over the past three days had been very informative and useful to members of our delegation. We consider the scientific meetings very important to our technical people and their full participation would have not been possible if they were held elsewhere because of the cost involved.

On the agenda, there are quite a number of important issues to be discussed, but I would like to focus only on those priority areas to Kiribati.

The need to address the shortage of water on the island still remains a priority, and as you would recall, this was also raised during the past sessions. The Government despite its efforts in setting out short term measures to address water shortage especially on the capital, South Tarawa is still facing problems. Now, it is a common sight to see people in the mornings and afternoons to rush to fetch water from nearby water taps or from other openings in the piping water system. Plans therefore to launch a major project to improve water and sanitation on the island is now underway. The SOPAC/EU Project on the integrated planning and management in the sectors impacting on hazards, aggregates and water resources in the Pacific would in no doubt complement the Kiribati water project, and we would like to extend our full support to the project.

The coastal management is another important area to address, and in particular for the small low-lying islands like Kiribati. The extraction of aggregates such as sand and gravel along the shorelines for construction purposes and building of roads creates coastal erosion and this is another big problem to the Government, especially when it comes to main-

tenance. With SOPAC assistance, an alternative site for the extraction of aggregates inside the Tarawa lagoon has been identified, and based on the survey report, the extraction pilot study project document has been prepared and submitted to the National Planning Office for funding purposes. Indeed, we would at times require further assistance from SOPAC during the implementation stage of the project. As an interim measure prior to the projects sets of the ground, the Lands Division had designated certain areas for the extraction of the aggregates. Recently, the Government had also passed Environment Act in March 2000 in an effort to reduce the impact of the developmental activities particularly to the coastlines and the environment. Under the Act, new development projects should be screened before they are approved to ensure that they do not create adverse impacts on the environment.

On the offshore Mineral Development, we would like to get more information on the full potential of the manganese nodules and the cobalt-rich crust available in our EEZ, especially around the Line Islands. Having said that, we would like to request SOPAC to include Kiribati in the future research cruises for assessment of these important resources.

A field survey involving drilling to assess the amount of phosphate remaining on Banaba was conducted last month with the assistance of SOPAC, but still, a more detail study to determine the full potential of the phosphate resource is needed before the Government could consider investing in the project.

Lastly, Mr Chairman, let me take this opportunity to thank SOPAC for its assistance in carrying out the assessment of the water resources on Banaba, the bathymetry survey of the lagoon at Abaiang Kiritimati, and for the upgrading of the management systems within the Ministry of Natural Resources Development. To the traditional donors to SOPAC, we are very grateful for the continued support to the Extra Budget, and for providing young professionals and volunteers in filling up certain important line positions within SOAPC.

Thank you

MARSHALL ISLANDS

Mr Chairman, SOPAC Director, Chairman of STAR & TAG, Honorable Ministers and National Representatives, Distinguished Delegates, Ladies and Gentlemen,

Allow me to join other delegations in thanking the Government of Kiribati for hosting us here in the lovely island of Tarawa and to the out-going SOPAC chair, HE Tia Barrett and the government of New Zealand for his leadership, interest and strong sup-

port over an extremely challenging year. We are also thankful and grateful to the SOPAC Secretariat for their hard and dedicated work and commitment to its Pacific state members and for facilitating the regions' deliberations and ours. Our further appreciation goes out to the traditional and new donors for their role and continued support that is clearly seen in SOPAC activities and programs. We would also like to thank the young professionals, volunteers and Pacific Island graduates who have put in as much effort and time into the Secretariat's work.

Firstly, on behalf of the Government of the Republic of the Marshall Islands, I am pleased to reaffirm the Government's commitment in hosting SOPAC 30th Annual Session in Majuro, Marshall Islands. And on behalf of the Secretary of the Ministry of Foreign Affairs and Trade, Ms. Marie Maddison, our National Representative, who send her apologies for not being with us this week due to urgent national matters that need her immediate attention, I am honored to accept the vice-chairman's position in the Governing Council and the Drafting Committee.

The Republic of the Marshall Islands notes the Director's Introductory Statement in the Director's Annual Report Part 1 regarding SOPAC's Work Program and Budget issues. Of particular interest is the increasing actual expenditure of the Budget due to the Secretariat's expanding scope of work. It indicates that SOPAC has been successful in attracting extra-budgetary funds and also creating additional new programs. We however feel that these additional resources are flowing to new programs or projects rather than to existing projects that are still pending with member countries. For example, the Marshall Islands notes that its proposed projects that were approved for the 1999-2000 Budget in the last Annual Session in Nadi, Fiji did not materialized. Hopefully, we are expecting 2-3 Water projects that will take place on Majuro before the year is over. In this regard, the Marshall Islands would like to see more SOPAC activities in the country.

This brings us to the issue of SOPAC/SPC integration. The Marshall Islands understands that the decision this Governing Council attains this session will greatly influence the future of SOPAC, its member states and the current Budget. We, therefore, have consulted widely among our government officials, assessing the implications of the merger. One advantage that will be tangible is the cost savings. Just recently we have establish a freeze in hiring and most of the staffs are overloaded with work. We see the benefits that will accrue in this area. Another advantage that may be clearly seen from the merger is the possible gains in efficiency, greater effectiveness and easier coordination of activities. Furthermore, the level of contribution from donor countries may actually lead to larger contribution due to a stronger

integrated regional organization. We are however concern with the risk of spreading resources more thinly from an expanded membership base. In particular, the services that SOPAC will have to provide for its extra members. In our view, our task profiles may therefore be competing with other services that these other members may demand. There are two options that may help resolve this issue, in both instances, there is the potential for increase in membership contribution. If this will be the case, the Marshall Islands still hopes that benefits provided to it are not diluted. For these reasons, the Marshall Islands therefore endorses in principle the merger of SOPAC and SPC.

With current activities that are occurring in the country, I am pleased to announce that Nitijela or Parliament had just passed a new outer island energy policy. The policy focuses on

- Contributing to the social and economic development of the outer islands through the provision of reliable energy services;
- Encouraging the use of low emission technologies and native energy resources for the production of energy on the outer islands;
- Ensuring that the provision of energy services is based on both a least cost development strategy and on technically and commercially proven technologies that utilize decentralized alternative energy options without ruling out grid connections when such connections are the economically viable option;
- Guaranteeing full cost recovery from consumers for the provision of energy services while making explicit budgetary provisions for Government and non-Government assistance when assistance is socially justified.

The responsible ministry, the Ministry of Resources & Development, is undergoing re-structuring its Energy Division. Currently, they have a technical person but is still in the process of hiring a manager to head the division. The Marshall Islands, therefore, appreciates the immediate services of SOPAC in continuing Task Profile MH99.014 titled "Development of an Energy Unit Structure". Because the new head of Division has not been hired yet, we also request that the 3 other task profile (MH99-008, MH99-012, & MH99-013) of the Energy division not be cancelled, but waits for further review and assessment.

Recently, new housings and a gas station in Majuro are being built on the periphery of old dumpsites. Plants such as pumpkins and papaya naturally grown in abundance in these areas too. The Government is concern with the potential impacts that will occur as

a result the recent development and also the potential health hazard from its people consuming the plants. In this regard, we kindly request that a study be undertaken analyzing and assessing potential environmental impacts of dump sites and the likely impacts resulting from further developing these areas.

Another issue of concern is the sand/aggregate mining activities that takes place on Majuro Atoll. It is a problem the SOPAC Coastal Unit is well aware of. EPA has recently been directing companies to dredge at the northern side of Majuro lagoon. However, we envision that sand mining for construction, roading and landfill will continue to take place now and in the future, it is therefore in the interest of the Marshall Islands to kindly request SOPAC's services in assisting EPA and Majuro Atoll Local Government with a sustainable mining management strategy and a cost and benefit analysis of the alternative lagoon aggregate sites. The latter project would be a follow up from task profile MH97-002 and would be used to encourage the business community to relocate their current dredging sites.

The Marshall Islands is keen to continue to work with SOPAC in attaining the country's deliberations. Allow me to once again thank the Government of Kiribati for hosting us this session and to the SOPAC Secretariat for your hard work and effort to help the Marshall Islands realize our goals and for your strong commitment to the region and its people.

Komol Tata.

NAURU

Mr Chairman; distinguished delegates; ladies & gentlemen...

Before I make my presentation, I wish to extend on behalf of the government and people of Nauru our deepest appreciation to the government and people of Kiribati for the warm welcome and the hard work involved in the preparation for the 29th SOPAC Annual Session and related meetings. Through you Mr Chairman, please convey our appreciation to your people and government of Kiribati of our heartfelt thanks for making this event a success.

Mr Chairman, firstly let me congratulate you in your appointment as Chair for this Session for the SOPAC Governing Council and I, like my distinguished delegates around this table, am confident that your guidance will lead us into a successful and fruitful meeting. I would also like to take this opportunity to offer on behalf of my government to the outgoing Chair, the representative of New Zealand, for providing constructive guidance through the previous session of SOPAC Council meeting.

This is my first attendance to SOPAC Council meetings and I am especially pleased to be here since the Department of Industry & Economic Development, formerly known as Island Development & Industry, has been the implementing government agency for regional programmes in SOPAC, SPREP, SPC and FORSec. I also would like to take this opportunity to offer my apology on behalf of my National Representative from Foreign Affairs, Ms. Angie Itsimaera for not being here due to other urgent commitments.

As the most recent member of SOPAC, and recognising that we have also ratified the SOPAC Constitution, Nauru is very keen to see future successful implementation of the work programmes of SOPAC and hopefully they would not be compromised due to lack of funding and available expertise. In the past we have had made several requests for technical assistance in the form of energy projects and water resources and quite recently erosion assessment and control. I would like to add here a special mention to the expeditious arrangement that SOPAC had assisted in our request for erosion assessment last month on one of our hotspot erosion areas. The theme for the STAR meeting, "The role of geoscience in reducing vulnerability of Pacific communities to climate variability; energy, coastal and ocean issues" was therefore most appropriate and quite valid.

In this respect, and on behalf of my government, I thank the technical support and prompt back-up rendered by the SOPAC experts in energy, water and coastal over the past years. I especially would like to mention that prior to Nauru becoming a member we have had informal consultations with SOPAC for technical assistance and thus it was inevitable and a necessity for Nauru to eventually become a member. The development of the task profiles for each member country, I believe, is an excellent and innovative one and trust that now and then, they shall be updated. I therefore commend the vision of SOPAC management to serve the peoples of the Pacific for a better quality of life. Nauru stands to gain from SOPAC work programmes and in this respect we shall endeavour to pay our membership contribution.

Mr Chairman, before I conclude, I would like to add that I came along with a list for technical requests however in the interest of time it would be inappropriate to submit it through my country statement, but rather it shall be raised informally with the SOPAC experts who are here during the course of the meeting.

On this note Mr Chairman, I wish each and every delegate present a successful and fruitful deliberation.

Thank you.

NEW CALEDONIA

Mr Chairman, distinguished representatives of member governments of SOPAC, representatives of regional and international organisations, Mr Director, dear colleagues.

Thank you Mr Chairman for giving me an opportunity to make a statement on behalf of the Government of New Caledonia.

Within the frame of the Noumea Accord that came into force on November 8th, 1998, New Caledonia, associate member of SOPAC since 1991 will be keen on maintaining its collaboration with SOPAC. In order to neither overload the Secretariat nor diminish the resources of the other member countries, New Caledonia has established an associate membership work programme with SOPAC.

Three international workshops have already been held in the country and SOPAC has conducted two shallow multibeam bathymetry surveys within our lagoon.

With regards to offshore resources assessment, we have recently evidenced within our EEZ the likely existence of gas hydrates which might boost the petroleum interest of the whole Southwest Pacific region.

New Caledonia also remains involved in the geohazard programme as the knowledge of superficial formations is critical to enhance the potential for success and cost-efficiency in mining and environmental project in progress within the Territory.

To finish with, Mr Chairman, we are looking forward to seeing most of you in New Caledonia during the forthcoming 8th Festival of Pacific Arts.

Thank you Mr Chairman.

NIUE

Mr Chairman, Distinguished Representatives of Member Governments of the SOPAC Governing Council, Distinguished representatives of Donor Governments and other organizations, support staff for SOPAC delegates and advisors, Director and staff of the SOPAC secretariat, ladies and gentlemen. On behalf of the government and people of Niue I bring greetings to you all especially to the Government and people of Kiribati.

I would like to take this opportunity to express congratulations to you Mr Chairman and wish to assure you of my government's support for you for the rest of this meeting and the year ahead. My government's appreciation also extended to the outgoing Chairman for your commitment to the secretariat in the past year. The government of New Zealand's commitment

to SOPAC reflected on the increased contribution for the year 2000 and 2001.

Mr Chairman, I was especially advised to express my governments appreciation for the diligent and invaluable assistance from all the scientists and supporting personnel of STAR. We believe that some of the more urgent problems that we have can be reduced if we, as small island states, offer our strong support and work together with the STAR group.

Last but not the least, I would like to express our appreciation to the Director and staff of SOPAC secretariat for all the assistance in the past year and the usual efficient arrangement for this Annual Session. Mr Chairman, Niue was very fortunate to be given the opportunity to host the regional Disaster Council Meeting in August to early September this year. This meeting was preceded with a Disaster Workshop for the local participants, a rare opportunity for most of our local participants. I believe the meeting was a success and I would like to express my government's appreciation to the Disaster Unit and all those involved and wish to express interest in hosting more regional meetings.

The agenda before us is heavy, but since there will be an opportunity to discuss other items during the appropriate sessions let me touch on one issue that is a concern from my governments point of view. That is the access to information and data gathered during investigations or survey carried out in Niue. These investigations, in terms of equipments and expertise were provided by outside donors and it is expected that the data derived from these investigations shall be shared with other organizations and countries. However, Mr Chairman it is common courtesy for requests to be channeled through our External Affairs Office.

In conclusion, Mr Chairman, I would like to reiterate my governments strong support for the secretariat on our journey in this new millennium.

Thank you Mr Chairman.

Kia monuina

NEW ZEALAND

Mr Chairman,

On behalf of New Zealand I wish to thank Kiribati for hosting this meeting and for the arrangements made. I would also like to thank SOPAC for its organisation of the meeting, and most especially for managing to get most of the meeting papers out on schedule despite power cuts and other disruptions. Indeed, SOPAC management is to be commended for the way in which it arranged its work during the recent unfortunate events in Fiji to ensure that there

was minimal disruption to the work programme. New Zealand was impressed at the 'business as usual' approach, even though this meant working somewhat unorthodox hours.

Members will be pleased to know that in this year's budget the New Zealand Government approved an increase of \$75,000 in our contribution to SOPAC for core and extrabudgetary expenditure. This signifies our confidence in the organisation, and its ability to deliver technical assistance to members. SOPAC has also benefited from our support to individual projects from the work programme for which funding had not previously been identified, and also some new projects. We were particularly pleased to fund a project to establish a 'virtual' library for the benefit of all members, and also a joint SOPAC/SPC project to identify and prioritise members' information technology needs. Delegates may recall that last year we expressed concern that there may be duplication of effort in this important area, and our wish that regional organisations work more closely together to ensure maximum assistance to members.

The last year has seen some important developments for SOPAC. We are pleased to learn that the Environmental Vulnerability Index has attracted wider support, including from some donors new to SOPAC. A most important issue for us has been the resolution of matters pertaining to the Disaster Management Unit, appointment of its manager, and the design of the work programme. We are pleased to have been part of the process, and commend SOPAC, the consultants and the national disaster management officers for developing a plan that has a clear vision for disaster preparedness and management in the region taking into account the needs of all sections of the community. There are some who have suggested that New Zealand has kept too low a profile in this sphere. Mr Chairman, let me assure you that this will no longer be the case. I am delighted to advise that New Zealand will contribute \$300,000 per annum towards the costs of the DMU, and that we have also set aside some funds for technical assistance should that be required from us.

Mr Chairman, we have a lot of important issues to consider in the days ahead. I look forward to our discussions and to the meeting producing a substantive report to the Forum Officials Committee and Leaders at the Forum.

PAPUA NEW GUINEA

Mr Chairman, Papua New Guinea government and her people extend their warmest greetings to each one of you. I am honored and pleased to represent PNG on this occasion of the 29th Annual Session and must take this opportunity to thank SOPAC, the or-

ganizing Committee and applaud the host Nation for a well and hospitable welcome.

Mr Kuma Aua, Permanent Representative to SOPAC sends his apology and conveys his best wishes. He is attending the CCOP Annual Session in Bangkok, Thailand.

PNG views SOPAC as an important regional geoscientific organization and will encourage SOPAC to strive for the needs of her member countries and to remain in tune with the donor funding requirements and concern. PNG reiterates the capacity building, both in human resources and institutional as its major priorities.

PNG values and encourages the ongoing regional seabed mapping, however cautions researches to seek assistance in country to avoid misinterpretation of exploration laws. We have been forced into this position because of the increased private interest in recent cruises, and are equipping ourselves to critically assess all cruise proposals.

Geological Survey of PNG has initiated compilation of the marine geology of PNG, comparable to the terrestrial systematic mapping. PNG therefore, supports and encourages continued mapping if it's territorial waters.

PNG is, excited to be advised of conception of new projects and apparent expansion of SOPAC, however reminds SOPAC to not place aside mineral sector projects. It is probably the only industry that is keeping the country ticking.

I wish to thank those donor countries and institutions that continue to carry out sea-bed mapping in our waters. JAMSTEC should be congratulated for carrying out studies into the cause of Aitape tsunamis. Mr Chairman I stand ready to be reminded of any contribution, which may go unacknowledged during our deliberations.

In conclusion, Mr Chairman, PNG believes resources would be well placed if they were directed towards institutional capacity building and human resource development.

SAMOA

Mr Chairman, Samoa reaffirms the importance of SOPAC's role in assisting the sustainable development efforts of the region particularly with regard to providing strategic technical expertise in fields where skills are lacking nationally.

In these uncertain and unsettled times, there is a growing demand or services by SOPAC, there is also the challenge to ensure that service delivery and the

expertise translates to meeting the articulated needs within the constraints of resource availability.

Samoa acknowledges the assistance rendered to it in the various areas of the work programme in water, hazard assessment, energy, IT development, coastal management and the work on the Environment Vulnerability Index.

Mr Chairman, we will continue in our partnership with SOPAC to address some of our priority needs and would be willing to utilise some of the resources available to us for further implementation of such activities.

Mr Chairman, we wish to note our appreciation of the extensive donor contributions to the work of SOPAC.

We wish to also thank the Government of Kiribati for hosting the 29th Session of Council

TONGA

Mr Kaburoro Ruaia, National Representative of the Republic of Kiribati to SOPAC and Chairman of the Twenty-Ninth Annual Session of the SOPAC Governing Council, His Excellency Mr Tia Barrett, Ambassador of New Zealand to the Republic of Fiji and Outgoing Chairman; Distinguished Representatives of SOPAC Member Countries, Director and Staff of the SOPAC Secretariat, Distinguished Scientists and Friends of SOPAC, Ladies and Gentlemen.

Mr Chairman, the delegation of the Kingdom of Tonga is obliged as a matter of principle, to thank the Almighty God – the Creator and Sustainer of all forms of life in our Spaceship Earth – for making it possible for all of us present here today to assemble and therefore makes this first Annual Session of the New Millennium possible.

Further, Mr Chairman, may I on behalf of my delegation, through your good self, thank the Government of the Republic of Kiribati, for welcoming us into your most beautiful country. We very much feel at home here and no doubt we shall take back with us fond memories of your atoll nation – Koraba !

Mr Chairman, it would be indeed a remiss on my part not to acknowledge your election to the Chair in this important and landmark Annual Session. My delegation has complete trust in your ability and therefore, we are most confident that we shall be able to complete business as scheduled.

Mr Chairman, as a representative of a sovereign nation and a member country of SOPAC, I believe that it is of utmost importance for me to convey to this Council an accurate reflection of the contribution of

the SOPAC Secretariat to our geoscientific needs in the past year. Having said that, Mr Chairman, I wish I have something sweet to say but I'm afraid that will not be the case and my apology to you Mr Chairman and this distinguished gathering if I may happen to be the odd man out.

Mr Chairman, in a nutshell, SOPAC's contribution to Tonga in the past year is nothing else but sheer disgusting. Most of the projects approved in the 2000 Work Programme are basically left untouched and again, they are appearing in 2001 Work Programme. Given this Mr Chairman, allow me to ask the highly paid top managers of the Secretariat whether they are going to respond to these needs? Is it going to be in this lifetime or the next? To make things worse, you have unfinished follies in Tonga and yet you are quite contended to use scarce donor resources in applying a methodology to evaluate disaster caused by a political uprising in Fiji which I'm sure none of us here would like to condone.

Mr Chairman, with these words of sorrow, it only remains for me to wonder whether we are getting the true value of the hard earned cash we are putting in SOPAC's coffer each year. Currently, we are contributing FJ\$27,997.00 annually in our capacity as a large island member state. Information available to our delegation would indicate that there would be further increase this year and that would result in our contribution moving further to FJ\$31,529 in 2001. For the record, Mr Chairman, allow me to convey to this Council that Tonga does not agree with this. We have contributed generously in the past up to last year and that has been used to pay the big salaries of the two top managers. In our view, big reward is fine but there must be realistic contributions to member countries. I'm afraid that this is not the case and I would strongly appeal to my colleagues around the floor to consider the possibility of injecting new blood to the top management of the Secretariat.

Mr Chairman, it is most ironical for me to say that we are having more done as a result of our relationship with donors than with this ailing Secretariat. In terms of water resources, AUSAID recently funded a desalination project in the Ha'apai Group and this is the sweetest water supply in the whole Kingdom. Very soon, a T\$18 million project funded by Japanese ODA will be launched and it is aimed at improving the Nuku'alofa Water Supply. If the Secretariat is wise enough, better come and learn something from this experience.

In terms of our other geoscientific needs, my delegation is pleased to report the generous assistance from various institutions in Japan especially in the area of seismology. We have had seismic stations established and equipment provided as a result of this.

Further, two members of our staff have been trained in Japan at post-graduate levels and they are now back on Tonga looking after the project.

Mr Chairman, I have said enough but before winding up, allow me to take something from your rich culture and perhaps put it to the attention of this Council as it should help especially given the fact that we are dealing here with an ailing Secretariat.

The literature would indicate that you have a social system here which is based on the "manaba". In the manaba, you have the wise old men - the "unimane" - representing specific needs of the community. Each unimane occupies a "te boti" which typifies a specific need. Their discussion and deliberation concern matters contingent to the community and it is done with clean minds taking into consideration that everything has to be right given the most harsh environment that you happened to inherit. I whole-heartedly admire this social arrangement and allow me to say that as an environmental scientist, I was drawn to some sort of attachment with your struggle when I first came here some ten years ago.

Mr Chairman, having recaptured that ethnographic experience I'm sure that it has wisdom to offer us as we are approaching a cross-road. As far as my delegation is concerned, we the National Representatives are the "unimane" - not the Program Manager or the Director of the Secretariat. As "unimane", we give them directions and it is their duties to demonstrate the fund-raising skills that they documented in their job applications to get the funds required for fulfillment of given directions. Mr Chairman, I'm terribly sorry to say that in our view this has not been sufficiently met and our geoscientific boat, SOPAC, faces the danger of slowly going down. Do we need to go that far? Definitely not Mr Chairman, and therefore I would urge fellow "unimane" around the table to consider carefully the proposals put forward by the Secretariat at this Council with clear conscience to make possible re-surfacing of our Secretariat. We shall not be able to attract donor funding if we continue to have an under-performing Secretariat.

In conclusion Mr Chairman, please allow me to put on record the sincere gratitude of my government to the governments of Japan, Australia, France, the United Kingdom and New Zealand for their most generous assistance towards our specific geoscientific needs in the past year.

Koraba!

TUVALU

Mr Chairman, Director of SOPAC, Your Excellencies, Distinguished National Representatives, Donor Governments and Agencies, CROP Agencies Representatives, SOPAC Scientist Community, Ladies and Gentlemen.

Tuvalu is very pleased to be represented here in Tarawa, Kiribati to participate in the 29th Session of SOPAC Governing Council. Tuvalu wishes at the outset to reaffirm its strong and continued support for SOPAC. With extreme capacity limitation in sustaining existence on our small atolls, Tuvalu highly values the work of SOPAC in relations to resources development and management, energy, water and sanitation, coastal and maritime management, disaster management and information technology. In light of which, we fully endorse continuation of SOPAC's activities in these areas in line with its vision statement to improve the quality of life, and ensure the safety of the Pacific and its people.

We would also like to particularly note our satisfaction with the performance of the Director of SOPAC, Alf Simpson, and his management and technical staff in reviving what appeared just over two years ago to be a "sinking canoe" to a now active organisation with focussed direction and purpose.

My delegation recognizes and appreciates the many valuable contributions that SOPAC was able to undertake over the past year in Tuvalu, for which we express our sincere gratitude. We would also like to acknowledge with the deepest appreciation the continued goodwill from the donor government and agencies, and the most invaluable input from the scientists and technical experts in supporting the work of SOPAC in Tuvalu and other member countries.

This said, however, Tuvalu still holds the view that a main concern is not the number of SOPAC activities being carried out in our country, but of more importance are the benefits derived from the results and assessment of national and regional activities undertaken by SOPAC. The Task Profiles extracted from the SOPAC Tasks Database show that most of the tasks or projects proposed by and for Tuvalu were still uncompleted. These are priority projects that the Government of Tuvalu has identified to supplement national projects. Tuvalu would therefore welcome an opportunity to further dialogue, and provide SOPAC with what is necessary to have these projects implemented at the earliest possibility.

My delegation also appreciates the pertinent issues raised by the Director in his annual report in regards to staffing, work program and budget for SOPAC. Whilst we would wish to comment on the issues during the relevant sessions on the agenda items, we note here Tuvalu's concerns respecting some donors reactions to regional projects following the Fiji political crisis. We pledge that donors reconsider their reactions to the crisis and be wary of the effect of any withdrawal of support to regional activities benefiting other member countries as well.

We would also like to note Tuvalu's commitment to pay its assessed membership contribution to SOPAC for the year 2001 in the early part of next year.

Mr Chairman, allow me to join other delegations in congratulating you on your appointment to the chair of the Council, and to once again thank you and your Government for hosting my delegation. We are most confident that under your able guidance, we will be able to accomplish our aims set out in the agenda.

May I also acknowledge the valuable contribution and guidance we have had from the outgoing chair (New Zealand) in His Excellency Mr Tia Barrett, NZ High Commissioner to Fiji and Tuvalu during and since the last annual session of Council. I am sure His Excellency is here with us in spirit.

Let me finish by extending the apologies of the Tuvalu National Representative to the Governing Council, Mr Elisala Pita, for his inability to attend this session. He wants me though to extend his greetings and best wishes.

With those remarks Mr Chairman, Tuvalu looks forward to working with you and the Secretariat in your chairmanship.

Thank you.

VANUATU

Mr Chairman, members of the Governing Council, representatives of SPOCC and supporting institutions, distinguished scientists, ladies and gentlemen.

Let me first of all convey our National Representative to SOPAC - Mr Stanley Temakon's sincere apologies for not being able to attend this Council Session due to unavoidable commitment. He assured the meeting every success.

Mr Chairman, like other distinguished speakers before me, I congratulate you on assuming the chairperson of this year's Session and for the next twelve months. We look forward to working under your guidance and offer you our full support. Given the fact that your government is hosting this year's Annual Session, may I also offer, through you Chairman, our sincere gratitude to the government of the Republic of Kiribati, for its willingness to host this Session.

I would also like to acknowledge the excellent work of our colleague, the National Representative of New Zealand, His excellency Mr Tia Barret for the services he rendered and for steering the organisation through these times of regional political interference.

Since its affiliation with SOPAC, Vanuatu had benefited from quite a number of activities in areas of mineral development & promotion, water resources development, hazard assessment, coastal works and capacity building. Disaster management and energy are another two areas, although not new, which we have benefited from their various activities.

Vanuatu wants to mention its support to the recommendations of the 9th IDNDR Disaster managers Meeting held in Nuic and its Final Project document which will be tabled at this meeting. Similarly, we wish to endorse the Regional Energy meeting recommendations during its week-long meeting here in Kiribati. The consultancy task undertaken by Sandy McFarlane for the SOPAC/EU project is greatly acknowledged. Vanuatu would like to reaffirm its strong support for and is committed to fully participate in this project.

Vanuatu consider the mineral program of SOPAC as one its priority areas especially because of the need for capacity development for local technical personnel with the aim of enhancing in-country capacity to undertake assessment studies and field surveys. This would ensure efficient and effective mineral prospecting and development within our country. It is, however, sad to note that a lot of the tasks under minerals is yet to be accomplished due to lack of funding. The mineral unit is an essential need for mineral development in Vanuatu thus we recommend the secretariat look at ways in strengthening this important unit.

Water Resources is another of such important unit that we noted with great concern the continuing staff shortages resulting in discontinuity. The water re-

sources is an essential for whatever development in Vanuatu and the region thus place a high priority on this program to be strengthened.

The Vanuatu Government would like to reaffirm its continued support to SOPAC despite its annual contributions to the organisation has been outstanding. The situation has been due to various national factors and constraints the country is facing at the moment which I would like the Council to take note and look forward for its understanding. However, after some consultation, the Foreign Affairs Department have confirmed our commitment to pay up the outstanding contributions before end of year.

I also want to join others in thanking our donors both traditional and new for the support over the

years. We hope this assistance would continue to be available to the relevant and priority areas to island countries. I would also like to thank new donors to SOPAC activities such as Denmark, Ireland, Italy and Norway, for enabling SOPAC to carry out crucial work in our member states. I hope they would stay with SOPAC. To our fellow scientists and technical advisers who had been with us all these years, we value and greatly appreciate your support, advice and time you have given us freely over the years.

Mr Chairman, I wish to conclude my statement by once again wishing this 29th session of the SOPAC Governing Council all the best and may its deliberation bring fruitful contributions to the countries of the region.

APPENDIX 5

STATEMENTS BY OTHERS

STATEMENTS BY SUPPORTING GOVERNMENTS AND NATIONAL AGENCIES

France

Institut Francaise de Recherche pour l'Exploitation de la Mer (IFREMER)

As you know IFREMER has supported SOPAC since a long time and will continue to do so. Since the 1999's SOPAC Session, the activity of IFREMER in the SOPAC region was intense due to the presence in the area of the RV *L'Atalante* and of the submersible NAUTILE. Six geoscience cruises (8 months at sea) have been carried out.

- ZePolyF cruise in French Polynesia was devoted to the swath mapping and sampling of a selected sites of the French Polynesia EZ for the evaluation of resources.
- ZoNeCo 5 cruise aimed to survey the Fairway Basin in the New Caledonia EZ where gas hydrates had been discovered in 1998. The first results confirm the existence of a 70 000 sq km gas hydrate site overlying a deep salt layer. This cruise was carried out as part of ZoNeCo program which is a New Caledonian program for the evaluation of marine resources.
- FAUST 2 cruise was carried out within the IFREMER/AGSO Agreement. The objective was the swath mapping survey of the area located East of Norfolk Islands in order to obtain data for the extension of continental shelf for New Caledonia and Australia.
- AUSTREA cruise was also a cooperative cruise with AGSO and LINZ to survey the southern part of Tasmania and Macquarie Ridge with the same objective of extension of continental shelf.
- ALAUFU cruise was aimed to survey the Northern part of the Fiji platform where a new ridge axis has been discovered.
- The last cruise was carried out in Manus Basin (MANAUTE Cruise) as part of the French-Japanese (IFREMER/JAMSTEC) New STARMER joint project. The objective of the cruise was the submersible exploration of active spreading ridges and volcanoes in the Eastern and Western parts of

the Manus Basin. Even some difficulties arise for the programming of the cruise, the results are very important.

Institut de Recherche pour le Développement (IRD)

Mr Chairman, Distinguished Delegates, SOPAC Director and Secretariat staff, Ladies and Gentlemen.

IRD, through its centers in Noumea (New Caledonia), Papeete (French Polynesia) and its antenna in Port-Vila (Vanuatu), has been working for a long time (since August 1946) in the Southwest Pacific region. Our research institution is still funding scientific programs, a part of which are common with the geoscience SOPAC activities. These concerned geological and geophysical investigations (such as neotectonics, on land and offshore geology, seismic hazard assessment, seismic microzonation of Pacific cities, paleo-environment) but also physical oceanography (climate variability), environmental coastal studies and remote sensing activities.

In Geosciences domain, IRD will continue to support any attempt of SOPAC leading to recommendations for a unified local monitoring or warning system on a regional network basis. As a first step, IRD has already been involved in the Pacific Cities Seismic Microzoning Regional Project.

By installing and maintaining seismological (a regional network of 14 stations spread over the region) and space geodesy through a GPS permanent network in New Caledonia, Vanuatu and recently in Futuna, IRD contributes to a better understanding of the tectonic activity of the Southwest Pacific and consequently to a better assessment of seismic hazard.

This is done, since 1998, in a strong relationship with the SOEST of Hawaii University. Several countries covered by the SOPAC activities are concerned. From a technical point of view, this includes mapping in worldwide geodetic systems, marine navigation through GPS reference sites and tide gauges deployment. Moreover, several oceanographic cruises or transits including bathymetry and coastal tectonic have been scheduled this year in Vanuatu, Fiji, Wallis and Futuna and Western Samoa EEZ's on board the R/V *Alis* from IRD and the R/V *L'Atalante* from IFREMER.

In year 2001, a multiple sea-beam 0-1000 m (comparable to the swath mapping system already owned by SOPAC) will equip the R/V *Alis* in order to get very precise and well defined bathymetric surveys around the lands, atolls (coral reef external slopes) and sea-mounts. This is a special scientific device which has been asked by the IRD scientific group in Nouméa.

IRD is also involved in an international program devoted to the El Niño/ENSO phenomenon study and on its regional impacts at different time scales; different kinds of data are so used: direct observations from in situ scientific equipment (sea surface temperature, salinity and Acoustic Doppler Current Profiler measurements) and massive corals samples used as proxies (through the chemical contents of their skeleton covering several centuries with a monthly or a weekly time scale). Several cruises of the IRD R/V *Alis* have already been carried out for these two specific programs along the equator (165°E to 175°E and from 20°S to 5°N) as well as in the Fiji and Tuvalu EEZ's; another one is scheduled in Tokelau at the end of the present year.

In tropical marine coastal environment domain, IRD is still conducting the ECOTROPE program mainly devoted to the influence of terrigenous and anthropic inputs on the coastal ecosystems. The main effort which started in 1997 is focused on the Noumea and Suva lagoons through an intense cooperative action (research and formation) between IRD, USP (University of South Pacific), SOPAC, James Cook University and other partners. Two cruises on board the R/V *Alis* have been carried out in 1999 in Suva lagoon (two months study); in year 2000, as you know, the cruises scheduled have been postponed. The R/V *Alis* activities will start again in Suva at the end of this year and in 2001 as soon as possible.

IRD is still strongly interested by the impacts of the climatic variability on the coastal environment of the Pacific Island Countries and IRD representative in New Caledonia still wants to host one of the next GOOS Workshops at a time which would be decided by this honorable assembly during the next year.

On behalf of the Head Manager of IRD in Paris, I would like to take the opportunity to express my sincere congratulations to the Director and the technical staff of the SOPAC Organization both for the tremendous work accomplished in the Southwest Pacific but also for their assistance in carrying out at sea (work permissions from the PIC concerned) our scientific programs.

Japan

Thank you Mr Chairman, SOPAC member countries, supporting countries, international institutions, ladies and gentlemen.

It is my great pleasure to attend this Annual Session as the delegate from Japan.

The Japanese delegation consists of the Ministry of International Trade and Industry (MITI), Japan International Cooperation Agency (JICA), Metal Mining Agency of Japan (MMAJ) and the Japan Marine Science and Technology Centre (JAMSTEC).

On behalf of the Japanese delegations, I would like to express our sincere appreciation to the Secretariat of SOPAC and SOPAC member countries. We have been able to successfully carry out research cruises in the SOPAC region as a result of their support.

The Japanese Government and its institutions, the Ministry of International Trade and Industry (MITI), the Science and Technology Agency (STA), the Geological Survey of Japan (GSJ), the Japan International Cooperation agency (JICA), the Metal Mining Agency of Japan (MMAJ), the New Energy and Industrial Technology Development Organisation (NEDO) and the Japan Marine Science and Technology Centre (JAMSTEC), have numerous important programs in SOPAC countries.

At the request of SOPAC, the Japan International Cooperation Agency and the Metal Mining Agency of Japan have been carrying out basic exploration activities in deep sea areas in the exclusive economic zones of SOPAC member countries since 1985, using the *Hakurei-Mar* No. 2 by the order of Ministry of International trade and Industry. In 1999, the Stage 1 project was successfully completed and identified several promising areas of manganese nodules, cobalt rich crusts and hydrothermal deposits.

According to the new request of SOPAC, JICA and MMAJ has started the next step in the project which consists of the detailed exploration and environmental survey of those promising areas selected by the Stage 1 project. This year, Cook Islands was explored and Fiji will be planned to explore next year.

It is my pleasure to introduce Micronesian President Mr Falcan's comments at the Second Japan-South Pacific Forum Summit Meeting held in Miyazaki this April. He appreciated Japanese cooperation for basic exploration activities in SOPAC area. Japanese government is glad to carry out continuous cooperation.

JAMSTEC appreciates the cooperation of SOPAC countries, in particular the Federated States of Micronesia and Papua New Guinea, for maintaining TRITON (TRIangle Trans-Ocean buoy Network) buoys in their EEZs by the order of Science and Technology Agency. In order to observe oceanographic and meteorological conditions on a long-term basis, JAMSTEC has deployed TRITON buoys in the western Pacific since 1998. A total of ten TRITON buoys were in operation as of August, 2000 to monitor changes associated with El Niño and La Niño in cooperation with the TAO (Tropical Atmosphere and Ocean) array in the eastern Pacific operated by the Pacific Environmental Laboratory/NOAA, USA.

JAMSTEC intends to expand this TRITON buoy array with 18 buoys in 2001. In order to enable sustainable measurements for oceanographic and climatic research, which, in the end, will contribute to develop global environmental change studies, JAMSTEC wishes to maintain close collaboration with SOPAC member countries to communicate with fisheries communities, to improve their awareness and respect on the research buoys.

In addition, the ocean seems to be a good candidate for CO₂ sequestration to mitigate a sharp increase of CO₂ concentration in the atmosphere. Although we need detailed understandings about the ocean for the CO₂ sequestration technology, studies on the behaviour of CO₂ released into the ocean and its environmental impact assessment have not been conducted yet. To obtain the basic data for the studies, NEDO started a new program named WEST-COSMIC in 1997. The program includes biogeochemical research using the Hakurei-Maru No. 2, which covers an area from 50 degrees to 10 degrees of latitude in the western North Pacific.

The Japanese Government has been sending experts to the SOPAC Technical Secretariat in Fiji

since 1987. They have been involved in offshore minerals programs, construction of data bases, the related data management, cruise coordination and various work in the field of offshore programs. Mr Kojima has been an expert since 1997, and I think that his work will contribute greatly to the steady development of the South Pacific countries.

The Japanese government and relevant organisations hope for other potential areas of cooperation with SOPAC countries in various fields.

Thank you.

Japan Marine Science and Technology Center (JAMSTEC)

First of all, the Japan Marine Science and Technology Centre (JAMSTEC) would like to express its appreciation to various cooperation of SOPAC member countries and secretariat in implementing its marine scientific research in the SOPAC region.

JAMSTEC now operates five surface research vessels, two manned submersibles and two ROVs mostly in the Pacific. According to the normal procedures specified in the Law of the Sea, every research cruises submit operation plans well in advance to the Governmental authorities of countries concerned and obtain agreements to carry out research cruises in their EEZs. In this respect, JAMSTEC wishes to thank in particular the governments of the Federated States of Micronesia, Papua New Guinea and Kiribati in issuing relevant authorisations. Although it is stated in the Law of the Sea articles, JAMSTEC would highly appreciate if processes to obtain such permission be simplified and period of notice be shortened.

In order to understand better the nature of the oceans and related global environmental changes, JAMSTEC deploys the TRITON buoys network in the western equatorial Pacific since 1998. Keeping such a network in good operational conditions requires strong cooperation of neighbouring countries in particular when the buoys are heavily damaged and become difficult to continue observation. In the past, JAMSTEC succeeded to rescue damaged buoys through close cooperation with authorities of Micronesia and Guam. Regarding this fact we would like to express our full appreciation to both governments for the rapid and friendly response and to the SOPAC secretariat for its coordination.

Observed data by the TRITON buoy network are opened through website after quality checking to all communities. However, JAMSTEC feels it insufficient. These data once publicised should be fully utilised particularly by communities where the buoys are settled. In this respect, JAMSTEC plans to organise a training course for promising young scientists and engineers from the region to provide basic knowledge and develop their skills in forecasting marine conditions of their own waters and relevant aspects, such as predicting fish migration and abnormal climate changes. The first course will be held in early 2001 and we intend to organise the course ever year.

Turning to the other subject, JAMSTEC would like to express its appreciation to SOPAC countries and scientists who participated in our special survey cruises to investigate mechanism of the Sissano Tsunami. Scientific results were already reported in some scientific journals and at various international meetings such as IUGG Assembly in July 1999 and AGU's western Pacific session in June 2000, and were well accepted by international scientists' community. JAMSTEC also wishes to thank Dr David Tappin, co-leader of this research team for his leadership and the SOPAC Secretariat for its coordination role and publishing a special issue of SOPAC Project # 13 which summarises adequate information related to this catastrophe.

In conclusion, JAMSTEC would like to assure the session that it will continue in its efforts to develop further cooperation with SOPAC in implementing marine research and related capacity building activities in the region.

Korea

Korea Institute of Geology, Mining and Materials (KIGAM)

It is with great pleasure I have the opportunities to attend this 29th Annual Session of SOPAC as a representative of the KIGAM, and I would like to express our sincere appreciation to the SOPAC Secretariat and member countries on behalf of KIGAM personnel. Of particular, this year's annual session at Tarawa, Kiribati, the first sunrise of the new millennium, is very meaningful and memorable for us.

Since KIGAM has committed its contributions within the region in 1997, we are keeping close ties with SOPAC Secretariat and member countries. What we did contribute in the region was so small enough, however, we will keep trying to further extend our supporting and interesting areas to the resources development program as well as environmental science program through KIGAM and Korean government. A continuation of coastal geological mapping in the island countries, seismic interpretation and updating the SOPAC petroleum data can be good examples for the future work program.

During the session, I look forwards to having chances to discuss how to strengthen the mutual relationships with Secretariat, member countries and supporting organizations. And we believe that circum-Pacific countries including Korea should important role in keeping the PICs being more welfare and sustainably developed, thus sharing the better life together with surrounding countries.

Finally saying, many economists say 21st century will be era of IT and e-business. This means that na-

tional capacity development can not achieved without any help and aids of IT. I also look forward SOPAC to having much progress in building up the database system, networking and GIS/RS of geoscientific information and knowledge in the region.

Thank you very much Mr Chairman again for inviting me to address the meeting and we look forward to a productive and successful session.

Korea Ocean Research and Development Institute (KORDI)

Mr Chairman, all the delegates, ladies and gentlemen!

I am pleased to have this opportunity to participate in the 29th Annual Session and to be able to contribute as a representative of the Korea Ocean Research and Development Institute or KORDI.

We all know that the world is looking toward the ocean for its sustenance and livelihood as we have stepped into the 21st century. For this reason, scientists, scholars and politicians are calling the new century as an «Ocean Century». However, discovering and receiving what the ocean can provide cannot be achieved alone but through the cooperative effort of international community. As a part of such effort, KORDI has established the Korea-South Pacific Ocean Research Center in the State of Chuuk of the Federated States of Micronesia in May of this Year. This center will function as the hub of ocean science and technology for the South Pacific region. The center shall promote, coordinate, and conduct ocean scientific technical studies in the region including developing projects and their implementations as well as identifying scientific and technical issues, problems and solutions or alternatives thereof.

It is also a good news that KORDI is expanding its research areas through the South Pacific region. For example, the early oceanographic research survey in the South Pacific region which was supported through KORDI, was limited to the Republic of the Marshall Islands. However, with the backing from the Korean government, specifically from the Ministry of Maritime Affairs and Fisheries, the project has expanded to include Manus Basin of Papua New Guinea in 1999 and Woodlark Basin of Solomon Islands in this year. With time, KORDI is planning to expand its research spheres to include much more areas of the South Pacific region.

On behalf of KORDI, I extend my great appreciation to SOPAC for its great role and obligation carried out in the South Pacific region. It is hoped that KORDI and SOPAC will continuously build and form a close cooperation. Through such cooperation, much more KORDI expects to carry out joint and collaborative

researches in the wider areas of South Pacific as well as areas of Chuuk State of the Federated States of Micronesia. However, these joint research plans cannot be carried out successfully without support and cooperation from the member states of SOPAC. Therefore, we seek your continuous extension of cooperative hands.

Lastly, I hope and believe this 29th Annual Session will be one of the most successful sessions. I hope this session will invigorate and reinforce the bonds among SOPAC members with a common goal and hope of becoming successful ocean nations in this new millennium.

People's Republic of China

Mr Chairman...

The Chinese Government attaches great importance to developing relations with SOPAC, which is based on "One China" principle. As a regional inter-government organisation of sovereign states, SOPAC must not conduct any form of official contacts with Taiwan. China is resolutely opposed to any appearance of "Two Chinas" or "One China, One Taiwan" in the documents of SOPAC meeting. However, in the Summary Record of the 29th SOPAC Session, with the encouragement of certain people, several references are made to the so-called "Taiwan/Republic of China", at which we express our strong indignation and demand that SOPAC honour its commitment of one-China policy and immediately correct this severe mistake, so as to guarantee a smooth development of the relations between China and SOPAC.

Taiwan/ROC

Taiwan/ROC wishes to extend, first of all, its warm congratulations on the appointment of Mr Kaburoro Ruaia as the incoming Chair of the 29th SOPAC Annual Session. Taiwan/ROC is confident that the deliberations will draw inspirations from Mr Ruaia's experience and guidance.

Taiwan/ROC also wishes to congratulate Director Alf Simpson and his contingent for their contributions to SOPAC in particular and to the region as a whole.

Taiwan/ROC has been proud in its association with SOPAC since 1993 in assisting and promoting development and cooperation in the region through the process of the post-Forum dialogue meeting. In the future, Taiwan/ROC will continue to work even closer with SOPAC on a mutually beneficial basis for the common interest of all.

Taiwan/ROC regrets that the so-called "One-China Issue" was raised at the closing session and consid-

ers that such a move is not only unnecessary but also irrelevant to the subject matters that have been discussed at the SOPAC annual meeting so far. However, Taiwan/ROC wishes to acknowledge with appreciation the support from Tuvalu, Marshall Islands, and other countries on this matter.

The Taiwan/ROC delegation would also like to take this opportunity to express its appreciation to the people and government of Kiribati for the assistance and hospitality throughout the meeting. Taiwan/ROC delegation is particularly grateful to the Honourable Minister Emile Schutz and the staff at the Ministry of Natural Resources and Development for their arrangements since our arrival.

United Kingdom

Department for International Development (DFID)

I am very pleased to be here today representing the Department for International Development which has seen the UK establishing a growing relationship with SOPAC.

We have now been implementing our new strategy for over one year and as many of you may know, this has recently been further reviewed in light of the crises which have occurred in the Pacific Region. I am pleased to confirm that we will continue with our regional approach and working towards our primary goal of eliminating poverty. It is encouraging to note that SOPAC have also taken this goal on board and are to be congratulated for their forward thinking approach in developing their paper "The Role of SOPAC in Poverty Alleviation - Philosophy and Approach". We will therefore continue to support the work and strengthen the capacity of regional organisations in the Pacific to attain their objectives, which in turn will improve the well-being, health and safety of the Pacific and its people.

As far as SOPAC is concerned there are no changes to our planned programme of assistance. We will continue to provide support to the Disaster Management Unit to assist develop the regional disaster planning and mitigation capability of Pacific Island countries. This assistance continues to highlight the importance we attach to the effective development of both national and regional disaster planning, management and mitigation capabilities. In addition to this we are providing funding for the Strengthening Community Resilience Through Applied Community Risk and Vulnerability Analysis project and providing seed money for community based activities in both Solomon Islands and Vanuatu.

SOPAC were also successful in securing funds through DFID's global Skills For Development initiative to develop the level of indigenous knowledge and

skills in the water and sanitation sector through problem focused in-country training. Funds will be dispersed in the near future.

We are also funding a Water and Sanitation Specialist and to assist with the implementation of water demand management and conservation principles to reduce water wastage and assist Pacific island countries to develop water sector strategy plans based on the sustainable development and utilisation of water resources. Funding for specific country based activities has also been agreed, although the precise details of the activities has yet to be agreed, priority will be given to the poorer Pacific Island Countries.

DFID also centrally funds the Overseas Development Institute Fellows Scheme which places economists in many developing countries. I am pleased that this funding has enabled the placement of a Fellow who has contributed to the development of the Poverty Paper mentioned previously. The British High Commission, based in Suva, have also asked me to confirm that they were again delighted to sponsor the successful 2000 World Water Day through the Small Grants Scheme.

Our wide range of inputs and our working relationship with SOPAC highlights the importance we attach to our common goals and objectives.

British Geological Survey (BGS)

Mr Chairman, ladies and gentlemen, the British Geological Survey is pleased to be represented at the 29th Annual Session of the SOPAC Governing Council and thanks SOPAC for the invitation to participate in the Session.

BGS involvement in the Southwest Pacific extends back some considerable time. For many years our organisation played an important part in the geological surveys of Vanuatu, the Solomon Islands, Tonga and Fiji contributing to studies of the onshore, coastal and marine geology and resources, supported by the UK overseas aid/development programme. Although this level of input has been reduced of late, BGS remains committed to the region and is keen to contribute to its national and regional geoscientific programmes wherever possible, principally through the aegis of SOPAC. In this regard, BGS has concluded a Memorandum of Understanding with SOPAC that may facilitate such co-operation. We would take this opportunity to remind SOPAC of the short-term, *ad hoc* expert advice and support that can readily be provided under the Resource Centre Scheme agreement between BGS and DFID.

One of the most exciting developments in the SOPAC programme, taking place during the year, was the formulation of the European Union Lomé IV project on island management. We would like to express our full support for this programme and the anticipated project outcomes. In our view the project structure has been well prepared and SOPAC is to be commended for its efforts.

BGS involvement in the region continues in a number of areas.

In June 2000, Andrew Butcher completed a three-year secondment to SOPAC under CFTC funding as Training Co-ordinator and returned to BGS, Wallingford.

In Vanuatu, under funding kindly provided the Mr Malcolm Hilson, British High Commissioner, BGS helped establish a new display of fossil molluscs in the Vila National Museum. This is an important collection derived from the Kere Shell Bed on Espiritu Santo Island and contains many unique, and some new, species. BGS geologists discovered the deposit in the early 1970s during geological mapping of the island.

In Papua New Guinea, Dave Tappin continued his work on the July 1998 Sissano tsunami. Dave has been the SOPAC co-chief scientist on the three collaborative SOPAC/JAMSTEC Sissano Offshore Surveys investigating the cause of the tsunami.

Volcanic hazard assessment in the Southwest Pacific region has continued, focusing largely on Savo Volcano in the Solomon Islands. Collaboration between BGS (Mike Petterson) and various other academic, research and national organisations around the region is continuing. The results of this work were reported earlier in the STAR session. BGS is also interested in supporting production of a volume concerned with mineralisation across the region.

A project to introduce a computer-based mining licence administration scheme submitted for funding to DFID's Knowledge & Research programme was unsuccessful. The project will be reconsidered for resubmission. In September 2000, another submission was made for a distance-learning scheme related to knowledge transfer for small-scale mining of industrial minerals. If successful, it is hoped that SOPAC will participate in the dissemination phase of this project that would commence in 2001.

Up until 1999, when it ended, BGS provided project management to the World Bank Technical Assistance project in the Papua New Guinea Petroleum Division. BGS remains very interested in PNG and hopes to become involved in further work in both hydrocarbons and minerals.

STATEMENTS BY CROP AGENCIES

University of the South Pacific (USP)

The University has worked in close collaboration with the South Pacific Applied Geoscience Commission (SOPAC) for a considerable period of time, and this working relationship has been welcomed by both Organisations. The Vice-Chancellor, and the USP Heads of Sections, who directly interact with SOPAC, wish to record their appreciation for this long-standing cooperation, and wish this 29th Annual Session fruitful deliberations.

In the area of geoscience studies, the University offers the Region several programmes of higher-level study. Bachelor of Science programmes in Earth Science, Marine Science, and Environmental Science have grown steadily, with a pleasing level of enrolments in the year 2000. The Bachelor of Arts in Marine Affairs also includes an Earth Science component. In the year 2000 new postgraduate diploma programmes in Environmental Science and in Environmental Studies were inaugurated; each of these programmes have earth science components. A comprehensive summary of the University's programme and course offerings in tertiary geoscience studies was provided in its statement to last year's SOPAC Council session held in Nadi, Fiji. This year, 2000, the Commission again supported teaching and other services at USP: the third year Applied Geology course in the Earth Science BSc, and the Ocean Resources Management courses in the School of Social and Economic Development. The University wishes to record anew its appreciation for this most generous assistance. The events of May 19th in Fiji caused staff resignations, and the Earth Sciences section of the Pure and Applied Science School was severely affected. The University is grateful to the Director of SOPAC for offering the services of commission staff to assist with teaching, should the USP require this.

Concerning the Earth Science and Marine Geology Certificate Programme, the University has agreed to continue conferring the award for as long as SOPAC should require this. It was very unfortunate that the teaching for the Certificate was cut short in June because of the Fiji crisis. The University had agreed to allow the SOPAC students to continue using the marine studies facilities until they could complete their year and sit for the examinations, however rapid emigration of the students forced the programme to close early. In connection with this training programme, the University wishes to record its appreciation to Mr Andy Butcher for his own personal services to the University's earth science students, and for the excellent bond that he created with staff of the university.

On a final note, the Vice-Chancellor of the University of the South Pacific wishes to thank most sincerely the SOPAC Governing Council for the invitation to be represented at this, and past council meeting(s). The University notes the excellent contribution the Commission has made to geoscience research and development in the Region, and wishes it all the best of success in its future endeavours.

USP Statement re the HRD Unit

The Earth Science and Marine Geology Certificate Programme is currently in the second year of its three year cycle. The 17 participants in this year's component unfortunately had their year cut short by about two weeks due to the Fiji political disturbances of 19 May.

Despite the University's offer to allow the programme to continue and their examinations to be completed under the guarantee of security, most of the participants chose to quickly return to their home countries.

SOPAC has made special provisions for this programme to continue early in the new year.

The 28th annual Session of SOPAC Governing Council, after substantial discussion, proposed to request the USP to consider continuing the conferral of the certificate award on completion of the Certificate programme in its present format. Some 3 years of SOPAC / USP discussions had attempted a revision of the programme's format, and will support the programme for as long as SOPAC wishes, and will confer the award as a USP one.

An agreement established this year between SOPAC and USP will now have the students fully registered with USP ID cards thus allowing the full use of University facilities. This year's students were accommodated in the new rooms of the Marine Studies Centre Lodge.

On behalf of the University, may I invite the SOPAC Training Co-ordinator to make use, at any time, of the new USP-Net televideo distance education faculty. In this way some distance and flexible learning may be possible. As the USP representative to the Governing Council, I would be happy to facilitate this initiative.

Another important programme, which appears to have lapsed is SOPAC's degree scholarship programme in Earth Science whereby scholarships were solicited, then directed to USP. Given that previously scholarship monies were wasted in some poor selections of scholarship students, the project has

provided 3 or 4 good graduates now working well in the region. In this regard, one suggestion might be to base selection after first year at USP, and selection of awardees undertaken in consultation with the University.

South Pacific Regional Environmental Programme (SPREP)

On behalf of the Director of SPREP may I thank you for the opportunity to make a brief Statement on behalf of the SPREP Secretariat.

As many of you would be aware the work programmes of our two organisations have become increasingly inter-twined over recent years. The integration of environmental concerns and best practice into sectoral development is to be encouraged and SPREP welcomes the effort being made by SOPAC in this area. As this integration evolves questions of coordination naturally arise. It is therefore timely to outline where SPREP currently is working with SOPAC to ensure the skills within our organisations are used to the maximum benefit of our member countries.

Water supply and sanitation

- Joint preparation of regional sewage consultations in advance of global meeting in 2001 (deferred due to political unrest in Fiji)
- SPREP assisted SOPAC with the development of education materials for World Water Day

Database development

- SOPAC engaged to assist with the development of SPREP's Corporate Database
- SOPAC engaged to assist with the mapping of marine pollution risks in the region

Energy

- SOPAC engaged in the preparation of a Regional Mitigation Analysis (including energy options) related to climate change
- SPREP input to CSD9 paper and relevant working groups

Climate change

- SOPAC engaged to prepare vulnerability assessments for some countries
- SOPAC nominated to provide advice on Coastal Adaptation Technologies

Future collaboration

Looking to work closely with SOPAC in the removal of barriers to the introduction of renewable energy in the region. Over the next 12 months, this will include the development of a full GEF proposal for the removal of barriers to renewable energy.

The environmental impacts of mining in the region remain a significant concern. As mining is an integral part of national development in the region it is proposed that we work closely together to examine opportunities for improved practice. This would include issues related to siting, lease development, extraction practices, environmental guidelines and rehabilitation.

The Environmental Vulnerability Index (EVI) has received considerable attention over the last two years. While the SPREP Secretariat does not support the use of a single composite index of environmental vulnerability, this work does involve the development of a range of different measures of vulnerability that will be of assistance to member countries. We look forward to working with SOPAC as we build capacity at the national and regional levels for environmental assessment and reporting. This is expected to include the development of input to the third Global Environment Outlook, the Global International Waters Assessment and preparations for Rio +10 (the 10 year review of the Earth Summit held in Rio de Janeiro, 1992).

In the area of climate change and variability, we will be coordinating our activities with all regional organisations to assist countries better understand and respond. The Regional Framework ON Climate Change, Climate Variability and Sea Level Rise, developed in the Cook Islands in April this year provides an essential platform for this collaboration. The Framework will be considered further by Ministers at the 11th SPREP Meeting, Guam, October 10-13 2000, and transmitted to the Pacific Island Leaders Forum in Kiribati. The completion of the Needs Analysis for Meteorological Services will direct our capacity building efforts in this sector as we work to provide accu-

rate and timely information on climate change and variability to a wide range of user groups. To this end, SPREP, with the support of the Government of Italy will be launching the Climate Update in October this year. This will be done in collaboration with a wide range of forecasting centres including NIWA, NOAA, PEAC, the Australian Bureau of Meteorology and MetService NZ.

After many years of planning, the new Strategic Action Programme for International Waters has finally commenced. The oceanic components, implemented through FFA and SPC, were established mid-year and the Project Co-ordination Unit based at SPREP recruited a Project Manager in July. Work to date has involved setting up administrative arrangements and re-establishing consultative processes that appeared to work so effectively during the formulation phase for the Programme. The implementation of the 14 demonstration projects provided for under the Programme will commence once all project staff are recruited - a task that hopefully will be completed before the end of the year. In addition, the International Waters project will seek to establish collaborative working relations with other CROP agencies, particularly SOPAC in respect of freshwater demonstration projects, and other interest groups, for example NGOs, active in the region.

The construction of SPREP's Education and Training Centre, funded by the Government of Japan, will increasingly be used as a focus for short-term human resource development for environmental management. We would be looking to work closely with SOPAC in the design of relevant courses and to draw on the skills of SOPAC staff where appropriate.

The establishment of the Disaster Management Unit formally within SOPAC will also provide a focus for collaboration between SPREP and SOPAC. Our work to assist countries in the area of climate change and variability will be responsible to the needs of this very important sector.

In closing, may I say, that the SPREP Secretariat is striving to work closely with SOPAC and all CROP agencies to maximise benefits for Pacific Island Countries. In addition to the CROP Marine Sector Working Group, a process of consultation has been established between SPREP, the Secretariat for the Pacific Community (SPC) and SOPAC that will focus principally on programme coordination. This, we believe, is a very tangible indicator of increasing coordination across all CROP organisations. I hope this summary of activities and road map for the future will assist you in your deliberations over the next few days.

Thank you.

STATEMENTS BY OTHER SUPPORTING AGENCIES

Greenpeace Australia Pacific

Thank you, Mr Chairman, for giving me the opportunity to make a statement on behalf of Greenpeace. And through you, may we thank Kiribati for hosting the 29th SOPAC Annual Session here in Tarawa and for looking after us all with such courtesy and care during our stay in your country.

As delegates may know, Greenpeace is an independent environmental organisation which campaigns to ensure a just, peaceful, sustainable environment for future generations and the ability of earth to nurture life in all its diversity. We are a global organisation. We organise campaigns for the protection of oceans and ancient forests; for the phasing-out of fossil fuels and the promotion of renewable energies in order to stop climate change; for the elimination of toxic chemicals; for nuclear disarmament and an end to nuclear contamination; and against the release of genetically modified organisms into nature.

We acknowledge with thanks the ongoing working relationship with SOPAC which we have enjoyed over the past years in our region. We share the Pacific's recognition of climate change as one of the greatest threats to the planet. We contribute to the scientific research on the issue by commissioning and publishing reports on the health of coral reefs and we advocate that governments that are slow to move from rhetoric to action will change policies so that less carbon dioxide and other greenhouse gases are pumped into the atmosphere. Our second coral reefs report, which includes an analysis of the socio-economic impacts of climate change on Pacific fisheries and tourism industries, will be launched here in Kiribati at the Pacific Islands Forum meeting later this month.

We also share the concerns voiced by other delegates here about the environmental impacts of toxic chemical stockpiles and of mining in our region. As land mining and the potential for seabed mining are taken as integral parts of national development in the Pacific, we welcome SOPAC's invitation to environmental organisations like ours to work together on improving environmental impact assessments and on best practice methodologies for mining.

Greenpeace Australia Pacific agrees with SOPAC and others here that it has indeed been a trying year for our work in the region. The crises in Solomon Islands and in Fiji have demanded much of us, whether our staff are based in Honiara, Suva or Sydney. We therefore appreciate SOPAC's commissioned paper

on civil crises in Pacific Island Countries tabled at this meeting.

Mr Chairman, let me conclude by saying that Greenpeace looks forward to future collaborative work with SOPAC and other regional bodies and NGOs on matters of mutual concern to us and I thank you again for the invitation to make this short statement.

Koraba!

Intergovernmental Oceanographic Commission of UNESCO (IOC)

William Erb, Head, IOC Perth Regional Programme Office-Perth, September 29, 2000

First, Mr Chairman I would like to say what a pleasure it is for me to return to the beautiful country of Kiribati, having attended the previous meeting of SOPAC in Tarawa. Your warm and friendly people makes visiting here something very special.

I am representing Dr Patricio Bernal at this meeting, the Assistant Director General of UNESCO and its Intergovernmental Oceanographic Commission (IOC). Dr Bernal sends his best wishes for a successful meeting and regrets that he could not attend himself. He has come to respect and value the cooperation, guidance and advice of SOPAC's very capable Director, Mr Alf Simpson. His participation at IOC meetings in Paris have raised the awareness of the South Pacific in UNESCO-IOC.

IOC's interest in the region is substantiated by its recent establishment of an IOC Regional Programme Office in Perth, Australia. This is a joint undertaking of the IOC and the government of Australia. The Office objective is to develop the Global Ocean Observing System (GOOS) and other IOC programs in the South Pacific and Indian Oceans. We are building on a long history of SOPAC and IOC cooperation of almost twenty years. GOOS is a system focussing on the ocean and coastal waters wherein data is collected, analysed, modelled and then turned into useful products and services for a variety of users. It is the equivalent of the weather bureaus but designed for the oceans. Its data is critical for weather and climate forecasting and prediction as well as for fishermen, coastal planners, coral reef management, etc.

In developing GOOS with SOPAC, IOC established an MOU in 1997, co-sponsored a capacity building workshop in Fiji in 1998 and most recently a coastal GOOS workshop in Samoa in August. SOPAC is attempting to meet its commitment to establish a GOOS for the region but is limited by resources. Additional support will be required if GOOS is to be successful.

There is a great deal that can be contributed to the system by the people of the region if given the means to do so. The SOPAC Secretariat is doing a magnificent job of organizing but the implementation has to come from the countries of the region. Also, the other regional organizations, such as SPREP, IRD, FFA, USP and other sponsoring agencies have to be involved. A GOOS Steering Committee has been established for this purpose and met during the STAR session. In the next several months we will draft a strategic plan for PacificGOOS, which will help guide our way and offer you a more comprehensive look at the objectives.

We wish you all a very successful meeting and thank you for this opportunity to participate.

United Nations Development Programme (UNDP)

Thank you Mr Chairman. The UNDP Resident Representative regrets not being able to attend and has asked me to make a very brief statement.

Traditionally UNDP provides most of its development assistance directly to, and through Government ministries. UNDP is also committed to providing some of its development assistance to and through regional organisations and it welcomes an invitation from SOPAC to discuss and identify priority projects requiring assistance. UNDP urges SOPAC to also invite other UN agencies to enable them to look at other areas of possible assistance.

UNDP is very pleased to note that the new DMU has started its project activities and that the transition phase has now come to an end. UNDP has been involved in disaster management and will continue to provide financial assistance in support of the activities for the DMU.

In concluding, UNDP wishes SOPAC all the success in its 2001 programme.

Thank you Mr Chairman.

World Meteorological Organisation (WMO)

Your Excellencies, Dear Colleagues, Ladies and Gentlemen...

It is an honour and a privilege for to address the 29th Session of SOPAC Council. On behalf of the Secretary-General of WMO, Professor G. O. P Obasi, I have great pleasure in expressing our appreciation to the government of the Republic of Kiribati for hosting this meeting. I also thank Mr Alfred Simpson, Director of SOPAC for the invitation extended to WMO to

participate in this meeting, and to convey to you the greetings of Professor G. O. Obasi, the Secretary-General of WMO and his best wishes for the success of this meeting.

This meeting is convened during the millennium when WMO is also celebrating the 50th anniversary of the entry into force its Convention. For half a century, WMO has served the people of the world and international community as the United Nations System's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the land surface and oceans, the climate it produces and the resulting distribution of water resources.

Some of the major challenges facing our islands in particular include natural and environmental disasters, climate variability and extreme weather events, climate change and sea level rise, freshwater resources management and development, depletion of natural resources, land use and land degradation and tourism management. Our islands in the Pacific are scattered in huge ocean areas and meteorological and related observations are of great importance not only to this region but also to the whole WMO community. I listened carefully to scientific presentation during the STAR session, and these presentations pointed to the fact that they are all using meteorological elements, such as temperature, wind speed, frequency of cyclones. It is important to note that national Meteorological and Hydrological Services are the key and have established infrastructure, technical capability to monitor and collect meteorological elements for both research and day-to-day operation purposes.

It is essential that the national Meteorological and Hydrological Services and other collaborative partners are equipped with adequate human resources and expertise, equipment and facilities if they are to take up these challenges.

This meeting gives an opportunity to discuss regional and global events that affect the development of climate variability, geological, hydrology, and disaster management to ensure their contributions to the sustainable social and economic development of the of our islands. In this connection, significant regional developments have taken place, particularly, the strengthening of the close cooperation between WMO and SPREP, WMO and SOPAC signed a Memorandum of Understanding in April of 2000 and the framework provides for partnership to address water-related issues, disaster management and capacity building in our region.

There have been a number of activities carried by WMO in the Pacific, such the training workshop on Climate Information and Prediction Services (CLIPS) in collaboration with SPREP in Tahiti in July 1999, training workshop in disaster management in collaboration with SOPAC in Fiji, in October 1999, WHO and UNEP conducted a multidisciplinary workshop in Climate and Human Health in Samoa in July 2000, and WMO/GCOS/SPREP Pacific Island Regional Implementation Workshop on Improving Global Climate Observing Systems conducted in August 2000.

WMO is looking forward to strengthening the collaboration with SOPAC, SPREP and other regional organizations in all aspects of meteorology including climate variability and climate change, hydrology, and environment-related activities for the benefits of its Members in the Pacific.

The WMO Regional Programme provides a framework for the implementation of global WMO programmes at the national, subregional and regional levels. One of its main long-term objectives is to assist and build the meteorological capacities of Member countries, either individually or a group of countries, in cooperation with regional and subregional economic groupings and institutions and to enable the national Meteorological and Hydrological Services to play their full role in the sustainable development of their countries.

Furthermore, within its overall efforts to reinforce WMO support to national Meteorological and Hydrological Services of the Pacific, a WMO Subregional Office for the South-West Pacific has been established in Apia in 1999 to serve WMO Members in the South-West Pacific. I would like to take this opportunity to reiterate our thanks to the Government of Samoa for hosting the Office in Apia and to SPREP for their continued support to the Office.

During the course of the meeting, you will discuss and review a number of important issues of major concerns. I would like to assure you that WMO is committed to further strengthening its collaboration with SOPAC and will continue to assist its Member countries and their national Meteorological and Hydrological Services in every possible way.

I wish the meeting every success and fruitful deliberations.

Thank you.

APPENDIX 6

RECOMMENDATIONS OF STAR WORKING GROUPS & STAR CHAIR REPORT TO COUNCIL

RECOMMENDATIONS OF THE WATER WORKING GROUP:

Procedures

The group reviewed the recommendations that were put forward to council by the Water Working Group of 1999. The group noted the implementation of various recommendations from the previous session. Further deliberations led to the following 10 new recommendations:

Recommendations of Water Working Group 2000

- The group noted the endorsement of the conclusion of the 1999 workshop on ENSO impacts on water resources in the Pacific by council and further recommends that council endorses the collaborative efforts of WMO and SOPAC in organising a follow-up workshop on ENSO related events for hydrologists.
- The group noted the endorsement of the recommendations of the WMO on hydrological needs of SIDS. The WMO meeting identified two important aspects being the establishment of a Pacific HYCOS and the need for training. Concerning the establishment of the Pacific HYCOS the group recommends to council efforts for collaboration between WMO, SOPAC and other relevant regional and international organisations be made. Concerning training for hydrologists the group recommends that efforts be made to run the training through organisation which have demonstrated capacity in this area such as USP and SOPAC. The group noted other avenues for training such as distance learning material that could be utilised in addition to this program.
- The group noted with great concern the continuing staff shortages in the water unit and resulting discontinuity. Despite the overwhelming priority given to this activity by the 27th and 28th Session of Council, there is no core-funded staff in the Unit. The group strongly recommends the Council consider ways of strengthening the Water Resources Unit, to ensure its continuity and effectiveness.
- The group noted the importance of the Water Resources Unit as a centre for the dissemination of information and knowledge in the field of water. The group recommends the continuation and expansion of existing media such as the Water Resources Unit web page, newsletter, virtual library and the Small Islands Water Information Network (SIWIN).
- The group noted the recommendation of last years Council to develop a Drought Index system for the region. Initiatives in this direction have resulted in project proposals to donor organisations for funding. The group recommends to council that continuing efforts be made by SOPAC and the regional research community to establish a drought index for the Pacific.
- The group recommends the collaborative efforts of regional organisation and institutes to develop a vision for water in the Pacific. The group also recommends investigation into interest for a regional institutional strengthening and coordination meeting for the transfer of ideas, technology and programming between different regional organisations.
- The group recommends that steps be taken to reduce vulnerability to drought by Pacific Communities through the generation of public awareness material.
- The group noted the importance of alternative water supply technologies such as desalination. The group recommends to council that SOPAC develops the capacity to meet the information needs of the member states in this area.
- The Group noted the members of SOPAC receive assistance through bilateral and multilateral arrangements for the development and strengthening of their national hydrology and water resources activities. The Group therefore recommended that the Council requested members of SOPAC to provide the SOPAC Secretariat with information pertaining to such assistance and to keep SOPAC Secretariat informed to avoid duplication.
- The Group noted the potential of expertise in hydrology and water resources within the SOPAC region. The Group therefore recommended that

the Council requested SOPAC Secretariat to do an inventory of experts in this area.

Recommendations of Energy Working Group:

During the 29th SOPAC Annual Session – STAR Meeting the Energy Working Group (EWG) met on the 27th September, 2000, in Tarawa, Kiribati.

Eleven representatives attended the EWG from 9 member countries (PNG, Fiji, Tuvalu, Kiribati, Cook Islands, Tonga, Vanuatu, Nauru, including ForSec, SOPAC, SPC, SPREP, USP and a representative from the Shikoku Research Department (Japan).

1. Tonga was elected as the new chair of the STAR EWG.
2. The EWG recommended that STAR note and endorse the Regional Energy Meeting 2000 Report and specifically note the following points:

CSD9

Pacific Regional Submission to the 9th Session of the Commission on Sustainable Development (CSD9) - Paper endorsed and adopted by the REM2000.

Regional Energy Logical Framework Matrix

The draft matrix was adopted by the REM2000 - SPC to continue to coordinate the completion of the matrix in close collaboration with the Energy Working Group.

EWG – Regional Priorities and Activities

The paper was noted and the work agreed to by the REM2000 Delegates. The EWG to continue to develop the paper and to keep members informed of progress.

REM2000 – Summary Record

The meeting adopted the draft REM2000 summary record.

Next Meeting

The REM2000 recommended that future meetings be held on regular basis (2 yearly). The timing being flexible and dependent on the need to address regional and international issues. As appropriate, subsequent REMs should have a specific theme.

The Cook Islands was offered as a venue for the next REM.

3. The EWG noted the urgent need to provide technical information on "New Technologies" those in particular that are currently not technically and commercially proven (Hydrogen fuels, Energy PV solar/satellite, OTEC). The EWG recommended that STAR note the initiative and priority given to the identified new technologies and the proposal to provide technical papers
4. The EWG noted that SOPAC and FORSEC are currently preparing a regional position paper with regard to nuclear energy.
5. The EWG recommended that as "energy efficiency and conservation" was highlighted as a priority area for consideration and attention in the REM2000, attention be given to the development of a regional proposal. Funding for the proposal could be considered under the similar GEF arrangements that were being sought for the SPREP renewable energy project of "removal of barriers".
6. The EWG encouraged the member countries, CROP organisation and others (researchers) to seriously consider submitting papers to STAR 2001. A prime opportunity existed with the current emphasis on new technologies and the desire to gain additional knowledge.
7. The EWG noted the desire of members to meet on a regular basis (2 yearly) and that the proposal for the next REM in 2002. Venue: Cook Islands, funding: the need to source funding, Theme: possible - outcomes of PREA 2000. The EWG confirmed that as previously agreed between SOPAC / SPC, that SPC will take the lead role in the organisation of the next REM.
8. The EWG noted that the next Pacific Science Congress will be in Guam, 2001 and that the meeting will provide an opportunity for PICs to present papers.
9. In addition it was noted that the Energy Unit's staffing levels are marginal and require reviewing with the view to seeking the appointment of additional staff in early 2001.

Recommendations of the Coastal and Nearshore Processes Working Group:

The Working Group discussed the recommendations of the 1999 Working Group report in the light of issues that had arisen during the present STAR meeting. The group benefited from the presence of Robert Smith, who was able to report on developments during the year that related to the 1999 report.

There was considerable discussion on the continuing problems involving aggregate mining and mem-

ber of the group raised specific issues from their own experience. The consensus was that this was an issue that would need continued attention by the working group and that most of the recommendations from the previous year should be re-affirmed. In particular, there was concern that sources of aggregate be identified before projects are approved, in order to avoid the haphazard removal of material from inappropriate sites and the rapid depletion of limited resources. In addition, the group commented that it should be realised that in many cases it might not be possible to source aggregate for a development locally. The Working Group also discussed alternative sources of material, such as sediment deposited in deep water in a fore reef setting, that might be utilised without damage to the nearshore environment, and recommended that these be investigated.

The value of beach profile data and of the SOPAC training programs was shown both during the STAR presentations and from experiences related during the Working Group meeting. The continuation and expansion of these as far as resources permit was recommended.

With respect to remote sensing, the Group discussed various technologies introduced during the STAR sessions. The Group noted that there had been much progress on the acquisition of hardware and software for obtaining and processing multibeam and side-scan data, as recommended last year, but that there was still a need for sufficient software and training to take full advantage of the imaging capabilities of the multibeam data.

The Working Group discussed the proposal raised during STAR for an integrated and multidisciplinary study of one or more islands, to obtain a full and quantitative understanding of the sediment budget and dynamics. The Group agreed that such a study would be valuable to areas where problems are occurring. It recognised both the uniqueness of the Pacific region in general and each island in particular, and supported such an holistic approach. It was agreed that funding be sought to scope out the parameters for such a study. Further, as much relevant data must exist at SOPAC, the Group recommended that there be a project to update SOPAC's database of bathymetric and other data.

Finally, the Group discussed the involvement of students in thesis research in the region. Such research is cost-effective and provides valuable training. It was resolved to recommend that SOPAC continue to encourage the provision of "seed-money" for such research, and also that SOPAC be asked to provide information, if possible, to STAR on how much student research was undertaken in the region.

Recommendations:

In nearshore aggregates research the Coastal and Nearshore Working Group

- **recommends** that the ongoing strategic national assessment of nearshore aggregate resources and consumption in member countries, and post-extraction monitoring processes, continue. Prior to new "large" construction projects being approved, aggregate needs should be assessed and sources identified, and approval be assessed within the framework of other needs.
- **recommends** that the identification of alternative and environmentally less-destructive sources be pursued. These might include suction dredging of deeper water deposits in fore reef areas.

In coastal research the Coastal and Nearshore Processes Working Group

- **recommends** that the collection of beach profile data and the SOPAC training programs continue and be expanded to the extent that resources will permit.

In nearshore and general research the Coastal and Nearshore Processes Working Group

- **recommends** that sufficient software and training be provided to take full advantage of the imaging capabilities of the multibeam data being obtained.
- **recommends** that SOPAC continue to encourage the provision of "seed money" for post-graduate research in the region, and that if possible it provide to STAR details of the amount of such research being undertaken in the region.
- **recommends** that funding be sought to scope out an integrated and multidisciplinary study of one or more islands that would quantify details of sediment budgets and dynamics, and allow these data to be applied wherever coastal problems arose.
- **recommends** that, in conjunction with the previous recommendation, SOPAC's database of bathymetric and other information be upgraded.

Recommendations of the Geohazards/Tsunami Working Group :

1. The Working Group considered recommendation 1 from the 1999 Working Group report i.e. "A formal means of independent peer review for projects which have implications for legal liability, including some aspects of projects conducted by the Hazard Assessment Unit, should be established."

SOPAC advised that the completion report on the project, "Earthquake Microzoning in Capital Cities of the South Pacific" had been submitted for peer review with IGNS, NZ; the School of Engineering, University of Auckland; and, the School of Earth Sciences, Victoria University of Wellington and that the reviews are available for perusal. The report has been amended in accordance with the comments received from the reviewers and is now in the process of publication as a SOPAC Technical Report. The Working Group records a sincere vote of thanks to the reviewers for their helpful efforts.

Furthermore the Working Group discussed the issue of legal liability and it was concluded that it was appropriate that, as a general rule and for reports of all types, SOPAC investigate the implications of the inclusion of an appropriate statement that addresses this matter on the front page of each report.

2. The Working Group discussed a number of issues relating to recent tsunamis in the region, namely those in PNG (Sissano) and Vanuatu (Southern Pentecost). The Working Group noted several of the STAR presentations relating to these events.

The presentation by David Tappin suggested a probable mechanism for the Sissano event and also highlighted that evidence gathered during the surveys and from other sources indicated that a number of similar events had occurred in the recent past, and that a number of sites where future events could take place were identified. The Working Group considered that it may now be appropriate to develop a hazard mapping program for the region. A suitable vehicle exists in the SOPAC "Communities at Risk" program (CAR) but lack of funding thus far has limited significant work being undertaken.

Joe Buleka (PNG), advised that an unsuccessful funding proposal for bathymetric mapping for the Sissano region that had been submitted through SOPAC. Dr Kitazawa responded by indicating that he had also presented the proposal to funding agencies in Japan but without success. He suggested that a submission directly by PNG authorities would then receive a more favorable review.

The presentation by Andrew Moore outlined aspects of the effects of the Southern Pentecost tsunami and indicated the importance of a tsunami awareness program that was conducted prior to the event by the tsunami. Had this awareness program not been conducted the death toll would have certainly been much greater than it was. It was requested that the information and conclusions arising from this work be incorporated in the SOPAC DMU-HAU Community Vulnerability project for Pentecost.

Dr Kitazawa requested that consideration be given to the development of evacuation procedures for areas that are prone to such hazards. Alan Mearns indicated that it was the responsibility of the individual countries to prepare these types of procedures, but SOPAC Disaster Management Unit have agreed to investigate the preparation of a set of guidelines for use on a regional level.

3. The Working Group considered recommendation 3 in the 1999 Working Group report i.e. "The establishment of a Regional Centre for Applied Seismology within SOPAC be strongly endorsed." SOPAC advised that the matter of the establishment of the Centre was being investigated further, but at this stage donors were still being sought. Further action on this matter would continue during the next 12 months.
4. The Working Group considered the recommendations relating to Agenda items 8 (Regional Workshop) and 10 (Global Disaster Information Network) coming out of the 9th Pacific Regional Disaster Management Meeting held in Niue early in September 2000. The Working Group endorsed the recommendations put forward and noted that the links with the Asia-Pacific Working Group be strengthened.

Recommendations:

- The Working Group **recommended** that SOPAC investigate the legal implications of all reports, but in the meantime follow the lead of AGSO Cities Project by including an appropriate statement that addresses liability issues at the front of each report.
- The Working Group, in the context of the two major tsunami that have taken place within the region during the past three years (PNG in July 1998 and Vanuatu in December 1999) with the loss of over 2000 lives, **recommends** that:
- SOPAC recognises the importance to the region of the tsunami hazard and sets up a tsunami program in the Hazard Assessment Unit.
- that the overall program objectives are to identify tsunami prone areas and develop mitigation strategies and.
- in accord with this function SOPAC will identify and acquire data necessary to identify tsunami prone areas. This data to include multibeam bathymetry, seismic records, historical tsunami records, seismicity information, onland tsunami deposits, relevant tsunami simulations and tsunami reports and papers.

- while recognising the technological constraints in tsunami prediction, SOPAC develops a tsunami prediction capability based, where possible on existing prediction methodology.
- The Working Group **urged** the continued search for a donor for funding for the establishment of the Regional Centre for Applied Seismology.
- The Working Group **endorsed** the recommendations put forward in agenda items 8 and 10 at the recent 9th Pacific Regional Disaster Management Meeting in Niue and **recommended** that the links with the Asia-Pacific Working Group of GDIN be strengthened by participating and contributing to the working group. The project being based on the experiences and investigations surrounding the Sissano tsunami through a lessons-learned simulation exercise.

Recommendations of the PacificGOOS Working Group:

Steering Group Attendees:

1. PacificGOOS Activities

Background

Alfred Simpson [Chair] provided a background on GOOS and the initiatives that have been taken since the establishment of PacificGOOS.

- PacificGOOS Capacity Building Workshop, Suva 1998
- SOPAC-IOC PacificGOOS Coastal Workshop, August 2000, Apia
- Outlined PacificGOOS rationale for commitment to both GOOS themes- open ocean and coastal
- Identified that the recent resourcing of the Oceans Unit at the Secretariat will ensure progress of PacificGOOS initiatives

Status of GOOS Activities in the Region

USP provided a brief update on its GOOS activities and iterated its commitment and strong interest in PacificGOOS

- Pacific Node of GCRMN
- Partner in the Argo Capacity Building Project [yet to be implemented]

IRD provided a brief update on the initiatives in New Caledonia under the ZoNeCo Program and indicated that these are "GOOS" activities

Noted that PacificGOOS regional participants will be users of information and interested in capacity building

2. Regional Institutional Arrangements

Establishment of IOC-Perth Office

Will serve as a resource in PacificGOOS development

Establishment of GOOS Secretariat at SOPAC

- Agreed that the interim PacificGOOS Secretariat will remain at SOPAC
- Advised that signed GOOS related MOU's exist between IOC-SOPAC and WMO-SOPAC
- Noted the strong links that exist between CROP Agencies and the importance of fostering these partnerships.

External arrangements

- Noted the existing links between SOPAC and various ocean agencies and the importance of maintaining these
- Agreed that linkages with such organisations, who work in the region need to be maintained.

4. Future Initiatives for PacificGOOS

PacificGOOS Strategic Plan

- Agreed that the development and definition of a strategic plan for Pacific GOOS is required, as a matter of urgency
- Recommended the PacificGOOS Strategic Plan be drafted and circulated among all partners, for comment by early 2001.

GOOS Data Node

- Agreed that based on the expertise and capability of the SOPAC Secretariat in data handling, that the GOOS Data Node reside in SOPAC
- Noted that this will have some cost implications and will need to be considered
- Noted IRD's offer to host a SOPAC server, in either Montpellier or Paris. This arrangement will greatly improve connection speeds for data exchange

National GOOS Representatives

- Agreed that SOPAC Secretariat be the focal point between IOC and national governments in the region for GOOS issues, communications and initiatives and that national representatives needed to be identified

Workshops

- Stressed the importance of actively promoting the CoastalGOOS pilot projects proposed at the PacificGOOS Workshop in Samoa, August 2000
- Noted the generous offer from IRD to host a GOOS Workshop in New Caledonia [late 2002 - early 2003]. The workshop may coincide with a workshop on remote sensing

STAR

- Agreed that a STAR Working Group on PacificGOOS be formed at the 30th SOPAC Annual Session and that scientific papers for implementing GOOS be presented in the STAR forum. Also, intersession interactions need to be encouraged.

5. Other Matters

Establish PacificGOOS Steering Group Dialogue

- Agreed that the SOPAC Secretariat update GOOS mailing lists and disseminate information periodically to members of the Steering Group.

6. Next Meeting

Suggested that the Steering Group meet for at least one day in early 2001 to discuss the draft strategic plan and other GOOS issues

- Suggested that tele-conferencing might be used for the preliminary meeting
- Agreed that meetings could be convened without full attendance of the Steering Group.

7. Recommendations to the SOPAC Governing Council

The Working Group recommends the SOPAC Governing Council:

- Support the continued development of Pacific GOOS in the region and specifically the hosting of the Pacific GOOS Secretariat, by the SOPAC Secretariat.
- Assist in the development of GOOS pilot projects in the region such as those developed at the Coastal GOOS workshop held in Apia in August 2000.
- Note the Argo Capacity Building Project (SEREAD) and endorse its initiation, once it has been finalised.
- Note the generous offer from IRD to host a GOOS Workshop in New Caledonia [late 2002 - early 2003].

STAR CHAIR REPORT TO COUNCIL

Mr Chairman

Thank you for this opportunity to report on the activities of STAR during the past year. STAR is SOPAC's Science, Technology and Resources Network and it interfaces between the SOPAC Secretariat and PIC members of SOPAC and the international scientific community. It does this in several ways. Every few years, an international scientific workshop or meeting is either convened by STAR, or held under its auspices, on a broad theme relevant to the SOPAC region. The last such workshop, on ENSO effects, was held in Nadi in 1999.

Each year, a meeting at which scientific papers are presented and discussed, and thematic Working Groups meet, is held in conjunction with the Annual Session of the SOPAC Governing Council. This year, following the new arrangements introduced in 1998, STAR met from September 26th to 28th, prior to the opening of this Council Meeting.

During the STAR meeting, 41 scientific papers were presented orally, by poster or by abstract and these are recorded in SOPAC Miscellaneous Report 387. The eight sessions of oral presentations were chaired by John Collen, Keith Crook, Paul Taylor, Joe Buleka, Faatoia Malele, Bhaskar Rao, Gary McMurtry and Yves Lafoy. Papers were grouped into the themes of energy, hazards, environmental, technology, minerals, coastal and ocean observations.

As is the norm for these meetings, the research presented covered a very wide range. STAR took advantage of the preceding Energy Workshop to begin with a session devoted to this topic. Speakers presented papers dealing with aspects of energy efficiency and local power generation, and the head of SOPAC's

Energy Unit summarised the Energy Workshop that ran here last week.

Geohazards research was very strongly represented and during these sessions several papers summarised recent work on tsunami. Of particular note were data supporting the origin of the Sissano tsunami as the result of a submarine slump rather than faulting, techniques for dating marine sediments in areas affected by this slumping, and the effects of the November 1999 Vanuatu tsunami. The latter was a remarkable example of a situation where the severe loss of life that could have occurred was mitigated by public awareness of the hazard. Other papers explored aspects of volcanic hazard, including a successful interactive workshop held with the local community on Savo volcano in the Solomon Islands. The session ended with papers on disaster management and damage assessment in general. Discussion during this session suggested that extreme events may in the Pacific region be common.

The application of Information Technology permeated much of the meeting but the session specifically devoted to this covered the increasing availability of high resolution satellite imagery and the potential this brings to Pacific research, the development of GIS capability, and the computerised management of forestry production. Papers on minerals discussed the deep sea mineral potential of the Pacific region,

And also a recent survey of phosphate reserves and groundwater resources on Banaba Island by SOPAC.

The coastal papers were equally wide-ranging and included a discussion of airborne laser systems for the rapid determination of bathymetry. Landslides and slumping in relation to seismicity were described for the Lae area of Papua New Guinea. Coastal erosion problems resulting from beach mining in Tonga was another subject and finally a summary of our current knowledge, and lack thereof, of Pacific nearshore sediment systems was presented.

The formal meeting finished with a session devoted to ocean observing systems. The PacificGOOS Coastal Workshop held in Samoa in August of this year was summarised and a proposal for building capacity for the Argo drifting float programme was discussed. Observations from the TRITON buoy network were outlined, and the relationship of GIS/RS systems to all of this were described.

In addition to the scientific presentations, five working groups also met. These were the Energy, Geohazards, Ocean Observing Systems, Water and the Coastal and Nearshore Processes Working Groups. I will report briefly on highlights of their recommendations here and they will be further dis-

cussed during this meeting. Other Working Groups that have met in the past were not convened here because of the lack of persons with appropriate expertise.

The Energy Working Group recommended endorsement of the Regional Energy Meeting 2000 Report and noted several points, including that the REM2000 endorsed and adopted the Pacific Regional Submission to the 9th Session of the Commission on Sustainable Development, and adopted the draft Regional Energy Logical Framework Matrix. The Group noted the urgent need to provide technical information on "New Technologies", in particular those such as hydrogen fuels that are currently not technically and commercially proven. The Group further recommended that as "energy efficiency and conservation" was highlighted as a priority area for consideration and attention in the REM2000, attention be given to the development of a regional proposal.

The Geohazards Working Group discussed the legal liabilities of SOPAC's activities and recommended that SOPAC investigate the legal implications of all reports. It also recognised the importance to the region of the tsunami hazard and made several suggestions, including setting up a tsunami programme in the Hazard Assessment Unit. It also urged that funding for a Regional Centre for Applied Seismology continue to be pursued.

The Water Working Group reviewed the recommendations put forward in 1999 and further recommended that Council endorse the collaborative efforts of WMO and SOPAC in organising a follow-up workshop on ENSO-related events; make efforts to run hydrological training through SOPAC and USP; consider strengthening the Water Resources Unit of SOAC, which has staff shortages, and continue to maintain this Unit as a centre for the dissemination of information. They further recommended that continuing efforts be made to establish a drought index for the Pacific, and that through increasing public awareness steps be taken to reduce vulnerability to drought; that collaboratively regional organisations and institutions develop a vision for water in the Pacific; and finally that SOPAC develop the capacity to provide information on alternative water supply technologies to member states.

The Coastal and Nearshore Processes Working Group discussed the continuing problems involving aggregate mining, including examples from their own experiences. They reaffirmed most of the recommendations made by this Working Group in 1999. The Group also noted the importance of SOPAC's beach profiling data and training programmes, the value of which was demonstrated several times during the scientific sessions. Finally, the Working Group sup-

ported the suggestion raised during STAR that an integrated and multidisciplinary study of the sediment budget and dynamics of one or more islands be initiated, and recommended that funding to scope out the parameters for such a study be sought.

The Working Group on Global Ocean Observing Systems (or GOOS) recommended that Council support the development of PacificGOOS and that the interim PacificGOOS Secretariat be based at SOPAC, assist in the development of GOOS pilot projects, and endorse the initiation of the Argo Capacity Building Project once it has been finalised. IRD has generously offered to host a GOOS Workshop in New Caledonia in late 2002 or early 2003.

The STAR Business Meeting elected Faatoia Malele of the Meteorology Division of Samoa as Vice-Chair of STAR for the coming year, and I look forward to working with him. He replaces Saimone Helu who served in this role for a number of years.

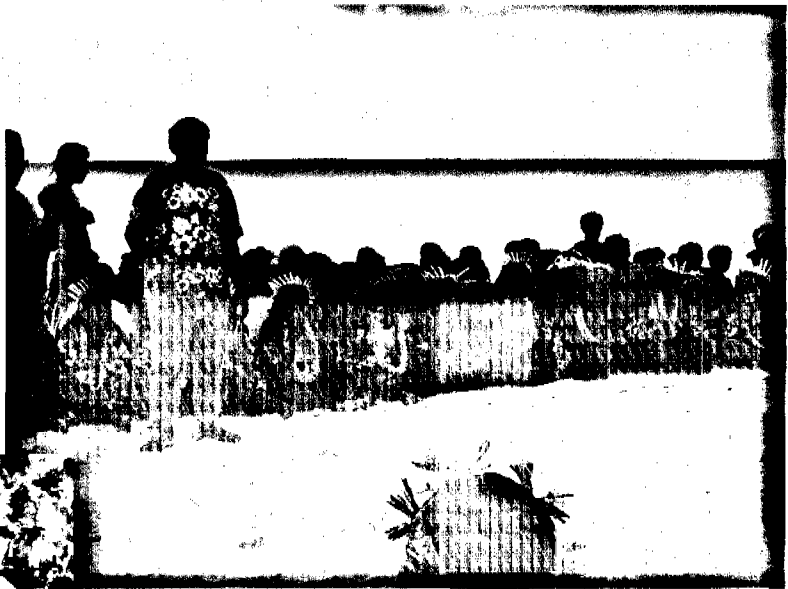
Finally, Mr Chairman, I would appreciate this opportunity to convey some personal impressions of this STAR meeting because there were three aspects of it that I found particularly notable. The first was the clearly applied direction to much of the research. This has always been a feature of STAR but is becoming more clearly articulated and was apparent

in every presentation. Secondly were the programmes aimed at building, or perhaps more accurately building on, community involvement and awareness. The Savo volcano workshop was an excellent example of this process and the reduction in lives lost during the Vanuatu Tsunamis clearly showed its value. My third comment is prompted by listening to some of the excellent presentations by SOPAC staff. It has become increasingly apparent to me that the work of SOPAC, important though it is to the region, is also potentially of great value to the wider scientific community. Those of us who are aware of this work can access it through SOPAC's publications but much of the scientific world is less informed. I would urge SOPAC staff to consider publishing the results of their work in international scientific journals or as books so that it reaches a wider audience and perhaps corrects some of the imbalances that we know of in the scientific literature. I know that everyone at SOPAC has full schedules but I for one, and I am sure that this goes also for my STAR colleagues, would be happy to assist in any way.

In conclusion and on behalf of the STAR delegates, may I thank the Government and people of Kiribati for the hospitality extended to us during our visit.

Thank you.

ABAIANG PHOTO ALBUM



APPENDIX 7

2001 WORK PROGRAM

1. RESOURCE DEVELOPMENT PROGRAM

HEAD 1.1 MINERAL RESOURCES UNIT

1. Objectives and Key Performance Indicators

Objectives

Provide technical assistance and policy advice on the sustainable management and development of onshore and offshore mineral resources

Key Performance Indicators

- Mineral master plans for Solomon Islands and the region
- Regional offshore and onshore mineral database for Solomon Islands, Vanuatu and Fiji
- Compensation policy for damages incurred through mineral development for Fiji
- Advisory assistance, mineral evaluation and assessment
- Offshore mineral policy developed for Papua New Guinea and blue print policies for the region (Fiji, Solomon Islands, Vanuatu, Tonga and New Caledonia)

2. Staffing

Positions	Donor	Status
Marine Geologist	RB	Secured
Offshore Geologist	Japan	Secured till 31 March 2001
Resource Economist	UK/ODI and Fiji	Secured
Senior Geological Technician	Australia	Secured
Petroleum Data Manager (Part-time)	Australia	Secured

3. Work Program

The following tasks have been deferred:

- CK1998.019 Manganese Nodule Strategic Plan
- FJ1999.010 Tuvalu Cost Benefit Analysis
- FJ1999.012 Mt Kasi Social Impact Study
- FJ1999.014 Natadola Resort Cost Benefit Analysis

SB1999.035 Pacific Tour for Minister of Mines of the Solomon Islands

SB1999.036 Legislation Review

VU1997.012 To conduct a geochemical survey using the Mobile Metal Ion technique (MMI) in assessing a precious metal deposit.

VU1999.005 Mining Tenement Management

Advisory Assistance for Mineral Development

Several member countries are now at various phases of mineral development. Investment for the development and exploitation of mineral resources can be extremely expensive and usually carries a high financial risk. Member countries have requested assistance with advice and specialist training in the following activities:

RT1997.002 Maintain and Establish Regional Deepsea Mineral Database & Mapping

Objective: To continue to maintain and expand deepsea mineral database.

Background: Deep-sea Mineral Databases and Mapping. SOPAC continued to maintain and expand deep-sea mineral databases (especially for manganese nodules, cobalt-rich crusts, metalliferous sediments and hydrothermal minerals) and compile and publish regional maps as required.

Outputs 2001: Conversion of the data to a more user-friendly and standard format to allow the incorporation of other existing data sets. There is also an urgent need to establish back-ups of all information as a precautionary measure against any loss of data.

RT1999.031 Master Plan of Environmental Impact Study on Deep-Sea Hydrothermal Deposits Mining

Objective: To establish a master plan for an environmental impact study on deep-sea hydrothermal deposits mining.

Background: As interests and concerns on environmental aspects of deep-sea mining emerge environmental impact studies on deep-sea hydrothermal deposits mining should be included in the next phase of the SOPAC/JAPAN cooperation program.

Outputs 2001: A proposal has been submitted to Japan for funding. If funding is secured, a master plan for an environmental impact study on deep-sea hydrothermal deposits mining will be developed.

RT1999.048 Madang Guidelines

Objective: Produce a set of guidelines as international standards for offshore prospecting and mining.

Background: Following the success of the offshore mineral policy workshop and formulation for PNG, the workshop strongly recommended that SOPAC produce a set of guidelines as international standards for offshore prospecting and mining. The Madang Guidelines, a set of recommendations arising from this workshop is currently under way.

Outputs 2001: Two volumes of the Madang Guidelines have been published. The reports are available at the SOPAC Library. The Madang Guidelines are a pioneering effort to ensure the sustainable development of mineral resources in the EEZ of nations of the world. Publication of Madang Guidelines and wide circulation of Summary and full publications in print and electronic form.

RT1999.049 Pacific Exploration and Technology in the Region

Objective: To produce a bulletin on papers presented at the PET Conference organised by SOPAC in 1998.

Background: A publication for international publication is also currently underway to publish the papers presented at the Pacific Exploration and Technology (PET) conference. The publication is being co-ordinated with Dr M. Petterson of BGS.

Outputs 2001: The bulletin is currently being edited by Dr Petterson and Peter Rodda. The bulletin will be published and widely circulated for the promotion of mineral sector of the region.

RT1999.095 SOPAC-Japan Deep Sea Co-operative Minerals Program

Objective: To coordinate the SOPAC-Japan Deep Sea Co-operative Minerals Program.

Background: Phase 3 of SOPAC-Japan Deep Co-operative Minerals Program has been on-going since 1995 and concluded in March 2000. During the period work has been undertaken in Tonga in 1995 (Tonga Ridge and East Lau Basin for hydrothermal deposits), Marshall Islands 1996 (Northern part for cobalt rich crusts, FSM 1997 area for cobalt rich crusts) Marshall Islands and FSM in 1998 (southern part for cobalt rich crusts) and in Fiji in 1999 for hydrothermal deposits. In early 2000 a new 3-year program was agreed to.

Outputs 2001: Reporting on Cook Islands cruise and completion of cruise in Fiji waters.

CK1997.001 Assessment of Manganese Nodule Development

Objective: Watching brief on metal prices and its impact on manganese nodule development.

Background: Some trillion tonnes of manganese nodules rich in cobalt occur in the Cook Islands EEZ. Currently, technology is not fully developed to enable the economic mining of these nodules. The Ministry of Marine Resources has requested SOPAC to keep a watching brief on the technology, market and the price of cobalt, nickel and copper.

Outputs 2001: A watching brief and its impact on manganese nodule development on metal prices will continue.

FJ1998.001 Assessment of Gold Potential at Nasivi - A Drilling Program

Objective: To test the potential of alluvial gold at Nasivi by drilling target identified in the geophysical survey.

Background: The Nasivi River delta holds good potential for placer gold due to its proximity to the Emperor Gold Mine. Previous work by exploration companies have also confirmed anomalous gold values in the area. A geophysical survey planned is expected to identify drill targets.

Outputs 2001: A drilling survey was conducted during the 13th of November to the 2nd of December 00. A technical report will be produced documenting the results of the drilling.

FJ1998.041 A Fair and Comprehensive Policy For Assessing

The Compensation Due To Landowners Through Costs Incurred In Mineral Development Can Reduce Friction Between Stakeholders And Help Achieve Sustainable Development In The Mining Sector

Objective: To develop a fair and comprehensive policy for assessing the compensation.

Background: A fair and comprehensive policy for assessing the compensation due to landowners through costs incurred in mineral development can reduce friction between stakeholders and help achieve sustainable development in the mining sector. SOPAC will continue working with the Fiji Mineral Resources Department to formulate a working compensation policy. That will include mechanisms to assess social, environmental and physical costs incurred through mining.

Outputs 2001: Peer review and assessment.

FJ1999.011 Gold Fabrication Industry for Fiji

Objective: Development of a gold fabrication industry in Fiji.

Background: This market would focus specifically on developing gold jewellery using traditional Fijian symbols of

cultural significance and stamped made in Fiji. The market focus would be the tourist consumer group.

Outputs 2001: Status report on the activities aimed at developing a gold fabrication industry in Fiji.

FJ1999.032 Fiji Offshore Mineral Policy

Objective: To develop a Fiji Offshore Mineral Policy

Background: Fiji has recently been approached to grant two offshore exploration licences in its waters. The present legislation in Fiji does not cover the offshore comprehensively. SOPAC has been chairing a committee with the Fiji government to develop an offshore policy. This policy is nearly complete after which it will undergo the stakeholder review process.

Outputs 2001: A draft Fiji Offshore Mineral Policy ready for expert comments and review during in-country workshop.

FJ2000.008 Fiji Offshore Mineral Policy Workshop

Objective: To develop a practical and international acceptable offshore mineral policy.

Background: A draft Fiji Offshore Mineral Policy is being completed (see task FJ 1999.032). A workshop is proposed to review the draft Fiji Mineral Policy and to address the issues of granting an offshore mineral-prospecting license in the waters of Fiji.

Outputs 2001: Workshop and draft offshore mineral policy for Fiji.

KI1997.001 Assessment and Market Study of Gypsum on an Ongoing Basis

Objective: Advise on gypsum development.

Background: Kiribati has known occurrences of gypsum. Recent assessment by SOPAC indicate that the gypsum deposits were not economic due to logistical constraints and the depressed market and price of gypsum. The Ministry of Environment and Natural Resources Development has requested that SOPAC keep a watching brief, should the market and price of gypsum improve.

Outputs 2001: Continue to keep a watching brief on the price of gypsum and report to Kiribati.

KI2000.004 Banaba Phosphate Assessment-Drilling

Objective: To evaluate the potential of remaining phosphate on Banaba by a drilling program.

Background: Mining of phosphate began on Banaba (Ocean Islands) in 1900. This ended in 1979 with a brief interruption in production during the Second World War when the island was invaded by Japan. Some 21 million tonnes of

phosphate has reportedly been extracted from the island. There are unsubstantiated claims that economic tonnages of up to 3million tonnes of minable phosphate material is present on the island. A prefeasibility study by Astro Pacific Corporation Ltd of New Zealand reports that there could well be some 2 million tonnes of phosphate rock available with 1 million tonnes of unmined areas and 1 million tonnes in earlier workings. Unmined areas include roads, buildings etc covering some 10 percent of the total land area of 595 hectares. Earlier workings include areas of partial mining and low-grade areas which were not mined previously. Additional secondary phosphate may also exist in lower depths that are yet to be tested.

Outputs 2001: An-assessment report on the potential of remaining phosphate on the island of Banaba.

PG1999.038 Offshore Mining Policy

Objective: Provide a regional advisory service or a forum for the development of minerals and mining legislation, particularly offshore mineral legislation.

Background: During the last two decades of ocean exploration, some 140 sites of mineral deposits have been discovered on the ocean floor in different geological settings and at different water depths. The mineral deposits of the ocean floor are polymetallic sulphides (PMS), in spreading zones and on top of seamounts, manganese nodules on abyssal plains, manganese crusts on the flanks of seamounts and ocean islands. Polymetallic sulphide deposits usually contain high and potentially rich economic concentrations of zinc, copper, lead, barium, silver, and gold, while manganese nodules contain high values of cobalt, nickel, iron and manganese. Some deposits, particularly those in heavily sedimented environments, are several millions to tens of millions of tonnes in size and compare with some of the largest so called massive sulphide deposits that are being mined on land. With the exception of one deposit, Atlantis II Deep (94 million tonnes) in the Red Sea that was tested for mining by Sudanese and Saudi Arabian governments in the 1970s, none of the deposits have been tested. The technology for development and recovery of the ore from the sea floor are yet to be developed and environmental concerns have not been adequately addressed.

Outputs 2001: This is an advisory assistance and is an ongoing task.

SB1997.013 Advisory Assistance for Mineral Development - Gold Ridge

Objective: Advise and assist in the promotion and development of mineral potential and provide specialist training.

Background: Gold Ridge prospect is currently reaching a phase of development. Ross Mining N.L has submitted to Government a feasibility study and the Solomon Islands will need all the assistance it can get in the negotiations with the mining company for mine development.

Outputs 2001: This is an advisory assistance and is an ongoing task

SB1999.032 Assist in proposal for Aeromagnetic Survey

Objective: To assist the Solomon Islands Government with a funding proposal to carry out an aeromagnetic survey over the entire Solomon Islands.

Background: Aeromagnetic surveys are one of the most cost-effective tools for identifying mineral targets for exploration. Solomon Islands, located in the Pacific Rim of Fire and neighbouring PNG has a huge potential of hosting large mineral occurrences. Aeromagnetic survey have been very successful in identifying new and confirming known mineral deposits in Fiji and in Vanuatu.

Outputs 2001: This task has been postponed. Awaiting a more favourable climate for funding submission

SB2000.004 Solomon Islands Offshore Mineral Policy

Objective: To develop an Offshore Mineral Policy.

Background: Recent interest in the development of offshore mineral deposits in PNG, Fiji and Tonga, has prompted the request of developing an offshore mineral policy for the Solomon Islands. Solomon Islands has known offshore hydrothermal activity in the country's EEZ.

Outputs 2001: Draft Solomon Islands offshore Mineral Policy.

VU1999.002 Promotional Pamphlet for the Mining Sector

Objective: To develop Promotional Pamphlets for the Mining Sector.

Background: Vanuatu has significant mineral development potential but requires promotion to attract investors. Recently numerous major gold occurrences have been identified in Malekula and Espiritu Santo. The results of these findings and the geological potential of Vanuatu require wide publicity.

Outputs 2001: A coloured and fully glossed report ready for printing and circulation.

TO1999.031 Mineral potential Assessment of Eua

Objective: To assess the mineral potential of 'Eua

Background: Tonga lies on the "rim of fire" and has mineral potential. Several of the volcanic islands show indications of mineral showings and has yet to be assessed. Mineralisation has been reported in the volcanics in Eua Island. A reconnaissance visit to assess the potential of mineralisation is required

Outputs 2001: Mineral assessment

VU1998.043 Housing Aeromagnetic data

Objective: To house aeromagnetic and safekeep data for Vanulu

Background: Airborne Geophysical Survey was initiated by the Government of Vanuatu and funded by the Government of Australia through the Australian Agency for international Development (AusAID). The survey was managed and supervised by the Australian Geological Survey Organization (AGSO) and flown by the World Geoscience Corporation Limited in December of 1994.

Outputs 2001: Housing aeromagnetic survey at SOPAC

SOPAC Petroleum Data Bank

Objective: Storage of SOPAC data at AGSO

Background: The decision to store the SOPAC data at AGSO was made in 1988.

The data sets in most cases are original and cannot be replaced without at the very least the expenditure of large sums of money. The data is stored at two locations in Canberra.

Outputs 2001:

- Continue the digitising of the brochures and catalogues. (Dependent on funding.) Continue to run the data bank to provide information on petroleum prospects as requested.
- Retrieval of seismic tapes, maintaining availability, and updating of data for hydrocarbon assessment and promotion of data packages to the oil industry.
- Making available data in the form of seismic tapes, transparencies, reports and maps to petroleum exploration companies, consultants etc. and advertising through the distribution of brochures.

HEAD 2.2 WATER RESOURCES UNIT

1. Objectives and Key Performance Indicators from the Strategic Plan

Objectives

Provide technical assistance, policy advice and information on the sustainable management of water resources, waste, health and sanitation

Key Performance Indicators

- 50% reduction in water wastage in 4 member countries (Solomon Islands, Tonga, Tuvalu and Kiribati) to relieve stress on existing water resources

- Safe sanitation facilities demonstrated in 4 member Countries (Fiji, Marshall Islands, Tonga, and Tuvalu)
- Water resources databases established in 4 member countries (Vanuatu, Samoa, Solomon Islands, and Tonga)
- Water Sector Action Plans for 6 member countries (Tuvalu, Kiribati, Vanuatu, Solomon Islands, Tonga, and Niue)
- 3 workshops on water resource management and in-country training

Positions	Donor	Status
Unit Head	UK/DFID	Approved (on hold)
Water Resources Engineer	Canada/CUSO	Secured to November 2001
Hydrologist	UN Associate Expert	Secured
Hydrogeologist	Canada/CUSO	Probable
Sanitation Officer	Various	Probable (Secured to 31 January)
Project Assistant	Various	Secured to 28 February 2001

3. Work Program

Water Demand Management

MH1999.001 Demand Management and Conservation Project

Objective: The goal of the project is to reduce wastage of freshwater through good demand management and conservation practices by water suppliers and water users in the Marshall Islands.

Background: The lack of sustainable freshwater and increasing demands on freshwater resources have been identified as amongst some of the primary constraints to development of the South Pacific (Reference: Forum Secretariat Regional Strategy Document 1997). Currently in the order of 50% of the water that does reach the user a significant proportion is wasted through poor usage practices.

The Marshall Islands has identified leak detection as their priority in tackling the problem of excess water loss. Taking this approach saves both vulnerable water resources and spares over worked water infrastructures.

Outputs 2001: A trip focussing on leak detection in the Majuro water supply system is planned for early 2001. This will also involve the collection of other relevant baseline information on the Majuro water supply system.

NU2000.003 Pipe Detection Survey and MapInfo Training

Objective: To complete pipe detection surveys for the remaining villages of Niue not previously surveyed and compile all information into the pre-existing Water Utility GIS. Provide MapInfo training to a member of the Niue Water Section.

Background: In a previous visit by a WRU member of staff, pipe surveys of 5 out of 13 villages in Niue were performed

and all information collected input into a GIS for use in the management of Water Utility assets by the PWD Water Section. This new task is a follow on from that visit is currently pending funding. This work was performed as part of the NZODA Water Demand Management Project. The creation of a complete GIS database of all Water Utility assets is a vital management tool for that organisation. It will enable better management, maintenance, collection and storage of information about the water distribution network. This is a new task proposed by member country contacts for work to be undertaken.

Outputs 2001: Trained Water Utility staff member in use of MapInfo software, pipe detection surveys for the remaining villages of Niue, a completed GIS of all Water Utility assets and additional collection of information important to the Water Section of the Niue Public Works Department including water quality and water demand.

WS1999.001 Demand Management & Conservation Project

Objective: The goal is to reduce wastage of freshwater through good demand management and conservation practices by water suppliers and water users in selected Pacific island countries. This would in turn make more water available for the environment enhancement and for future generations.

Background: The lack of sustainable freshwater and increasing demands on freshwater resources have been identified as amongst some of the primary constraints to development of the South Pacific (Reference: Forum Secretariat Regional Strategy Document 1997). Currently in the order of 50% of the water that does reach the user a significant proportion is wasted through poor usage practices.

Through efficient demand management and conservation of water supplies, pressure on freshwater resources will reduce thus making more water available for other development or for future use. The actual savings to the operational budgets of small island economies will also be significant. By taking less out of already stressed water sources the environment benefit as well.

Outputs 2001: Enhanced reliability of existing water supply systems, reductions in water usage and water losses and enhanced future access to supplies.

VU2000.001 Hydraulic Training for the Department of Rural Water Supply (DGMWR)

Objective: Two members of staff from the Department of rural water supply are to achieve familiarity with the basic hydraulics required to design rural water supply systems.

Background: As part of the NZODA funded Water Demand Management project WRU visited Vanuatu in September 1999. The field trip provided background basic hydraulics required to fully understand and design small rural water supply systems for the department's technicians. The WRU field trip coincided with a training assessment mission for the department funded by NZODA. The Consultant saw good opportunities for SOPAC to provide efficient training

on basic hydraulics to the department for its established competence in the area. In November 1999 his report was accepted and a training schedule suggested. Rural Water Supply agreed in January 2000 to the proposed time schedule. The first four one month hydraulic training sessions was carried out in April this year. The training consists of two courses a beginner and an advanced course that will be given to two members of the Vanuatu Rural Water Supply. The next training session is scheduled for later this year.

Outputs 2001: Completion of the second two 4-week advanced training courses in hydraulics and water supply system design.

TO2000.004 PVC Pipe and Leak Detection

Objective: To confirm the existence of water distribution pipes in the Nuku'alofa water supply network. To detect leaks and reduce water wastage from this network.

Background: Tonga has one of the highest percentages of unaccounted for water loss of all Pacific Island Countries. In islands where water resources are limited such wastage is unacceptable. It creates the perception that there is a shortage of water and that the infrastructure is insufficient to deliver the amount of water that is demanded. However, the actual demand has been artificially inflated by this excess loss. Detection of water main leaks and their subsequent fixing would significantly reduce stress on this limited resource and established infrastructure. The establishment of correct pipe distribution network records is also an invaluable management tool for any water utility. Currently, there are some mystery pipes indicated on the Nuku'alofa Master Plan that need to be verified.

Outputs 2001: Verification of the several areas of the Tonga water distribution network records that are thought to be questionable, reduction in the amount of water lost from the Tonga reticulation system and reduced stress on water resources are the expected outcomes for this project.

VU1999.026 Water Demand Management (Follow-up)

Objective: Sustainable water supply to rural areas.

Background: Vanuatu experienced various water problems in the past. The large amount of unaccounted for water and a lack of trained engineers has been identified as the major reason for the problems. The task will, in co-operation with other agencies such as NZODA and WHO, provide hydraulic training as well as training in the reduction of leakage. Project is currently deferred pending funding approval.

Outputs 2001: The continuation of hydraulic training and country visit as required.

Water Resources Assessment

KI1999.050 Conversion of Pumping Systems

Objective: Improved water supply on outer islands.

Background: Recent success of an UN project that installed Solar Pumping Systems on outer islands encouraged the Kiribati Government to seek assistance with replacing older and inefficient handpumps with a different locally produced pump called Tanena Pumps. SOPAC WRU was asked to implement the project. The project is currently deferred pending funding.

Outputs 2001: Comprehensive analysis of replacement needs and implementation plan with a detailed budget.

TV1999.002 Standards for Roof Catchments

Objective: Tuvalu Government has updated their regulation on roof catchments.

Background: Recent variations in rainfall patterns lead to a dramatic shortage of drinking water in Tuvalu and finally to the declaration of emergency. The task will review current regulations for rainwater catchments in Tuvalu and test existing sizing practices of rainwater catchments applying various stochastic and determined methods. It will also provide an inventory of existing catchment facilities using GPS/GIS technology.

Outputs 2001: Work is currently under way to review the pending rainwater catchment legislation with a trip planned early 2001 for the water utility GIS asset surveys. A review of government regulations for roof catchments in Tuvalu will be performed to determine if the existing regulations are feasible.

MH1998.001 Groundwater Protection for Majuro

Objective: Laura freshwater lens is sustainably utilised and managed.

Background: Small atolls have a groundwater potential depending on the size of the island and amount of recharge (precipitation). This limited resource must be carefully managed in order to avoid the intrusion of seawater in the aquifer. Laura, which currently supplies freshwater to the public water supply is being developed thus threatening its quality. Investigations to protect this source of freshwater are required.

Outputs 2001: Further surveys and the development of a monitoring program to help in the creation of a Laura Groundwater Protection Plan will be performed.

MH2000.003 Groundwater Solar Pumping Assistance

Objectives: Improve water supply in the outer islands and review of groundwater solar pumps in the outer islands.

Background: Rural areas have been provided with water supply systems in the past years. To improve on the increase in demand on freshwater resources solar pumps has been encouraged to assist groundwater supply. This new task was recently proposed by member country contacts.

Outputs 2001: Proposed projects for assistance of groundwater solar pumping.

NR1999.001 Develop Water Resources and Water Supply Master Plan

Objective: Nauru Government has reliable data to plan future developments with respect to the availability of freshwater.

Background: A recent vulnerability study on climate change produced by SPREP states that the water resources on Nauru need specific attention to avoid climate change related constraints in Nauru's economical development. The existing master plan on water supply and water resources was produced in 1990. Since then development have occurred affecting water sector issues. Thus a review of the existing plan is required.

Outputs 2001: A visit to Nauru is planned for later this year to discuss water sector issues with all relevant stakeholders and to assist water sector staff in developing a revised Master Plan. This task will be carried out in conjunction with task NR 99.046.

SB1999.001 Review of Existing Water Policy and Legislation

Objective: Assist in updating a draft national water policy and associated legislation.

Background: Attempts to establish a water legislation was initiated in 1987 by UNDP but to date has not been fulfilled. A draft document exists. However it needs to be reviewed. Noting that SOPAC are not experts in preparing legal documents, the Solomon Island Governments has requested SOPAC to review the draft providing advice based on its regional experience in the waste sector.

Outputs 2001: A draft water policy and legislation document

CK1999.008 Outer Island Groundwater Monitoring

Objective: Review and monitor the groundwater of outer islands in Southern Cook Islands.

Background: In the past successful drilling programs have been carried on volcanic islands in the Southern Cook Islands including the islands of Makatea, Atiu, Mauke, Mitiaro and Mangaia 1982 by an NZODA funded project. Drilling has also occurred in Aitutaki through an Australian funded drilling program with Mr. Tony Falkland. SOPAC has been approached to carry out a review of data available from these projects as a means of monitoring their efforts. This is currently a proposed task and no activity has been carried out to date with funding yet to be identified.

Outputs 2001: A report compiling all existing data.

FJ2000.019 Integrated Drought Mitigation Project

Objectives: Provide good management of water resources in Fiji through a joint project with FAO/CTAD/SOPAC.

Background: Constant water supply is important, Fiji has a reliable source of groundwater, but seasonal drought in rural areas has caused limit to water supply. Good management of water resources is required to eliminate this problem.

Outputs 2001: Identify drought areas, Development of secured basic water supply to these problem areas.

FM1999.002 Rural Water Supply Assistance

Objective: To develop community based wise water management practices for rural water supply and to investigate the upgrading of existing rural water supply schemes.

Background: Recent work in FSM identified that further assistance to rural areas in water supply was still required. Many rural areas currently have inadequate water supplies, or supplies that do not function efficiently due to inappropriate user practices.

Outputs 2001: A program for community based wise water management practices assessing the problems facing rural water users and proposing solutions. Preparation of feasibility and design reports on future water schemes that were investigated.

NR1999.046 Monitoring of Groundwater Wells

Objective: To examine the potential of existing groundwater wells for water supply use.

Background: Nauru's current water supply almost entirely relies on desalination. The Nauru Government realises the need for more freshwater as part of its development plan. It is believed that existing groundwater wells could significantly supplement existing freshwater sources.

Outputs 2001: The Nauru Rehabilitation Corporation has recently planned the drilling of a series of bores into the fresh water lenses under the island including two production bores and two monitoring bores. Also pumping tests are planned to obtain yield results of the lenses and develop a water model and testing regimes for the long term monitoring of this resource. Associated with the drilling project SOPAC will provide assistance to the development of a monitoring program for the groundwater wells on Nauru.

VU2000.002 Groundwater Assessment (GRA) for the Bouffa Area. Efate

Objective: DGMWR staff is able to undertake similar assessments without further support from outside.

Background: OPAC WRU staff has visited Vanuatu in September 1999 and November 1999 to work with DGMWR staff in different projects. At this time Bellevue Estates Ltd. Approached DGMWR with the request to assess their groundwater resources in the Bouffa Area that provide the drinking water supply for the estate.

Preliminary discussions were held and a cost estimate produced. On 18 February 2000 DGMWR requested the groundwater resources assessment officially. It was agreed that the proposed assessment should be used as a "hands-on" training exercise for DGMWR staff. This task is to be carried out in conjunction with IIRD VU 1998.015.

Outputs 2001: Depending on when funding approval comes through, in field activities and training will be carried out in 2001.

VU1998.025 Hydrological Baseline Studies (HBS)

Objective: Baseline hydrological and water quality data of selected streams that drain catchments where future mining activities may occur are known.

Background: Mining activities are often detrimental to the downstream environment but is hard to prove without knowing the state of the environment before the mining began. Thus by knowing the initial natural conditions of stream flow regimes and water quality any changes may then be associated with developments within the catchment. SOPAC assistance was requested by Dept of Geology, Mines and Water Resources and funded by AusAID.

Outputs 2001: A continuation of the hydrological baseline surveys is expected in cooperation with the relevant Vanuatu water authorities. This activity stems from damage that occurred to water infrastructure in areas affected by the recent earthquake. Rehabilitation of earthquake damaged water supply systems is to be achieved.

CK1999.003 Groundwater Monitoring of Rarotonga (III Phase)

Objective: To assess the potential of groundwater resources in Rarotonga for future water supply.

Background: On Rarotonga the existing water supply is served by a double ring-main distribution network which is fed by the capture of surface water catchments installed on the main streams of the island. The total demand includes domestic and commercial water requirements, agricultural applications (including irrigation of market gardening) and, it is suspected significant wastage through a leak-prone distribution network. During drought periods demand increases while the supply falls and it becomes difficult or impossible for the system to satisfy all existing uses. Groundwater potential in the coastal plain has been assessed in the II phase of the project (SOPAC Technical Report TR 259). This previous work needs to be supplemented by longer term monitoring system.

Outputs 2001: Report on groundwater quality and quantity and implementation of appropriate guidelines for its use.

CK1999.004 Leak Detection Assessment for Rarotonga

Objective: Overall leakage of the Rarotonga water supply system reduced by 50%.

Background: The Rarotonga water supply system has a severe leakage problem. That has been addressed by several agencies in the past. However, currently MOWEPP Water Works is not able to direct their resources to their efficient use because of the lack of reliable information on the system network.

Outputs 2001: A completed geographical information system and hydraulic model of the Rarotonga network.

CK1999.007 Improving Access to Freshwater Springs in Mangaia

Objective: Improved access to freshwater on Mangaia Island and trained staff to develop freshwater springs.

Background: During recent droughts the population of Mangaia has experienced water shortages. The Ministry of Outer Island Development (MOID) has approached SOPAC to assist them with the assessment and development of known freshwater springs on the island. The Village of Oneroa is located on the island of Mangaia in the Southern Group of the Cook Islands. There are three villages on the island, namely Oneroa, Ivirua and Tamarua with respective populations of 614,256,213 a total of 1083 (1996 Census) for the island. The current water supply system in Oneroa Village includes reticulated surface water from streams and rainwater off roof catchments from community and private water tanks. The island was severely affected by the 1997/98 drought, which caused about 90% of taro planting activities to be abandoned. The drought also caused intermittent supply of reticulated water to Oneroa Village. It was decided to utilise the Vairoronga freshwater spring to supplement domestic water supply. Towards the end of 1998, water from the spring was being transported to all three villages. The spring was never dry during the drought period. The spring protrudes through the beach rock into a small pond (4 square metres approx. in area), is about 15m from low sea level mark, and about 1.0m amsl.

Outputs 2001: During a mission planned early 2001 freshwater springs on Mangaia will be mapped and an assessment will be made of the existing water supply systems. An implementation plan will be designed for the sustainable development of the groundwater resources on Mangaia.

CK2000.009 Rehabilitation of Slow Sand Filtration Units

Objective: Rehabilitation of existing slow sand filtration units that currently operate ineffectively to treat the Rarotonga water supply.

Background: The water supply in Rarotonga comes from several inland stream intakes. The majority of these intakes have some kind of water treatment provided by slow sand filtration units located near the intakes. Operation and maintenance of these units has been neglected to the point where they hardly function properly. Water quality is an issue in Rarotonga, as the PWD Water Works advises users to boil their water before drinking. Properly designed, operated and maintained filtration units could improve the quality of the water supply in Rarotonga. This is a new task for review by member countries.

Outputs 2001: Improvement in water treatment and water quality, design and implementation of rehabilitation for existing filtration systems, designs for water treatment systems for untreated water supplies in Rarotonga and creation of appropriate water quality standards and testing methodologies for the Cook Islands.

TO1999.040 Hydrological Program

Objective: Tonga Water board monitors and controls freshwater quality and hydro-hydrogeological parameters on Tongatapu.

Background: The task will implement a hydrological program in Tonga in co-operation with a similar initiative supported by NZODA. In detail it will fund the purchase and set-up of hydrological equipment, develop data storage and handling capacity and the evaluation of such data. Emphasis will be also given to develop the human resources to sustain the project. It is anticipated that the task will be supported over five years. The task is still subject to the approval of the GEF funds to SOPAC.

Outputs 2001: 8 monitoring stations for hydrological and hydrogeological parameters.

WS1999.006 Groundwater Manual

Objective: To prepare a Groundwater Manual to provide guidelines for groundwater development and management appropriate to Pacific Island countries.

Background: The Samoa Water Authority has requested SOPAC's assistance in the development of a Groundwater Manual covering issues such as siting and design of boreholes, drilling, borehole development, pump testing, pump sizing and controls, standard details, commissioning, monitoring etc.

Outputs 2001: A draft manual will be prepared and circulated for comments.

WS1999.032 Hydrological Program

Objective: Apia Observatory monitors water quality and hydro- hydrogeological parameters on main islands Upolu and Savaii.

Background: The task will implement a hydrological program on Samoa in co-operation with a similar initiative supported by NZODA. In detail it will fund the purchase and set-up of hydrological equipment, develop data storage and handling capacity and the evaluation of such data. Emphasis will be also given to develop the human resources to sustain the project. It is anticipated that the task will be supported over five years. The task is still subject to the approval of the GEF/International Waters funds to SOPAC. The initiative from NZODA with the assistance of a Technical Officer from NIWA resulted in a three weeks training for staff at the Observatory and installation of 4 monitoring stations and software for hydrological parameters. Another visit by the NIWA Technical Officer is planned after a period of one year.

Outputs 2001: Pending on the approval of GEF funds SOPAC will monitor the achievements of the hydrology division and provide assistance where possible.

RT2000.001 Remote Sensing of Water Resources

Objective: A method to locate additional fresh water resources on isolated Pacific islands using remote sensing technology has been developed for the selected areas of investigation on small islands in the Fiji- and Cook Islands-Archipelago.

Background: Remote sensing has been used for a wide variety of purposes in geoscience research and exploration. Among these purposes are the classification of ground cover and its application to water resources research. Landsat data and airborne photographs are only two of several remote sensing systems that are available to study water resources. In this study, such systems will be utilized for fresh water exploration on small remote islands. One of the advantages of remote sensing is the opportunity to obtain data on areas that are difficult or costly to access, which is particularly true for Pacific islands, because they are characterized by vast distances separating them, hardly accessible land surfaces, and only a very modest amount of recorded hydrologic data. The Austrian Research and Testing Center Arsenal currently applies remote sensing as an essential part of its ground water resources exploration activities. In 1995-97 the ARTC Arsenal has realized a research study „Application of remote sensing to hydrology“ funded by the Austrian Ministry of Science and Transportation. This study will be carried out in co-operation between ARTC Arsenal, South Pacific Applied Geoscience Commission (SOPAC) and the governments of Fiji and the Cook Islands.

Outputs 2001: No activity this year. This project is cancelled due to a lack of funding.

RT2000.041 Development and Use of Drought Indices for the Pacific Region

Objective: Increased use of the Drought Index method to take appropriate action to mitigate the effects of ENSO related hazards.

Background: The coupling between the atmosphere and the ocean in the tropical Pacific produces cycles in which the eastern and east central sea surface temperature is significantly warmer than normal (El Niño) followed by periods in which the sea surface temperature is markedly colder than normal (La Niña). This cycling is known as the El Niño-Southern Oscillation (ENSO). ENSO is now recognised as having a profound influence on extreme rainfalls and droughts, hurricanes and monsoon failures, not just in the Pacific, but in a wide band around the world. The 1997-1999 ENSO event, in particular, had devastating impacts throughout the Pacific Region. This event caused severe droughts in the North and South Pacific while the following 1998-99 La Niña event had similar, major impacts on the Central Pacific.

During long droughts, shallow groundwater, directly recharged by rain (Falkland, 1999; White et al., 1999a) is

frequently the only potable water source for many small island nations. This resource is vulnerable to salinisation by seawater intrusion due to overextraction in dry times (Falkland, 1999). In addition the social and cultural issues surrounding groundwater use are complex (White et al., 1999b). National emergencies or states of disaster are frequently declared (droughts occur about one year in six in some countries) when raintanks run dry and domestic wells become saline. It is essential that small island nations have more proactive strategies that analyse developing dry conditions and promote appropriate water conservation measures.

Preliminary work has been undertaken to examine methodologies using the example of Tarawa Atoll, Republic of Kiribati as a SOPAC/UNESCO-IHP case study (White et al., 1999a). This was based on work which examined drought in Australia (Smith et al., 1992) and on results from stochastic models weather models which use ground-based data (Hutchinson, 1995). The work offers promise of providing a simple, easy to use system which, not only analyses quantitatively the severity of developing droughts but also appears to provide a system of predicting the onset of severe droughts with a warning time of up to 6 months and a better than 50% success rate. This new task on research on Drought Indices is proposed in the form of a joint project by the Water Research Foundation of Australia, SOPAC and various other specialists from Pacific Island Countries and is also pending awaiting funding.

Outputs 2001: Organise a drought index workshop for Meteorologists/Hydrologists from Kiribati, Marshall Islands, Samoa and other Pacific Island Countries. Collaborate with the Water Research Foundation of Australia and various other specialists from Pacific Island Countries. The project proposes to organise a five day regional workshop where the knowledge and outcomes of studies on drought indices can be disseminated to meteorologists, hydrologists and other people involved in the water sector.

Water Supply, Sanitation & Hygiene

RT2000.028 Promoting Sustainable Management of Waste Water and Storm Water

Objective:

- (a) Improve management and availability of water resources.
- (b) Avoid further degradation of water bodies and the marine environment.
- (c) Improve knowledge and skills of administrators and decision makers in developing countries and countries in transition to enable them to do (a) and (b).

Background: SOPAC will collaborate on the preparation of a regional overview on the Pacific small island developing states (SIDS) for the Source Book on Environmental Sound Management of Waste Water and Storm Water with the International Environmental Technology Centre (IETC). The source Book would help to disseminate the practice of Adopting, Applying and Operating ESTs on Waste Water

and Storm Water Management amongst countries and governments of developing countries and countries with economies in transition. It would also form the basis for the training modules to be utilised to train and educate decision makers in the relevant countries.

Outputs 2001:

- (a) Improved knowledge base reflected in IETC EST Information Systems and, for example, an International Source Book on Environmentally Sound Technologies for Waste Water and Storm Water Management, and a publication containing: i) selected in-depth case studies from both developed and developing countries of innovative and cost effective technologies for environmentally sound urban waste water and drainage systems; and ii) sound practices, including indigenous/endogenous technology options, which can be applied by developing countries;
- (b) Training modules for use by organisations conducting training courses in the respective field of waste water storm water management or by organisations implementing investment programs in waste water projects.
- (c) Information fliers (translated to several UN languages) prepared to enhance awareness of local government officials on waste water and storm water issues and on available information sources and appropriate technologies to address these urgent problems and
- (d) A pilot training course to examine the effectiveness of the training modules.

MH2000.004 Sanitation Assistance for Outer Islands

Objectives: Identify sanitation problems that exist in outer islands.

Assist in improved development and awareness of the rural sanitation sector.

Background: Sanitation issues have often been neglected in rural areas leading to related disease and poor health. Awareness in the importance of personal hygiene and disease is always needed to improve health. Pollution of water resources caused by inadequate disposal of wastewater has been attributed to water-borne diseases. This new task has recently been proposed by member country with no activity undertaken to date. And could possibly be a follow on task to the Small Scale Wastewater Treatment Plant Project

Outputs 2001: Improved sanitation issues in the outer islands. Develop community-based awareness for sanitation.

TO1999.036 Popua Rehabilitation Project

Objective: Improved health for the population of Popua.

Background: Popua is a resettlement area in Nuku'alofa that experiences various problems because of its low elevation (approx. at sea level). Even minor rainfall events create inundation of the area spilling contents of poorly constructed septic tanks all over the area. In the past that

has created outbreaks of typhus and other water borne diseases. The task aims at extending a successful composting toilet project from Hapaii to Popua. This is also a follow-up to the Small Scale Wastewater Project funded by NZODA in 1999 but is currently deferred pending funding.

Outputs 2001: The installation of 20 composting toilets and hybrid toilets. The rehabilitation of the Nuku'alofa Hospital wastewater treatment plant.

TO1999.039 Sanitation Demonstration Project

Objective: Demonstration project has successfully reduced land-based pollution of marine resources.

Background: In the past, many rural areas were provided with some kind of water supply system. The availability of water leads to wider spread use of flush toilet systems. These systems mainly use simple toilets to discard the waste water either directly into the porous underground or into simple holes. At the same time many villagers still supplement their water supply from shallow wells which are often located in the direct neighbourhood of the toilets. Even if landowners consider the possible contamination of their well through their own toilet and locate them widely spaced they often cannot avoid the location of their neighbour's toilet. With the ongoing development of tourism centres in remote areas or on tiny islands pristine environments are exposed to contamination from wastewater. It is expected that the promotion and proliferation of small scale wastewater treatment plant technology can contribute to the solution of these problems. This is also a follow-up to the Small Scale Wastewater Project funded by NZODA in 1999. The task is still subject to the approval of the GEF funds to SOPAC.

Outputs 2001: Installation of 15 small-scale wastewater treatment systems.

RT2000.042 Regional Workshop for Stakeholders in Sewage Management

Objective: To address municipal wastewater as a major land-based source of pollution and prevent further deterioration of health of humans and ecosystems.

Background: SOPAC, together with GPA/UNEP Coordination Office, and SPREP is seeking funds for a Regional Meeting for the Pacific with the objective to prepare a regional future oriented Framework for Action on Wastewater Management. The Regional Framework for Action would include a Regional Appreciation/Endorsement of Guidelines for Municipal Wastewater Management, demonstration projects (innovative in technology, partnerships in building), pre-investment portfolio, and identified regional capacities and centres which can be used for capacity building.

Outputs 2001: Organisation of a broad-based stakeholder meeting on sewage in the region to produce Guidelines for Municipal Wastewater Management is proposed for September 2001. Included will also be the identification of demonstration projects and the establishment of regional cen-

tres, which can be used for capacity-building purposes. A consultation meeting will be held in February 2001 in Auckland to determine the direction for the regional meeting.

RT1998.001 Desalination Technology for SOPAC Member Countries

Objective: Decision-makers are able to decide whether desalination is a technically and economically viable option for their country. They are aware of all related costs and the advantages and disadvantages of desalination in general as well as specific desalination technology.

- Five SOPAC member countries have been provided with an assessment of the possible use of desalination technologies in their country, i.e. best suited techniques, related costs and so forth.
- Possible funding sources to implement projects have been identified.
- One technician of each participating member country has been sufficiently trained to undertake pre-feasibility and feasibility studies and run tenders on desalination plants.
- Decision-makers in member countries have access to relevant information on desalination technologies, i.e. about costs and technical skills required to operate and maintain plants.

Background: Many new desalination or de-salting technologies are fine examples that can accommodate the needs of small systems requirements. In the past decade several major technological advancements e.g. low pressure membranes, have been achieved which make de-salting very attractive from both an economic as well as an operations/maintenance perspective.

Each member state of SOPAC has very similar baseline physical/environmental condition. Although this would not doubt be argued by some of the SOPAC member. As far as desalinating technology is concerned however, the fundamental environmental requirements are basically the same regardless of geographic location.

Current droughts in the wake of the El Niño weather phenomenon have raised the question whether desalination technologies could alleviate extreme hardships in the water supply situation in many SOPAC member countries. A circular was sent to member countries earlier this year to inform and rally interest in the project and WRU have received some interest. Project is also currently deferred pending waiting funding approval.

Another related initiative is currently underway with members of the Water Supply and Sanitation Collaborative Council to produce a Sourcebook on Desalination for Small Island Developing States.

Outputs 2001: Prepare a project proposal for each country to determine:

1. Supply requirements (gallons or cubic meters) per day which translate into plant design capacity
2. Chemical/biological profiles of the source waters (groundwater, surface water, ocean or brackish waters).

3. Sources and consistency of energy available.
4. Population center locations and the near-shore physical and environmental parameters and configurations.
5. Potential plant locations and alternatives.
6. Public or private financing availability.
7. Human resources available for operations/maintenance.
8. Seminars for decision-makers on desalination.

RT2000.043 Water and Health Publication

Objective: To provide extension services on the subject of Water-borne diseases in the Pacific and its prevention

Background: Water borne-diseases are the main cause of adults and children dying in developing countries. Warm humid regions are made up mostly of developing countries where no reasonable access to safe water supply exists. Awareness on health risks can be improved via educating adults and children. A simple booklet can help to avoid water-related diseases and can be distributed among communities throughout the region. This new task is yet to be reviewed by member countries and is pending waiting funding.

Outputs 2001: Production of a publication for Pacific Island Countries on Water and Health jointly with other regional organisations.

RT2000.044 World Water Day 2001 – Water and Health

Objective: To provide SOPAC member countries with information, material and technical support to enable them to run a World Water Day 2001 campaign.

Background: World Water Day is an annual event to help focus on water; its development and conservation and the implementation of the recommendations of Agenda 21. The project is designed to provide background material and support on this year's World Day for Water theme to SOPAC member countries interested in using the event as an opportunity for water related awareness campaigns. SOPAC is the lead agency in the Pacific for World Water Day and globally WIIO will be the lead agency for World Water Day on 22 March 2001 under the theme "Water and Health".

SOPAC has the regional mandate to disseminate water and sanitation related information to its member countries as the regional focal point for water and sanitation issues. World Water Day is seen as an excellent opportunity to make all stakeholders focus on water and sanitation problems in the region.

Outputs 2001: Member countries provided with a campaign strategy of proposed activities, publication material, and other supporting material to run their campaign.

RT2000.045 Water Education and Awareness for Schools

Objective: To create awareness of vulnerable water resources in the Pacific through the use simple user friendly publication material.

Background: Scope of this Package, this package attempts to provide a set of information sheets, activities to assist in learning and understanding concepts and issues and a series of posters and other awareness raising material. The material in the package may be used independently or as part of an existing classroom activity. If the teacher is pressed for time question sheets are included to enable the student to work on his/her own. This package is aimed at children between the ages of 9 and 13 in most Pacific Island schools. Teachers may find that some of the material is also suitable for other age groups and use of the materials in an adapted format should be encouraged. This task originated from World Water Day Activities for the 2000 campaign developed by SOPAC and SPREP. This new task is a follow on from this activity.

Outputs 2001: A range of publication material including posters, activity guides, stickers and other simple and easy to use material for children between the ages 9-13.

RT1999.039 Water and Sanitation Sector Co-ordination Centre

Objective: Increased co-ordination of agencies and member countries in the field of water and sanitation.

Background: The task will provide valuable background information on the water and Sanitation Sector to member countries water authorities. One major activity will be the provision of a quarterly newsletter and assistance will be given to water resources assessment and water demand management/conservation strategies. Emphasis for this task will be given to the establishment and dissemination of the water demand management newsgroup (E-mail list) and the related webpage that can be accessed by member countries. This task also includes particular background information on trends in sanitation. In addition to this the development and dissemination of information through the Small Island Water Information Network (SIWIN) is currently being established. This network provides a regional archive to store individual country information.

Outputs 2001: Establishment of a co-ordination committee to direct activities of the centre and MOU's between donor agencies.

HEAD 1.3 ENERGY UNIT

1. Objectives and Key Performance Indicators from the Strategic Plan

Objectives

Provide technical assistance and policy advice on the sustainable management and development of the energy sector of member countries

Key Performance Indicators

- 5 year work program developed in co-operation with the Secretariat of the Pacific Community (SPC)

- Assistance to Solar Co-operatives
- 5 rural electrification policies and guidelines developed (Kiribati, Marshall Islands, Tonga, Tuvalu and Vanuatu)
- Energy database modified for 6 countries. Access to petroleum data established with major oil companies. Regional workshop convened on energy database management and data analysis
- Wind resource monitoring and assessment continued including developing institutional capability for wind data analysis.
- Re-establish ocean energy program including updating resource database, technical options and establish institutional capability to carry out feasibility studies for potential ocean energy projects
- 3 regionally focused demonstration small energy projects established. Project appraisal and analysis techniques demonstrated in 2 countries each year

2. Staffing

Positions	Donor	Status
Energy Manager	New Zealand/Australia	Secured
Energy Advisor	New Zealand/Australia	Secured
Energy Project Officer	Various	Probable/Partly secured
UN Energy Expert	UN Trusteeship Funds	Secured

3. Work Program

RT1999.010 National Energy Policy

Objective: To assist member countries in establishing national energy policy statements, that will help in guiding government's in the planning and management of their energy sectors.

Background: Various assessments of the national energy sectors within member countries has identified the absence of national energy policy statements and guidelines, and that this is one of the major constraints to the effective planning and management of their national energy sectors. This project was initiated in 1993/94 and member countries are now at different levels of progress with the development and adoption of their energy sector policies. The project is to provide on-going, in-country technical assistance as required to those countries that have not yet adopted their national energy policy statements and also to those that require their current policies to be reviewed.

Outputs 2001: Assistance provided to the following countries with their national energy policy statements and policy guidelines.

- Cook Islands - CK1999.005 National Energy Sector Policy Development, (assistance in convening a summit for the consideration/discussion and endorsement of their drafting policy statement)
- Niue - NU1999.012 Review of National Energy Sector Policy Statement
- Papua New Guinea - PG2000.005 Comment on their National Energy Policy Statement and Guidelines

- Vanuatu - VU2000.006 Review of National Energy Sector Policy Statement

RT2000.027 Rural Electrification Policy

Objective: To assist member countries in preparing and establishing rural electrification policy statements and guidelines, that will help in guiding government's in the planning and management of their energy sectors.

Background: Various assessments of the national energy sectors within member countries has identified the absence of rural electrification policy statements and guidelines, and that this is one of the major constraints to the effective planning and management of their rural energy sectors. This project was initiated in 1994/95 following the earlier initiative in 1993/94 to develop national energy policy statements. Previous activities on rural electrification have been incorporated under "National Energy Policy" but it is considered relevant to identify activities associated with rural electrification policy separately. With member countries now having achieved different levels of progress with the development and adoption of their energy sector policies, this project is designed to provide on-going, in-country technical assistance. Assistance will be provided as required to those countries that have not yet prepared or adopted their rural electrification policy statements and also to those that require their current policies and guidelines to be reviewed.

Outputs 2001:

- Vanuatu - VU2000.003 Review of Rural Electrification Policy for Vanuatu
- Federated States of Micronesia - FM1999.013 Review of the FSM Solar Electrification Program
- Federated States of Micronesia - FM2000.001 Development of Rural Electrification Policy
- Solomon Islands - SB2000.002 Rural Electrification Policy Development

RT1999.006 Technical Assistance on the Energy Supply and Demand Database

Objective: To assist member countries to establish and maintain a compatible, accurate, reliable and up-to-date energy supply and demand database so as to enable effective management and planning of their national energy sectors.

Background: As part of the Forum Secretariat's Energy Division's program, assistance was provided to member countries to establish an independent and sustainable capacity to effectively plan, manage and monitor their national energy sectors. Activities during this initial period included the co-operative design with member country, planning, statistics and energy offices to develop an energy demand/supply database template and provide training in its operation and management. However, many of the countries have encountered difficulties in collecting energy data down to the levels of disaggregation that they initially envisaged as possible. Hence as a result only limited progress has been made with the collection, verification and inputting of national energy data and statistics throughout the region. The limited progress to date and the identified need to establish and desire to maintain these databases, a

number of member countries have requested assistance specifically in the collection of petroleum data and in the modification of the database structure. Work and technical support commenced on the energy supply and demand database in 1993 and is continuing.

Outputs 2001: Assistance with the management and updating of national energy databases, through in-country database workshops. Preparatory work to include the updating and modification of their individual country databases and the preparation of revised database management guidelines and training manuals.

- Guam – GU1999.009 Technical Assistance on the Energy Supply and Demand Database
- Solomon Islands – SB2000.007 Technical Assistance on the Energy Supply and Demand Database
- Samoa – WS2000.005 Technical Assistance on the Energy Supply and Demand Database
- Tuvalu – TV2000.006 Technical Assistance on the Energy Supply and Demand Database
- Cook Islands – CK2000.014 Technical Assistance on the Energy Supply and Demand Database

RT1999.009 Energy Data Analysis Workshop

Objective: To assist member countries in the interpretation and analysis of their energy supply and demand data. The calculation of energy indicators will assist in the planning and the evaluation of the energy sectors.

Background: The establishment of the national energy supply and demand database has been an on-going activity of the SOPAC Energy Unit. Various assessments of the regional energy sector and the regional energy program have highlighted the importance of the need to establish and maintain national energy databases. While progress with the establishment of the data bases has been slow, it is realized that member countries need to be provided with the techniques and methods that will assist them in collecting energy data. The program will also provide them with the skills to use the data available to estimate through interpolation and extrapolation the missing data. From the data analysed how the results of the analysis (indicators) can be used for energy sector planning and policy development.

Outputs 2001: In implementing RT1999.006 "Technical Assistance on the Energy Supply and Demand Database" this will assist in preparing a number of countries to be in a better position to participate in this activity. Funding still remains to be allocated to this program activity either for a fully regional workshop or for a number of sub-regional workshops. Member countries should note that as a prerequisite to participate in this workshop they should have a substantially up to date national energy database an area in which the SOPAC Energy Unit continues to provide assistance.

RT1999.016 Energy Technology/Information Database

Objective: The preparation of an information database of energy projects and technologies within the Pacific region

and the establishment of guidelines for the updating and maintenance the database as a reference source for the future.

Background: Over the past 10 years there has been significant effort given to developing the energy sector in the region. However, information on technologies and projects is well spread between member countries and regional organisations. So as to avoid the longer-term loss of this experience and information relevant to the region it was proposed that an energy technology and information database be prepared to assist in retaining a record of this experience. As a result of this situation the need has been identified for information to be more readily available on projects and technologies, either implemented or tested in the region. This information will also include a number of R&D activities that have been studied by regional institutions. The formulation and development of the database at this time is considered timely as it will enable the existing current high level of corporate knowledge of the Energy Unit to be sourced as with time this can be expected to decline over the coming years. The preparation of a database including information on various energy technologies, projects, programs, reference material and reports are all considered worthwhile.

Outputs 2001: Commence the installation of the database into member countries on a progressive basis preferably in conjunction with regular programmed energy missions. It is proposed that this will take through to the middle of 2002 to complete. Other short term assistance will be utilised as appropriate.

RT2000.004 Petroleum Price Monitoring in Conjunction with Regional Energy Database

Objective: To assist the Palau Energy Office (PEO) to effectively monitor their petroleum prices.

Background: There is insufficient capacity in the Palau Energy Office to monitor and provide advisory assistance to major petroleum consumers in their business dealings with oil companies.

Outputs 2001: Continue to discuss the supply of petroleum information with petroleum companies and establish a format and regular transfer of data and continue to maintain linkages so as to ensure a continuing flow of petroleum data.

- Guam – GU 1999.010 Petroleum Price Monitoring

RT2000.026 Technical Assistance to the Power Sector

Objective: To assist member countries with activities that specifically relate to the power sector, where the power utilities are the focal point for the assistance and so that the benefits may be jointly realized by both either the government or the utility.

Background: In the past there have been a range of energy sector activities implemented that have focused on the power sector and on power utilities. However, more recently there has been less emphasis on the power utilities, as they tend to become corporatization with the longer-

term view to privatization in some cases. Although this is the case there is still a requirement for providing assistance to the power utilities in member countries. The power utilities are one of the major consumers of imported petroleum products and producers of energy. Therefore they play an important role in the development of the electricity sector and in energy policy development. In addition they also make significant inputs into the national energy supply and demand side databases that comprise an important part of the energy sector. In the majority of cases they still require technical assistance so as to be able to continue to develop and meet the individual countries power demands.

Outputs 2001:

- Cook Islands – CK 2000.004 Review of Te Aponga Regulatory Mechanisms

RT1999.054 Demand Side Management Project

Objective: To secure funding for twelve (12) months technical assistance to review previous DSM studies, design and implement two DSM demonstration projects.

Background: Previous work on DSM was carried out under a UNDP program where the DSM potential was identified in ten (10) Pacific Island countries. Based on these studies and the current need to address the reduction of GHG emissions it was considered relevant to revisit this potential area of energy savings. Hence a DSM project was developed seeking funding support for a review of the previous studies and the implementation of at least two projects based on the findings of the review. Part of the reason for the limited interest in DSM is a general lack of experience and understanding of DSM programs in the region. In particular, a reticence of high-energy consumers (industry, governments, utilities etc) to spend money to make savings. Utilities traditionally considering that it is their job to generate and sell electricity not to save it. Therefore there is a long overdue need for projects that demonstrate how energy consumption can be reduced through the adoption of sound DSM practices.

Outputs 2001: Commencement of the project with the review of previous DSM studies, and two DSM demonstration projects designed and implemented.

RT1999.012 Regional Energy Information Awareness and Dissemination

Objective: To provide the member countries with information and the latest developments in energy sector technologies and practices. To equip them with regionally designed public awareness training materials so as to assist them in developing their initiatives in public awareness and education programs.

Background: Missions to the energy offices and agencies of member countries have shown that most of these offices are not well equipped with the latest information on developments in energy sector technologies, products, and practices. Furthermore, it was noted that more and more school children and the general public are visiting the energy offices for educational materials on energy conservation and the energy-environment linkages. A number of countries

have expressed interests on running public awareness and education programs and to be supported with the production of regionally designed training materials. It is noted that the Pacific Island countries generally lack the basic training materials that are needed for an effective public awareness and training program. These training materials include posters, stickers, leaflets and pamphlets. This component of the project is for the production on public awareness and provision of training materials for participating countries.

Outputs 2001: Prepare, editing and publish technical publications:

- RT2000.029 – Domestic Sector Energy Conservation and Efficiency Booklet
- RT2000.030 – Commercial Sector Energy Conservation and Efficiency Booklet
- RT1999.047 – Technical publication Energy Audit of the SOPAC Secretariat
- FJ1999.003 and TO1999.003 – Technical publication on the Efficiency of Solar Hot Water Systems
- RT1999.052 – Technical publication on the use of Solar PV as a telecommunications backup system for the SOPAC Secretariat.

RT1999.046 Pacific Energy Newsletter (PEN)

Objective: To establish a closer link between SOPAC's regional energy program and the member countries, donors, CROP agencies and others who are involved in the development of the energy sectors of member countries. To keep the PEN readers advised, on a quarterly basis, on the recent developments in the regional energy scene and selected ones from the member countries. It is expected that PEN will assist in creating a net-working among its readers.

Background: PEN was a service that was formerly delivered from the Energy Unit whilst at the Forum Secretariat. This was discontinued due to a number of reasons and constraints. It has been identified that the region requires a medium through which to communicate with its members and therefore the PEN has been reintroduced in its quarterly issue format.

Outputs 2001: SOPAC to continue to publish PEN with joint contributions from SOPAC and SPC. PEN to be published on a quarterly basis and distributed to member countries and other relevant and interested readers.

RT1999.013 Technical Assistance on Renewable Energy Programs and Projects, and to Solar Cooperatives

Objective: To assist member countries and donor agencies in the review, evaluation and implementation of renewable energy programs and projects so as to ensure that they contain the relevant and necessary phases and components for the long term sustainability, and to provide follow-up assistance and monitor the progress with the implementation of assistance previously provided to solar utilities.

Background: Renewable energy projects and programs in the region have had wide and varying degrees of success for a number of reasons. In recent times specific emphasis has been placed on the development and implementation of projects so as to take into account these past experiences. It is considered important that so as to maximise the benefits from future programs and projects that independent technical reviews of programs and projects be provided. This will help ensure that the lessons learnt from the past are integrated into these programs and projects in an attempt to achieve the desirable longer-term sustainability. Assistance in the development of policy strategies and guidelines is covered under task profile RT 2000.0 "Rural Electrification Policy". Business management assistance has been provided to the solar utilities in Kiribati, Tuvalu and the Marshall Islands. This assistance recommended measures in respect to the improved operation, management, financial and maintenance aspects that are necessary for the sustainable development of the solar utilities. This technical assistance will assist the solar utilities in implementing the measures recommended and in monitoring the impacts on the performance of their solar utilities.

Outputs 2001:

- Cook Islands - CK2000.003 Rakahaga Island PV/Diesel Hybrid System (technical appraisal)
- Vanuatu - VU2000.003 Rural Electrification Policy Development
- Cook Islands - CK2000.005 Outer Islands Electrification Guidelines
- Kiribati - KI1999.002 Kiribati Institutional PV Project
- Kiribati - KI1999.016 Solar Pump Maintenance Workshop

RT2000.003 Technical Assistance on the Development of Sustainable Rural Energy Programs

Objective: To provide technical assistance to member countries so as to enable them to manage their rural energy programs in a sustainable manner.

Background: The supply of conventional energy to the rural areas by urban-based energy utilities is generally uneconomic. To the rural dwellers, energy is often their only hope for improving their standard of living. There is an abundant supply of energy in the rural areas. The wind, the solar radiation, the rivers and the forest are examples of these abundant energy sources. The rural dwellers must work together as a community to address their energy needs. Experience in the region has shown that community and rural-based "energy utilities" can be sustainable if the proper business management practices are observed and the appropriate policy frameworks are in place. Unfortunately this is currently not the case and it has been identified that assistance in the design and development of a regionally acceptable system will help enhance these rural focused energy sector initiatives and activities.

Outputs 2001: Activities under this task will be determined during the year. As the Secretariat of the Pacific Community is now implementing its three year renewable energy programme focusing on solar and wind technologies these may be limited.

RT1999.014 Small Scale Energy Consultancies

Objective: To assist member countries to address specific energy issues by the provision of short-term consultancies to cater for specialist areas where either the time or expertise is not immediately available from the SOPAC Energy Unit.

Background: Energy agencies of the member countries are regularly faced with unexpected and urgent demands from their decision makers such as Board of Directors, Cabinet, Ministers, etc. This component of the energy program allows for the timely dispatch of expert(s) to the requesting country to attend to these urgent energy focussed requirements.

Outputs 2001: It is proposed that assistance will be provided to the Cook Islands and Tonga.

Cook Islands - CK1999.009 Grid Connected Wind Power

Cook Islands - CK1999.012 Wind Power Development Study

Cook Islands - CK2000.006 Household Energy Survey

RT1999.015 Pacific Danish Environmental Education Program

Objective: To assist member countries with their wind power development programs through capacity building.

Background: The Danish Government has indicated an interest to fund this project in the Pacific. A feasibility study was carried out in 1997, which looked at a possible capacity building program on wind and renewable energy, and a demonstration commercial scale wind turbine. DANIDA has agreed to fund the capacity building component leaving the commercial scale wind turbine component to be considered at a later date.

Outputs 2001: Finalise negotiations and arrangements for the site for erection of the demonstration wind turbine and preparation of the technical specification. Complete work on the preparation of the energy planning course module. Installation of the demonstration wind turbine and preparation of the training modules completed. Training programs delivered by RISO and a sub-regional training workshop on wind power convened including the coordination and preparation of the workshop program.

RT1999.007 Regional Biomass Resource Assessment

Objective: To assess the biomass resource in a number of member countries (Cook Is, Fiji, FSM, Kiribati, Samoa, Tonga and Tuvalu) and to prepare a management plan for the future effective use and management of the resource. This project will help ensure that member countries are able to better assess and manage their relatively scarce biomass resources.

Background: On average, biomass accounts for around 90% of the rural energy used in a quarter of the Pacific Islands. Whilst deforestation is common in these countries, it is also a threat to future energy supplies. In particular, a threat that is likely to have very serious environmental and economic implications for the future. A number of member countries have identified that, so as to enable their biomass

resource to be managed properly they require an assessment of the current and future levels of biomass supply and demand. The assessment will not only provide information for inclusion in energy databases but will be useful for energy supply and demand policy decisions.

Outputs 2001: Prepare a detailed brief (specification) for the consultant and commence the resource assessment and the in-country training component of the program.

RT1999.060 Energy Resource Assessment

Objective: To monitor and assess the indigenous energy resource potential of the region and to determine the feasibility for extraction and utilization.

Background: There has been many technological developments in the utilization of ocean-based energy resources, wind, biomass and land-based energy resources (OTEC & geothermal) for power generation. It is common that potential investors and donors do visit the region to identify opportunities in the supply of energy using indigenous energy resources. The development of these potential new initiatives is constrained by the unavailability of monitored/assessed data from the potential project sites. SOPAC has been engaged in the monitoring of ocean-based energy resources and member countries have expressed interest in participating in an extension of this exercise.

Outputs 2001: SOPAC proposes to continue to pursue the opportunities for the collection, review and updating of:

- ocean/wave energy
- geothermal potential
- wind energy resources
- solar radiation-monitoring

Specifically continue to finalise a draft regional geothermal proposal with the view to identifying possible funding sources that would allow the drilling of deep investigatory wells at locations that have been identified to have potential. Continue to collect wind energy data and identify new locations for monitoring. Preparation of a preliminary proposal for a solar radiation-monitoring project.

RT1999.053 Joint Ocean/Wave Energy Project

Objective: To monitor the progress with the development of ocean-based energy technologies, to extend the earlier resource assessment work carried out by SOPAC and to look at the possibility of building a ocean-based energy demonstration project in the region.

Background: SOPAC carried out assessments of wave power energy potentials of some of its member countries in the 1980's. Development of ocean-based energy technologies are continuing in Norway, Japan, UK and others. The ocean holds the largest potential source of energy for the Pacific Islands and therefore, development in this area should be closely monitored and assessing their potential should be carried out.

Outputs 2001: SOPAC to continue to pursue the opportunities for developing and establishing an ocean/wave energy project in the region. Previous project requests will be further addressed during 2001.

- Federated States of Micronesia – FM1999.012 Evaluation of FSM Wave Power Potential
- Samoa – WS1999.008 Wave Power Development Study

RT1999.058 Wind Power Development – Resource Monitoring

Objective: To encourage and assist member countries in particular the Cook Islands, Fiji, Niue, Tonga and Vanuatu in continuing the monitoring of their wind power resources.

Background: The regional energy program completed a two-year wind-monitoring program in 1997. Upon completion of the project, participating countries were supplied with a lap top computer for downloading the data, an anemometer, data logger and all the necessary accessories. The participating countries continue to identify wind monitoring as a priority, however a number have been unable to be able to continue their wind monitoring program primarily due to funding constraints. The project is intended to assist these participating countries to continue with their wind monitoring but at different sites thus providing more data about their wind power potential.

Outputs 2001: The reestablishment of the wind resource-monitoring program, collection and analysis of additional wind data and relevant climatic information that will assist countries in better developing their renewable energy resources.

RT1999.055 Pacific Regional Energy Assessment (PREA 2000)

Objective: To update the last (1992) Pacific Regional Energy Assessment (PREA) of 1992 by identifying current and future options in the energy sectors of member countries.

Background: The last PREA was completed in 1992. Considering that the data and information from the 1992 PREA is now nearly nine years old, these assessments still provide the most comprehensive set of energy sector data for most of the Pacific Island countries. The energy sector of Pacific Island countries has been or will be affected by the recent technological and economic changes that the global economy has experienced. A PREA will be a timely attempt to gear the energy sectors of PICs for what is to be expected in the 21 century in particular the climate change issues and the need to address the most appropriate way to reduce GHGs.

Outputs 2001: The completion of a proposal for a PREA and forwarding of this to major donors and agencies who participated in similar previous assessments (ADB, World Bank, UNDP, etc). Establish the consultancies necessary for the implementation of the assessments. Publication of the assessment and the convening of a regional workshop to present the findings of the assessments. Dependent on timing this could be in 2002.

RT1999.056 SOPAC/UNESCO Cooperation on Renewable Energy

Objective: To assist UNESCO in a review of a proposal for the establishment of the Centre for Education and Training in Renewable Energy for the Pacific Region.

Background: In May 1999, UNESCO approached SOPAC for assistance in reviewing a proposal from the PNG government to establish a Centre for Education and Training in Renewable Energy for the Pacific Region. An MoU for this collaboration between SOPAC and the UNESCO office in Apia was signed in July 1999. SOPAC's Energy Adviser was assigned to provide assistance to UNESCO. The delivery of the assistance commenced in August and involved consultations with selected Pacific Islands Countries.

Outputs 2001: Continue to pursue and develop the earlier proposal with UNESCO and other interested parties during 2001.

RT1999.061 Energy Meetings and Conferences

Objective: Energy Unit staff to represent member countries in meetings and conferences, which are relevant to the energy sector development of the region.

Background: The SOPAC Energy within its role as focal point for regional energy activities continues to be invited to meetings and conferences which are relevant to the development of the energy sector of member countries. These include conferences on specific matters relating to an energy technology, issues relating to rural electrification and generally on the links between energy, environment and the economy. More recently, the SOPAC Energy Unit has represented the region on behalf of the Forum to the APEC energy meetings and to the SPF Invitational Meetings. It has been invited to meetings that link other regional program activities to the Energy Unit, including the PICCAP meetings, meetings on CDM and the like.

Output 2001: As appropriate continue to participate and represent member countries at regional and international meetings so as to ensure that new ideas and contacts are maintained benefiting the energy sector and member countries.

RT1999.017 Regional Institutional Woodstoves Training Workshops

Objective: To carry out in-country training workshops in Kiribati, PNG, Tonga, Tuvalu and Vanuatu on the construction and the maintenance of institutional woodstoves.

Background: A significant amount of work has been carried out on woodstoves in the region. The first phase of this project initiated from the core energy program which enabled the Foundation for the People of the South Pacific (FSP) to review the institutional wood stoves manual originally prepared by the Fiji Department of Energy. The review culminated in the updating and reporting of the manual and reprinting taking into account other woodstoves designs that have been in use in the region. As phase two of this program, training will be provided in-country to disseminate the knowledge and skills to participating countries.

Outputs 2001: Continue to provide assistance as relevant on the dissemination of the know-how on building and maintaining institutional woodstoves within the region. Follow-up reporting on the performance of the institutional woodstoves installed under this program.

RT1999.057 Evaluation of the Institutional Woodstoves Project

Objective: To carry out an evaluation of the institutional woodstoves project and to provide recommendations as to the future focus of SOPAC's assistance in this area.

Background: SOPAC has been providing financial assistance towards the design and the construction of woodstoves in Fiji, Kiribati, Tonga and Tuvalu. This assistance was coordinated by the Foundation for the Peoples of the South Pacific (FSP) and had a major training component aimed at enabling local people to build and to maintain the stoves. PNG, Kosrae and Vanuatu have expressed interests in participating in an extension of the woodstove project. The evaluation is important to determine the exact nature of SOPAC's continued assistance in this area.

Outputs 2001: Complete the evaluation of the woodstoves installed in Tonga, Tuvalu and Kiribati, prepare and publish a detailed report of the evaluations and make recommendations in respect to a second phase. As relevant continue to discuss funding opportunities with the Foundation for the Peoples of the South Pacific (FSP) for Phase II of the workshops/installation program for Kosrae, Papua New Guinea and Vanuatu. Dependent on the availability funding and the outcome of the evaluation construct stoves in Kosrae, Papua New Guinea and Vanuatu.

RT1999.011 Training and Technical Assistance

Objective: The exchange of expertise and experience among the energy agencies of the member countries in respect to specific energy sector activities.

Background: Training attachments have been identified by member countries as a priority activity and beneficial in skills development. It provides the opportunity for energy officials to be attached to their counterpart energy official/energy agency in another country (where the subject of the training is more developed and advanced). Or to the staff of the SOPAC Energy Unit thereby enabling the exposure and the transfer of knowledge and experience in specialist areas which are not normally addressed in this level of detail regional training workshops and courses.

Outputs 2001: As requested and appropriate the provision of technical assistance and training so as to ensure trained and better informed energy officials in the member countries will be provided.

- Cook Islands – CK2000.008 Energy Audit (Rarotonga)
- Kiribati – KI2000.008 Training Attachment (Energy Planning Officer)
- Federated States of Micronesia – FM1999.016 Training Attachment
- Marshall Islands – MH1999.014 Development of an Energy Unit Structure
- Tonga – TO1999.038 Assistance to the Climate Change Enabling Proposal (To assist the Energy Planning Unit with the drafting of their Climate Change Enabling proposal and to provide assistance to the implementation of their Climate Change Enabling Activities as required).

RT1999.059 Small Energy Projects Program (SEPP)

Objective: To provide a regional source of small, quick response, discretionary funds to assist the member countries in meeting the identified energy sector needs of the region, as they arise.

Background: SEPP is a well-established program that has been with the regional energy program since it was established. In the 1997 NZ review of the regional energy program, SEPP was highly commended for its usefulness to the region and was recommended that it be continue to be delivered with improved pre-feasibility and review processes applied to these projects against predetermined criteria. The SOPAC Energy Unit acknowledged the recommendations of the 1997 NZ review of the Core Energy Program and proposes to put more emphasis on monitoring and ensuring that current and proposed SEPP projects are successfully implemented, reporting completed and the projects are evaluated.

Outputs 2001: To complete existing projects and programmes and as relevant and appropriate establish new small energy projects and programmes that will be of benefit to the member countries and the energy units in the region. Member countries will be encouraged to submit projects for consideration during the 2001 period. Activities currently ongoing have been listed below as "Outputs Proposed for 2001", other activities that are anticipated to be completed this year have no output flagged for the 2001 year.

RT1999.052 Demonstration PV System for Telecommunications

Objective: To demonstrate that a solar back-up system can be used cost efficiently to provide power for communication and security night lighting when mains power is interrupted.

Outputs 2001: Continuation of the monitoring and evaluation of the demonstration a solar back-up system. Preparation and publication of a report detailing the operation of the system to date.

RT1999.047 Energy Audit of the SOPAC Secretariat

Objective: To identify potential energy saving opportunities within the SOPAC Secretariat and to produce a report detailing the methodology used so that member countries can use it as a reference in their own energy conservation program.

Outputs 2001: Continue with the implementation of the audit report recommendations within the SOPAC Secretariat and provide assistance as requested to member countries in the implementation of their own individual energy audits. Monitor the energy consumption and evaluate the impact of the audit recommendations.

FJ1999.007 Appliance Labeling

Objective: To carry out a pilot project on Appliance Labeling in Fiji and depending on the evaluation of this pilot project,

consider the possibility for replicability in other member countries and implement as appropriate.

Outputs 2001: Re-establish the project based on the new label and star rating system. Implement and monitor the project, provide assistance as required and ensure that project reporting is completed.

KI1999.012 Kiribati Energy Conservation Project

Objective: To improve the energy efficiency of government offices through improved air conditioner performance and the use of more efficient lighting.

Outputs 2001: Develop a detailed project proposal in conjunction with the Kiribati Energy Planning Unit, implement the project and monitor the project and provide assistance as required so as to ensure that project reporting is completed.

NR1999.002 Diversification of Nauru's Cooking Fuels

Objective: To demonstrate in the domestic sector of Nauru that LPG is an equally convenient energy source for cooking as electricity, but a cheaper energy source.

Outputs 2001: Prepare a detailed energy project proposal implement the project, monitor, provide assistance as required and ensure that project reporting is completed.

NR1999.003 Nauru Energy Conservation Project

Objective: To reduce the energy consumption in Government Offices. This is to be carried out through (1) the introduction of efficient lights, (2) timers on air conditioners and (3) to launch an energy efficiency public awareness program.

Outputs 2001: Prepare a detailed energy project proposal implement the project, monitor, provide assistance as required and ensure that project reporting is completed.

NR1999.006 Energy and Electricity End-Use Demand Side Survey

Objective: To carry out an energy and electricity end use demand side survey for the domestic and commercial sectors of Nauru.

Outputs 2001: Prepare a detailed energy project proposal implement the project, monitor, provide assistance as required and ensure that project reporting is completed.

NU1999.002 Niue Water Solar Pumping Project

Objective: To demonstrate the technical and economical viability of using solar water pumping to supply water to the remote locations in Niue.

Outputs 2001: Niue to complete an alternate project design, install, monitor and report.

TO1999.002 Schools Energy Education Program

Objective: To increase the awareness about the energy, economy and environment interactions and enhance the local capability in promoting energy efficiency but with a particular emphasis on the school children.

Outputs 2001: Tonga EPU to implement the project. SOPAC to provide assistance as required and ensure that project reporting is completed.

TO1999.004 Rechargeable Battery Project

Objective: To demonstrate the economic and technical viability of using solar power to charge rechargeable batteries with the view to replicability regionally.

Outputs 2001: SOPAC continue to assist in the sourcing of suitable charging units for this project so as to enable the implementation of the project in rural areas. As required provide technical assistance and ensure that project reporting is completed.

2. ENVIRONMENTAL SCIENCE PROGRAM

HEAD 2.1 COASTAL UNIT

1. Objectives and Key Performance Indicators

Objective

Provide technical assistance policy advice and information on the sustainable management and protection of coastal resources

Key Performance Indicators

- Establishment of legislation for the protection of beach sand in Pacific island countries (Tonga, Tuvalu, Marshall Islands and the Federated States of Micronesia)
- Assessment and identification of alternative sources of sand and gravel in offshore areas (Tonga, Tuvalu, Marshall Islands and the Federated States of Micronesia)
- Policies and regulations that state the need for sound data for development of coastal areas and improve water quality in the coastal zone
- Production of detailed bathymetric maps for at least five major harbours in member countries

2. Staffing

Positions	Donor	Status
Marine Geophysicist	Australia	Secured
Coastal Geologist	China	Secured
Coastal Geologist	CFTC/DFID	Secured (until 30 th Jun)
Electronics Engineer	RB	Secured
Electronics Technician	Australia	Secured
Project Assistant	Various	Probable

3. Work Program Report

RT1998.027 Interactive Graphical Ocean Database System.

Objective: Implementation of an interactive graphical Ocean database for CTD and ADCP profile data.

Background: Conductivity, Temperature, Depth profiling of the water column has very direct and indirect uses - to monitor ocean health e.g. for dissolved, oxygen, levels. At other times data is gathered and used primarily to document natural variability, possibly to characterise the effect of input such as an outfall relative to normal background conditions. In a third instance the CTD is used to collect data in which to assess natural processes such as the flushing of a bay or harbour by tidal forces, or the dispersion of material into the coastal ocean around a river mouth. Other uses could include independent assessment of modelling results.

Outputs 2001: Update database with new data continued maintenance and reporting

RT2000.049 Regional shallow water bathymetry database SWBDDDB

Objective: To update the regional shallow water bathymetry database with the recently acquired single and multibeam data from 1998-2000

Background: The compilation of the Shallow-Water Digital Database SWBDDDB was first initiated and completed in 1997. This was a joint SOPAC, NIMA funded project with NIMA funding contracted through the University of Hawaii. Digital data were stored by SOPAC member country name in separate country folders. Project narrative reported in SOPAC Preliminary Report 89

Outputs 2001: Updating of shallow-water digital database

RT2000.050 Coastal Survey equipment to support work programs

Objective: To maintain equipment data inventory to undertake required work program tasks

Background: To facilitate SOPACs Work Program an extensive inventory of equipment is available to undertake coastal and nearshore surveys applicable to the Work Program. In many instances replacement tools, upgrades or new tools for new program activities are required from time to time and therefore must be budgeted for.

Objective: To maintain equipment data inventory to undertake required work program tasks

Background: To facilitate SOPACs Work Program an extensive inventory of equipment is available to undertake coastal and nearshore surveys applicable to the Work Program. In many instances replacement tools, upgrades or new tools for new program activities are required from time to time and therefore must be budgeted for.

Outputs 2001: Equipment needs 2001:

- EPC thermal graphic recorder 1086
- Sontek 750 kHz ADCP upgrade to include DGPS interface
- Wave Height and Tide gauge
- Radio Modem 35 W RF Amplifier
- 1500 W Inverter
- HYSWEEP Multibeam processing software
- Hypack Survey software and office suite for single beam surveys

CK1999.000 Coastal Mapping to assist with development of a Strategy for Foreshore Protection and Development in Aitutaki/Rarotonga

Objective: Measurement of historical coastal changes and present conditions in critical areas (to be identified) of Aitutaki and Rarotonga; analysis of sediment budget, patterns of sediment production and dispersal, and processes responsible for coastal change.

Background: Recommendations on the likelihood of rehabilitation and methods of protection at the various sites and development potential for critical areas.

Rarotonga is the primary tourist destination and administrative centre in Cook Islands and has a long history of coastal erosion problems. A request has been submitted by the Conservation Service in Cook Islands for assistance in the development of a foreshore protection strategy for the islands of Rarotonga and Aitutaki. [Note that this duplicates the UNDHA Tourism development proposal to some extent.]

Need for improved port facilities in Aitutaki to improve efficiency and reduce the risk associated with landing of cargo from ships lying off the reef. Baseline studies of coastal

stability, sediment dispersal processes, and lagoon circulation are required before the harbour improvement design is finalised.

Outputs 2000: Final report documenting survey data, coastal changes and processes in particular with respect to proposed harbour expansion at Arutanga. The report include a summary of site conditions and an estimate of vulnerability to further degradation from human activity and natural processes and recommendations as to actions which should be considered. Completed and reported in Technical Report 292.

CK1999.006 Bathymetry of Penrhyn Lagoon

Objective: Model lagoon processes and water quality in order to manage aquaculture projects at sustainable levels.

Background: The use of numerical circulation models could make a significant contribution to the solution of many problems in the Pacific Island countries. Examples range from seaweed culture projects in Abaiang and Kiritimati island, pearl culture projects in Manihiki, pollution studies in Nuku'alofa, Tarawa and Majuro, to dredging projects in Funafuti and Majuro. This project is pending budget constraints and the logistical difficulties

Outputs 2001 pending budget constraints and the logistical difficulties include:

- Maps of time-dependent changes in lagoons
- Linkage of changes to ENSO conditions
- GIS database of lagoonal maps for aquaculture farming management

CK1999.010 Benthic Substrate and Bathymetry Maps for Aitutaki Lagoon

Objective: Geographic Information System (GIS) of Aitutaki atoll providing information of:

- a. Overlays of main benthic substrates types (sand, reef flat, patch reef)

Lagoon bathymetry background. The Ministry of Marine Resources will use these maps for the following purposes including but not limited to:

Background: For effective marine resource assessment of commercial trochus fishery whose main habitat is the reef flat area, lagoon fish populations as associated with coral patch reef, site evaluation for aquaculture activities as in black-pearl culture seaweed farming, hatchery reared trochus and giant clam receding sites are as much dependent on lagoon bathymetry substrate type and hydrodynamics. The development of marine Reserve site assessment and site evaluation through a GIS based information system is considered an essential tool contributing towards successful resource management

Outputs 2001: Completed GIS base maps with reporting.

FM1999.015 Assessment Survey for Hydrographic Mapping of Commercial Seaports

Objective: Multibeam harbour survey Chuuk

Background: This survey is to make a comprehensive analysis of the necessary elements involved in the undertaking of a project on hydrographic survey and mapping of the major commercial seaports and navigable waterways connected therewith in the FSM. To develop an appropriate scope of work for such a project Chuuk Harbour has been identified as the priority harbour for survey in 2001

Outputs 2001: Shallow-water digital database in GIS format for port and harbour management; Dive tourism heritage map of lagoon floor lagoon resource maps

FM1999.014 Bathymetry Circulation and Pollution of Kolonia Harbour

Objective: The survey would determine the water circulation and current patterns of the harbour and also to determine the measures needed to reduce the bacterial pollution of the marine area as to fund mitigation procedures to allow the area to again become a productive resource area for the community living near the shoreline.

Background: The harbour is getting discharges from the town's sewage treatment plant, discharges from shipping dock facilities, and it is also the discharge point of several streams on the island and the shoreline of several unsewered congested communities on Sokchs Island. The circulation of water in the harbor has been severely restricted by a causeway that connects the main island to the dock/airport facilities, and has resulted in the waters greatly exceeding the EPA marine bacterial standards.

Outputs 2001: Priority has now been given to FM1999.015 Mapping of Chuuk harbour.

FM2000.006 Coastal erosion assessment - Malem Kosrae

Objective: To investigate the erosion problem at Malem, Kosrae and advise on possible mitigation measures

Background: Coastal erosion problems have existed for sometime at Malem. In two studies Jessica Cote's report University Oregon and a recent V&A study (by Robert Goodwin et al) identify this area of concern.

Outputs 2001: Field survey to assess problem and advise on mitigation options for coastal erosion problems

FM2000.007 Vulnerability Assessment for Pohnpei PICCAP Coordination

Objective: To complete a vulnerability assessment for Pohnpei

Background: A new project to assess vulnerability of the island to SLR - working in cooperation with local PICCAP co-ordinator.

Outputs 2001: Using GIS develop thematic planning maps on coastal infrastructure vulnerability to SLR scenarios.

FJ1999.025 Coastal Water Quality Monitoring SE Viti Levu.

Objective: Understanding the movement of the mixing layer on a seasonal basis its maxima and minimum water depths siting and likely impacts of a submarine tailing outfall.

Background: Project has linkages to a submarine outfall for tailings disposal to understand the movement of the mixing layer on a seasonal basis.

Outputs 2001: Mineral Resources has requested that this project be reinstated to an ongoing status providing/developing long term capability for MRD to undertake the surveys/sampling using SOPAC technical equipment

FJ1999.035 Multibeam Survey of Lautoka Harbour

Objective: Complete multibeam survey of Lautoka Wharf area for Management and Operations.

Background: As per Memorandum of Understanding with Ports Authority of Fiji - SOPAC will complete one survey per year for Ports Authority of Fiji for contributes to swath mapping.

Outputs 2001: Continued assistance to Mineral Resources in the interpretation of the greater port area data set.

FJ1999.036 Operation & Maintenance of RV Yautalei

Objective: Management and Operation of the survey Boat RV Yautalei.

Background: With the formulation of the operations and maintenance of the Memorandum Of Understanding with Mineral Resource Department the operations and maintenance of the mineral resources coastal research vessel the RV Yautalei.

Outputs 2001: Ongoing project with review of MOU.

FJ1999.037 Multibeam Survey, Nadi Bay and Vuda Point.

Objective: To map the offshore bathymetry of Nadi Bay & Vuda Point to model hydraulic regime.

Background: Pollution, existing sites of the marine outfalls and a lack of understanding about the current regime offshore Nadi Bay and Lautoka. It is thought to be impacting on the ecology of the reef and its ability to produce sediments, which is essential in maintaining coastline stability with the implementation of the Water and Sanitation program siting of marine sewer outfalls will benefit from this dataset.

Outputs 2001: Assistance to Mineral Resources Department

ment with data processing and interpretation. This is made possible with the purchase of a second copy of the multibeam processing software. Survey is completed but reporting is to come from MRD.

FJ1999.040 Coastal Erosion Assessment, Tagaqe, Village, Coral Coast, Nadroga

Objective:

- To determine primary coastal processes, sediment sources and sinks the impacts of coastal erosion that maybe associated with coastal development.
- Determine best practice mitigation measures to be adopted to coastal protection.

Background: The community of Tagaqe, along the Coral Coast have reported that during the period 1994-1998 they noted an increase in erosion of the shoreline with major erosion occurring both on the eastern and western flanks of the village. Based on a request from the Mineral Resources Department initiated by the Korolevu-i-wai District Council a study, to determine the likely cause for the increase in erosion, determine sediment source and sinks that should sustain shoreline stability and what alternate measures maybe taken to prevent further erosion.

Outputs 2001: A working guideline for new development projects aimed at tourism and indigenous communities in similar environmental and social settings as the Coral Coast Southwest Viti Levu.

FJ2000.012 Replacement of Kinoya sea outfall - seabed surveys

Objective: The Fiji government intends to replace the existing Kinoya sea outfall A number of site investigations, surveys are required for outfall engineering design and placement the studies to include bathymetry survey along tentative centreline of new route, sidescan investigations for obstacles. Seismic investigations onshore and offshore for depth to bedrock and vibrocoreing of surficial sediments to 6 m. Development of hydrodynamic model for selecting optimal outfall location

Background: The existing outfall from the Kinoya Sewage Treatment works requires replacement. The Fiji Government intends to replace the existing Kinoya sea outfall the project financed through the EU.

Outputs 2001: Complete survey and reporting for design work

FJ2000.14: Multibeam Survey of Levuka Harbour

Objective: Complete a multibeam survey of Levuka harbour for Maritime and Ports Authority of Fiji

Background: As per the Memorandum Of Understanding with Ports Authority. This is the third such survey in a series of support surveys for MAPF in support of the acquisition of the multibeam system.

Outputs 2001:

- Expected output includes additional data to the shallow water digital database
- Heritage map of possible wreck locations
- Route pipeline map placement and stability

FJ2000.015 Multibeam Processing and interpretation workshop

Objective: Trained personnel in the aspects of multibeam processing

Background: Fiji Government through the Mineral Resources Department and Maritime and Ports of Fiji contributed to the cost of multibeam system. With both MRD and Hydrographic using HYPACK software it has been requested to run a workshop on the use of this software to process both multibeam and single beam data.

In addition as end users have different uses for the multibeam data sets, with Hypack software they are now able to undertake their own studies with the multibeam data sets.

Outputs 2001: Complete workshop

KI1999.003 Assessment of Vulnerability to ASLR South Tarawa.

Objective: Assess the physical vulnerability of South Tarawa from Bairiki, Bonriki.

Background: Under the US Country Study Program SOPAC completed the field work for vulnerability study of Bairiki, Bikenibeu and Bonriki (Task KI1999.03) in August, 1999 following up the vulnerability study of Betio in 1997. The Kiribati Government requested that the study should cover all of South Tarawa at the debriefing meeting of Project Task KI1999.03. Representative at the debriefing were Ministry of Health, Ministry of Foreign Affairs, Atoll Research Program, USP, Ministry of Natural Resources Development, Ministry of Environment & Social Development, Ministry of Finance and Economic Planning.

Outputs 2001: Reporting and data analysis to be completed

KI1999.011 Water quality modelling in Abaiang and Kiritimati

Objective: Model lagoon processes and water quality in order to manage sustainable aquaculture, pollution and sedimentation.

Background: Little is known of the circulation of these lagoons and mapping of them is compounded due to their shallow nature and vast size. Using new technologies such as spaceborne image data to derive bathymetry, numerical modeling to understand circulation provide a foundation on which to develop lagoon management plans for aquaculture resource projects.

For Kiritimati include acquisition of field data sets on currents, CTD measurements and bathymetry for bathymetry and model calibration. An interpretation of bathymetry from Landsat image data was then completed. Report in preparation

Outputs 2001: Numerical model of lagoon circulation and results Kiritimati lagoon.

KI1999.014 Multibeam Bathymetry - 6 Islands.

Objective: Nearshore Bathymetry outer islands for FAD deployment. To map the outer reef bathymetry of selected islands to assist with the deployment of fishing aggregate devices (FADS).

Background: For islands Tamana, Arorae, Nikunau, Banaba, Kuria and Makin, there is need to undertake a nearshore bathymetry around the ocean reef parameters to assist in the placement of FADS. In the past, FADS placed in the area have been lost as no site has been actually identified for the anchorage of the FAD. The purpose of the FAD is to assist the local fishermen in aggregating fish around this device at a distance close to the island.

Outputs 2001: Complete field survey mapping. Products to include GIS format, shallow water data base 0-300 m, seabed morphology, fisheries habitat, sediment sinks and resources for 6 islands in the Kiribati group.

MH1997.002 Assessment of alternate Lagoon Aggregate Resources

Objective: Map bathymetry and resources in the west of Majuro lagoon.

Background: In Majuro, sand mining for construction, roading and landfill is obtained primarily by dredging in shallow, nearshore lagoon areas. Initial resource surveys were conducted in 1994 (SOPAC Technical Report 215) and April 1996 by SOPAC with four deposits identified in the north eastern portion of the lagoon. Current knowledge of deep water (10-50 m) sand deposits is poor. Quantities already extracted are unknown. Environmental aspects of coastal management and sustainable coastal resource exploitation are perceived as major issues. Unmanaged sand mining can lead to pollution, reef degradation, coastal instability, and impinge on fisheries. Resources need to be investigated to assist EPA with a sustainable mining management strategy.

Outputs 2001: Report and maps on bathymetry, sediments and distribution for mapped areas. Remains deferred priority with task MH1999.010

MH1999.003 Feasibility Study for Foreshore Protection and Development in Majuro Atoll.

Objective:

- Implement a shoreline feasibility study.
- Compilation of coastal geology mapping into GIS databases.

Background: With the completion of the coastal mapping for Majuro atoll and combined with bathymetry for the lagoon with GIS mapping of infrastructure, and land use zoning, a shoreline protection feasibility study can be implemented.

Outputs 2001: Implement study

MH1999.010 Offshore Sand Recovery and Environmental Impacts

Objective: Environmental and economic assessment for the recovery of offshore sands.

Background: Alternate sand resources have been identified for Majuro lagoon. Selection and utilisation of these prospects required an environmental and economic assessment to know what specific technologies can be used for recovery of aggregates, the transporting of them and merits and disadvantages of each prospect.

Proposed Outputs: Applicable technology for the economic recovery of offshore sands. Merits and disadvantages of each prospect with impacts to the natural and human resources.

Outputs 2001: Identified as a priority with funding being sought to implement study in 2001.

NR1999.004 Nearshore Bathymetry 0-300M Depth

Objective:

- To map the outer reef bathymetry of the island to assist with the deployment of fishing aggregate devices (FADS), assess coastal erosion problems attributed to small boat channel and harbour developed.
- To produce a digital and hardcopy bathymetric maps.

Background: For island of Nauru there is need to undertake a nearshore bathymetry around the ocean reef parameter to assist in the placement of FADS. In the past, FADS placed in the area have been lost as no site has been actually identified for the anchorage of the FAD. The purpose of the FAD is to assist the local fishermen in aggregating fish around this device at a distance close to the island. Also of recent multibeam survey by the NOAA vessel R.V. Ron Brown and data extended from 300 m to 3500 mm of the Nauru platform.

Proposed Outputs: In GIS format, shallow water data base 0-300 m, seabed morphology, fisheries habitat, sediment sinks and resources

Outputs 2001: Generation of both digital and hard copy bathymetric maps of Nauru in Mapinfo

NR1999.005 Coastal Erosion Monitoring and Advice on Response Strategies.

Objective:

- Identify areas where infrastructure maybe under threat
- Collect information on countermeasures currently taken or proposed at State Level.

- Determine the coastal erosion hazard for infrastructure that maybe or is threatened.
- Advise on effective and sustainable response strategies.
- Beach profiling and Training

Background: Apart from a small boat harbour currently under construction in Anibare, other coastal infrastructure have had impacts on the shoreline. Nauru require assistance with monitoring to assess these and advise on effective and suitable response strategies.

Outputs 2001: Reporting incorporated into GIS for ongoing monitoring program.

NR1999.045 Monitoring and Assessment of Anibare Small Boat Harbour

Objectives:

- Evaluate coastal processes in the vicinity of Anibare small boat harbour.
- Evaluate the stability of the shoreline in the harbour areas.
- Identify impacts (positive and negative) of harbour construction of the shoreline stability.
- Propose management and engineering plans/options for the coastal area.

Background: The Government of Nauru is in the process of constructing a small boat harbour in Anibare. The harbour is located in a dynamic coastal area, which is subject to erosion and sediment transport and also the possible threat to adjacent coastal infrastructure. In response to needs expressed by the Government of Nauru, SOPAC proposes to assess and evaluate the stability and dynamics of the shorelines in the vicinity of the harbour and comment on possible solution/s to any foreseen problems associated with construction of the said facility. In addition, management plans for the said coastal areas will be prepared for the project.

Outputs 2001: Completed report distributed

NC2000.001: Multibeam survey forereef slope Cap Bocage, near Moneo

Objective: Delineate the morphology of the forereef slope for siting a submarine tailings outfall.

Background: Associated with the development of a new mine is the need to dispose of mine tailings. One methodology is to dispose the tailings by means of a deepwater outfall into the ocean. Site location of an outfall requires detail bathymetry. A similar exercise was completed for Koniamabo in 1999 on the West Coast, SOPAC Technical Report 302.

Outputs 2001: Survey and reporting

PG1999.001 Sissano Tsunami, Inshore and Lagoon Mapping Investigations, Papua New Guinea.

Objective:

- Complete shallow swath mapping and seismic surveys of the 0-200 m shelf area seaward of Sissano lagoon.
- Mapping bathymetry and sediments of Sissano lagoon.
- Complete a range of sampling and coring programs.

Background: The data acquired on the two JAMSTEC/SOPAC surveys offshore of north PNG show that additional swath bathymetry and seismic reflection data is now required in water depths of less than 200 metres. The JAMSTEC vessels used during the surveys could only work in water depths greater than 200 metres and additional data is now needed as close inshore as possible. The proposed survey area is approximately 40km by 10km as the 200m isobath is located approximately 10km from the shoreline. The data acquired will be used to determine whether a nearshore sediment slide contributed to the tsunami of July 1998 and to assess the influence of the shallow water morphology on the focusing of the tsunami. From the new bathymetric data, computer modelers will be able to determine the focusing of the tsunami wave as it passed through shallow water. The acquisition of seismic reflection data of the shelf deposits will provide insight into the stratigraphy, geometry, structure and geotechnical properties of the shelf sediments within the nearshore zone. Interpretation of the seismic data, coupled with coring of the seabed, will allow for the identification of previous events and their frequency. The sampling program will be based upon the swath and seismic results.

Proposed outputs: Report and maps on bathymetry, morphology, shelf evolution, tsunami history.

Output 2001: Reporting on the core analysis

SB1999.004 Contamination Risk Assessment, Iron Bottom, Solomon Islands, Phase Two: Resource Assessment and field Investigations of Wrecks.

Objective: The follow up study is limited to the 0-100m deep zone (the zone of possible maximum environmental impacts and in which there is the most human interactions). The aims of this follow-up study is to map, in the field, the specific location of shallow water (less than 100 m deep) wrecks, assess the general water circulation patterns, assess the natural resources in this zone and comments on the possible contamination risk that these wrecks may pose to the environment. If deemed necessary, proposals for follow-up studies will be made.

Background: Between January to May 1999, SOPAC conducted an investigation of contamination risk assessment of WWII military arsenal which were destroyed and sunk in Iron Bottom Sound, Solomon Islands, during the naval campaign of Guadalcanal, 1942-1943. The purpose of the study was to assess the volume of military wreck in the study area and comments on possible contamination risk

that these military arsenal poses to the natural and man-made environment of the area. In addition, proposals for further studies were made, with the aim of providing further necessary data, required to comment on the specific risk which may exist in the area. The results on this study was delivered to the Solomon Island Government as two reports via UNDP (who funded the project). The reports are SOPAC/UNDP Progress Report, March 1999 and SOPAC/UNDP Final Report, May 1999. Following from the recommendations of that study, a series of follow-up investigations are now proposed in this task profile.

Outputs 2001: Possible field survey implementation pending outcomes off current political climate.

TO98.001: Assessment of Marine Aggregate Resources and Sand Mining in Vava'u.

Objective: Determine alternative locations, extent and nature of offshore resources

- Develop baseline data of potential resource area(s)
- Assess impacts associated with current aggregate source areas
- Advise on alternative resources.

Background: In Vava'u, sand mining for construction and roading, is obtained primarily from mining in the coastal zone. Data defining marine and sub-tidal resources is limited to two surveys in 1996, and 1997. Associated impacts of impinge on fisheries. Difficulties in identifying marine sand resources of sufficient quality and quantity has necessitated expanding the survey area further south in the southeast quadrant of Vava'u survey area

Outputs 2001: Complete survey reporting.

TO2000.005 Assessment of Erosion Problems Atata Island - Tonga

Objective: To determine the causes of erosion of Atata island

Background: An erosion problem on Atata has only recently become most apparent and is of some concern if this trend continues. Examination of 1968 and 1980 aerial photography show the shoreline of Atata to be stable. However examination of 1990 photography (the most recent available) appears to show changes to the eastern coastline had already started. As a result important island infrastructure may become threatened by inundation. The cause or causes for this sudden change in the islands coastal processes is unknown.

Outputs 2001: Report detailing finding of studies and possible mitigation strategies.

TV1999.011 Geophysical Surveys for Marine Sand Resources Nukufetau and Vaitupu.

Objective To conduct geophysical surveys to identify marine sand resources

Background: Beach and nearshore mining have been the main source of sand and aggregate for infrastructure de-

velopment. These mining activities have resulted in coastal erosion and beachfront damage and as such are of great concern. Alternative sources are required if national infrastructure development is to be sustained.

Outputs 2001: Deferred pending EU project

TV1999.003 Beach Profiling and Monitoring Niutao.

Objectives: Measurement of existing coastal profiles for baseline reference.

Analysis of sediment budget

Background: An existing boat ramp, which acts as a groin has had an impact on beach sediment transport resulting in severe erosion down drift. Also permanent sand loss is now being experienced through an access channel in the fringing reef.

Outputs 2001: Deferred pending EU project

WS1999.029 Aggregate Resources Northern and Eastern Savai'i.

Objective: To define aggregate Resources and input into GIS

Background: A SOPAC-NZOI study on aggregate resources was completed in 1989 for Savai'i. Follow-up work has been requested on the northern and eastern areas of Savai'i.

Outputs 2001: Project planning linking with WS1999.030 under the EU project outline

WS1999.30 Reassessment of Lagoon Aggregate Resources of Upolu.

Objectives: coastal mapping, resources, erosion

- assess lagoon aggregate extraction activities and resources
- up date the SOPAC 1990 - 1992 coastal morphology maps
- move data into GIS
- Develop guidelines based on resource outcomes

Background: A coastal mapping programme was completed on the island of Upolu in 1990, which looked at nearshore minerals, (primarily construction materials) geological hazards and coastal processes.

A SOPAC study on aggregate resources was also completed in 1995 for Vaiusu Bay, Upolu. Ten years in there has undoubtedly been many changes, impacts of varying degrees to the coastal zone. Updating of the coastal morphology maps, assessing lagoon mining activities, coastal erosion and processes and moving this data into GIS for management is most timely.

Outputs 2001: Project planning and formulation and links with EU project outline for Small Island System management.

HEAD 2.2 HAZARD ASSESSMENT UNIT

1. Objective and Key Performance Indicators

Objective

Mitigation of effects of natural and man-made disasters in member countries through assessment of the impacts of hazards, analysis of community risks, and promotion of effective planning for development and post-disaster rehabilitation.

Key Performance Indicators

Creation of a risk management geographic information system (GIS) database including infrastructure, physical geography, geotechnical data, natural and man-made hazards and community vulnerability for regional population centres.

Implementation of training programs and equipping of regional centres of expertise with tools for hazard assessment and risk analysis.

Integration with other regional disaster-related projects

2. Staffing

Positions	Donor	Status
Geological Engineer	Australia	Secured
Geophysicist	Various	Secured (until February 2001)
Consultant	Various	Secured (unsecured 2001)
Consultant	Various	Secured (until March 2001)

3. Work Program

RT2000.036 Strengthening Community Resilience through Applied Community Risk and Vulnerability Analysis

Objective: To reduce disaster impacts in Pacific island communities through applied community vulnerability and risk analysis

Background: The project will provide solutions to community vulnerability and strengthen the resilience of Pacific communities to disasters in selected Pacific small island states through applied community risk and vulnerability analysis, an integrated approach that involves scientific/technical as well as community self-analysis techniques, which will be applicable for decision-making at all levels.

Outputs 2001:

- Design, conduct and disseminate vulnerability analysis plan
- Collate existing scientific data relevant to Port Vila peri-urban areas and southern Pentecost

- Develop Risk - GIS spatial information infrastructure for project areas
- Conduct country visit
- Conduct geotechnical survey of project areas
- Develop regional cyclone climatology model through consultancy
- Model scenarios of cyclonic wind effects over Port Vila through consultancy
- Developed storm surge and tsunami scenarios through consultancy

RT2000.000 Catastrophe Insurance Pilot Project

Objective: Development of a scheme for provision of insurance for catastrophic events in Pacific Island countries

Background: The World Bank work has in progress a scheme for providing insurance for catastrophic events in developing countries. Over the past decade, SOPAC has been collecting data on hazard and disaster events in a range of Pacific Island Countries. This data largely fits with the requirements of the development of a catastrophe insurance model for the region, based on a recent comparison with the World Bank's Caribbean pilot study.

As the next step in this process, it is proposed to proceed to examine further issues within the broader context of disaster mitigation and consider the appropriateness of a pilot study to be undertaken using one Pacific Island country for which hazard data is more readily available and, if appropriate, develop a pilot study funding proposal.

It will be necessary to examine further the effect that factors such as the non-homogeneity, cultural differences and variations in asset ownership of Pacific Islands will have on a proposal for regional catastrophe insurance, within the broader context of disaster mitigation

Outputs 2001:

- Develop a detailed proposal for a pilot project
- Develop regional cyclone climatology model through consultancy
- Model scenarios of cyclonic wind effects over pilot area through consultancy
- Developed storm surge and tsunami scenarios through consultancy
- Develop preliminary risk models through consultancy

RT2000.000 Promotion at Conferences and Workshops

Objective: Raised awareness of the outcomes of hazard and risk assessment programs in member countries, the Pacific region and the international community

Outputs 2001:

- Attend and present at local, regional, and international conferences, workshops and venues to raise awareness, promote results of projects, and develop collaborative ventures

- Transfer knowledge, experience and contacts gained to member country focal points

FJ1998.018 Risk Analysis and Presentation, Pacific Cities, Suva

WS1998.013 Risk Analysis and Presentation, Pacific Cities, Apia

SB1998.019 Risk Analysis and Presentation, Pacific Cities, Honiara

TO1998.020 Risk Analysis and Presentation, Pacific Cities, Nukuialofa

VU1998.018 Risk Analysis and Presentation, Pacific Cities, Port Vila.

Objective: Risk to life and property quantified using an interrogative GIS database to assess the interactions among hazards, buildings, lifelines and demographics

Background: The Pacific Cities concept is founded on an all-hazards risk-assessment approach in highly vulnerable, concentrated population centres of the Pacific, and utilises GIS as a key tool in developing an information infrastructure for risk reduction. It incorporates the following elements:

- Comprehensive database of geographic and physical information
- Compilation of existing and predicted information on all hazards including impacts and frequency of occurrence.
- Comprehensive database of borehole and subsurface remote-sensing information
- Derivation of characteristic values for parameters describing earthquake motion, resonance and ground response
- Development of a complete database of building and infrastructure
- Digital elevation model and orthophoto base for scenario modelling and visual presentation of the GIS database
- Modelled scenarios of cyclonic wind behaviour related to terrain characteristics
- Modelled scenarios of hydrodynamic behaviour relevant to pollution, storm surge, seiche, wave and tsunami effects in harbours
- Population, census and demographic information integrated with the building and infrastructure database

The ultimate aim of Pacific Cities is the quantification of risk using the GIS database built up from all the preceding inputs, to be then utilised in raising public awareness and informing Governments and donors about the risks communities face from natural and man-made hazards. This process is a continuous one, and risk assessment tasks are ongoing and form the over-riding co-ordination on all hazard projects carried out by SOPAC.

FJ1998.018 Risk Analysis and Presentation, Pacific Cities, Suva

Outputs 2001:

- Publish up-to-date data CD of Suva
- Publish final GII-USAID earthquake microzoning report
- Conduct final search and compilation of geotechnical borehole information for Suva
- Incorporate power, water supply, telecommunications and other infrastructure data, where available, into GIS database
- Analyse census and occupation data with regard to building, infrastructure data and hazard
- Complete digital elevation model and orthophoto for eastern Suva peninsula
- Assess and analyse earthquake resonance effects in specific, at-risk building types
- Develop predictive hazard scenarios through consultancy and incorporate results in database
- Develop regional cyclone climatology model through consultancy
- Model scenarios of cyclonic wind effects over Suva through consultancy
- Develop storm surge and tsunami scenarios through consultancy
- Develop pollution scenarios through consultancy
- Develop advanced risk models through consultancy
- Demonstrate and promote outcomes through presentations, workshops and conferences

WS1998.013 Risk Analysis and Presentation, Pacific Cities, Apia

Outputs 2001:

- Publish up-to-date data CD of Apia
- Conduct final search and compilation of geotechnical borehole information for Apia
- Incorporate power, water supply, telecommunications and other infrastructure data, where available, into GIS database
- Obtain and incorporate current census data into GIS database
- Purchase and incorporate aerial photography, digital elevation model and orthophoto data in database
- Demonstrate and promote outcomes through presentations, workshops and conferences

SB1998.019 Risk Analysis and Presentation, Pacific Cities, Honiara

Outputs 2001:

- Publish up-to-date data CD of Honiara

- Publish final GII-USAID earthquake microzoning report
- Demonstrate and promote outcomes through presentations, workshops and conferences

TO1998.020 Risk Analysis and Presentation, Pacific Cities, Nuku'alofa

Outputs 2001:

- Publish up-to-date data CD of Nuku'alofa
- Publish final GII-USAID earthquake microzoning report
- Conduct country visit
- Complete building assets survey of Nuku'alofa
- Survey building occupancy in central city area
- Conduct final search and compilation of geotechnical borehole information for Nuku'alofa
- Conduct final search and compilation of existing hazard information for Nuku'alofa
- Obtain and incorporate current census data into GIS database
- Incorporate power, water supply, telecommunications and other infrastructure data, where available, into GIS database
- Demonstrate and promote outcomes through presentations, workshops and conferences

VU1998.018 Risk Analysis and Presentation, Pacific Cities, Port Vila

Outputs 2001:

- Publish up-to-date data CD of Port Vila
- Publish final GII-USAID earthquake microzoning report
- Conduct country visit
- Conduct final search and compilation of geotechnical borehole information for Port Vila
- Incorporate power, water supply, telecommunications and other infrastructure data, where available, into GIS database
- Analyse census and occupation data with regard to building, infrastructure data and hazard
- Develop predictive hazard scenarios through consultancy and incorporate results in database
- Develop regional cyclone climatology model through consultancy
- Model scenarios of cyclonic wind effects over Port Vila through consultancy
- Develop storm surge and tsunami scenarios through consultancy
- Develop pollution scenarios through consultancy
- Develop advanced risk models through consultancy
- Demonstrate and promote outcomes through presentations, workshops and conferences

NOTE: The tasks carried out for the Pacific Cities concept have now been condensed under a single task heading for each country, reflecting the finalisation of the first stage of Pacific Cities with the publication of up-to-date data CD is for each of the five major cities currently under study. Details of the condensation are shown below:

FJ1998.018 Risk Analysis and Presentation, Pacific Cities, Suva

Now incorporates all tasks previously reported under:

- FJ1999.013 Physical Database Assembly, Pacific Cities, Suva
- FJ1999.016 Hazards Assessment, Pacific Cities, Suva
- FJ1999.017 Subsurface Database, Pacific Cities, Suva
- FJ1999.003 Earthquake Microzoning Study, Pacific Cities, Suva
- FJ1998.021 Survey of Community Assets, Pacific Cities, Suva
- FJ1999.023 Photobase and DTM, Pacific Cities, Suva
- FJ1999.021 Cyclonic Wind Modelling, Pacific Cities, Suva
- FJ1998.022 MIKE 21 Hazard Modelling, Pacific Cities, Suva
- FJ1999.024 Demographic Database Links, Pacific Cities, Suva

WS 1998.013 Risk Analysis and Presentation, Pacific Cities, Apia

Now incorporates all tasks previously reported under:

- WS1999.015 Physical Database Assembly, Pacific Cities, Apia
- WS1999.016 Hazards Assessment, Pacific Cities, Apia
- WS1999.010 Subsurface Database, Pacific Cities, Apia
- WS1999.017 Earthquake Microzoning Study, Pacific Cities, Apia
- WS1999.018 Survey of Community Assets, Pacific Cities, Apia
- WS1999.020 Photobase and DTM, Pacific Cities, Apia
- WS1999.019 MIKE 21 Hazard Modelling, Pacific Cities, Suva
- WS1999.023 Demographic Database Links, Pacific Cities, Apia

SB1998.019 Risk Analysis and Presentation, Pacific Cities, Honiara

Now incorporates all tasks previously reported under:

- SB1999.010 Physical Database Assembly, Pacific Cities, Honiara
- SB1999.011 Hazards Assessment, Pacific Cities, Honiara

SB1999.012 Geophysical Harbour Survey, Pacific Cities, Honiara

SB1999.014 Subsurface Database, Pacific Cities, Honiara

SB1997.004 Earthquake Microzoning Study, Pacific Cities, Honiara

SB1998.021 Survey of Community Assets, Pacific Cities, Honiara

SB1999.021 Photobase and DTM, Pacific Cities, Honiara

SB1998.022 MIKE 21 Hazard Modelling, Pacific Cities, Suva

SB1999.020 Demographic Database Links, Pacific Cities, Honiara

TO1998.020 Risk Analysis and Presentation, Pacific Cities, Nuku'alofa

Now incorporates all tasks previously reported under:

TO1999.010 Physical Database Assembly, Pacific Cities, Nuku'alofa

TO1999.009 Hazards Assessment, Pacific Cities, Nuku'alofa

TO1999.016 Geophysical Harbour Survey, Pacific Cities, Nuku'alofa

TO1999.012 Subsurface Database, Pacific Cities, Nuku'alofa

TO1997.003 Earthquake Microzoning Study, Pacific Cities, Nuku'alofa

TO1998.021 Survey of Community Assets, Pacific Cities, Nuku'alofa

TO1999.015 Photobase and DTM, Pacific Cities, Nuku'alofa

TO1998.022 MIKE 21 Hazard Modelling, Pacific Cities, Suva

TO1999.023 Demographic Database Links, Pacific Cities, Nuku'alofa

VU1998.018 Risk Analysis and Presentation, Pacific Cities, Port Vila.

Now incorporates all tasks previously reported under:

VU1999.010 Physical Database Assembly, Pacific Cities, Port Vila

VU1999.012 Hazards Assessment, Pacific Cities, Port Vila

VU1999.019 Subsurface Database, Pacific Cities, Port Vila

VU1997.002 Earthquake Microzoning Study, Pacific Cities, Port Vila

VU1998.020 Survey of Community Assets, Pacific Cities, Port Vila

VU1999.015 Photobase and DTM, Pacific Cities, Port Vila

VU1999.024 Cyclonic Wind Modelling, Pacific Cities, Port Vila

VU 1998.021 MIKE 21 Hazard Modelling, Pacific Cities, Port Vila

VU1999.023 Demographic Database Links, Pacific Cities, Port Vila

TO1999.024 Geohazard Awareness Workshop, Tonga

Objective: Enhanced public awareness of the risks associated with geohazards such as earthquake, volcanic eruption and tsunami and better preparedness through appropriate selection of housing sites, housing construction methods and immediate protection responses when geohazards strike.

Background: The Kingdom of Tonga is situated in one of the most active geological regions of the world. It is located at the junction of the Indo-Australian and Pacific tectonic plates. It is made up of a chain of volcanic islands of the Tofua Volcanic Arc and another series of coral islands starting from Tongatapu in the south to Vava'u in the north. Some of the islands are populated and volcanic eruption has been experienced in one of these islands (Niuafu'ou) in the past.

This project will allow a series of workshops to be conducted throughout the kingdom for the purpose of informing the public on the risks involved. Relevant experts from SOPAC or from any other geological organisations will be assisted by locally available experts in the implementation of workshops. Further assistance will also be required in terms of transportation and provision of teaching aids.

Outputs 2001: Seek external funding and collaboration with DMU program for initiation of the project

HEAD 2.3 OCEAN UNIT

1. Objectives and Key Performance Indicators

Objectives

- Provide technical assistance and policy advice on the sustainable development and management of ocean resources.

Key Performance Indicators

- Establishment of Pacific Global Ocean Observing System [PacificGOOS]
- Increased usage of deepwater and sea-level maps and other physical oceanography information.
- Member countries taking advantage of Law of the Sea (LOS) through compliance with UNCLOS

2. Staffing

Position	Donor	Status
Marine Affairs Adviser	Taiwan	Secured
Project Assistant	New Zealand	Secured
Maritime Boundaries Officer	Australia	Probable

3. Work Program

RT1998.003: Regional Coordination of Law of the Sea Related Issues in the SOPAC Region

Objectives: To advise member countries on legal and policy issues relating to delimitation and the continental shelf, marine scientific research, offshore minerals exploration and mining. Further, to monitor law of the sea issues of relevance to SOPAC's work programme.

Background: The 1982 United Nations Convention on the Law of the Sea [UNCLOS] sets out principles and norms for the conduct of relations among States on maritime issues. As the SOPAC region is first and foremost a maritime region with a heavy reliance upon both the living and non-living natural marine resources, the importance of UNCLOS cannot be emphasised enough.

At the 25th Session of the Governing Council of SOPAC, the importance of the law of the sea to the SOPAC member countries was noted and the Director of SOPAC was asked to work [through CROP] toward developing a framework for regional coordination of law of the sea issues. In August 1997, an independent consultant prepared options for developing a regional framework for coordination of activities related to law of the sea issues, following a review of the relevant regional organisations.

The study recommended that SOPAC should advise its member countries on legal and policy issues relating to the following critical law of the sea issues:

- Delimitation of maritime zones and boundaries
- Determination of extent of the continental shelf
- Development of offshore mining legislation
- Exploration and exploitation of the International Seabed Area
- Marine scientific research
- Transfer of marine technology.

Outputs 2001:

- Delimitation of maritime zones and boundaries
Refer RT2000.048
- Determination of extent of the continental shelf
Refer FM2000.004; FJ2000.011; PG2000.003; TO2000.003

- Development of offshore mining legislation
See specific tasks relating to offshore minerals policy and legislation listed under the Mineral Resources Unit
- Exploration and exploitation of the International Seabed Area
Continue to monitor and review developments relating to the International Seabed Authority
- Marine scientific research
Refer RT1997.007
- Transfer of marine technology
Continue to monitor and review existing and new marine technology developments

RT1997.007: Regional Coordination of Marine Scientific Research and Retrieval of Offshore Data

Objectives: To promote, facilitate, coordinate, advise on and cooperate in marine scientific research geoscience activities in the offshore areas of the SOPAC region. To retrieve and store geological, geophysical, geochemical and other relevant physical oceanographic data acquired by foreign researching states and organisations during marine scientific research in areas under national jurisdiction within a 12 nautical mile limit and under resource jurisdiction within a 200 nautical mile exclusive economic zone [EEZ].

Background: Marine Scientific Research [MSR] activities have been coordinated and monitored by SOPAC since its inception in 1972. Under UNCLOS the researching State has obligations to comply with a number of specified conditions. The most important of these being:

- Granting the coastal State an opportunity to participate or be represented in the research
- Providing the results of the research, with access to data and samples collected
- Providing assistance in the assessment and interpretation of the data, samples and results of all data acquired within their Exclusive Economic Zone [EEZ].

To date, research activities have discovered offshore mineral resources such as cobalt-rich manganese nodules, cobalt-rich manganese crusts, polymetallic massive sulphide deposits, hydrocarbons and methane hydrates within the EEZs of numerous SOPAC member countries. Such discoveries demonstrate that non-living marine resources both within and beyond national jurisdiction may one day become economically significant to the economies of these Pacific Island Countries and to the region.

It is generally acknowledged that, with the exception of Australia and New Zealand, SOPAC member countries have little or no MSR capacity. Therefore, it is imperative that SOPAC continue to promote and encourage MSR carried out by institutions from outside the SOPAC region, in order that further discoveries may be made and known discoveries become better understood. For the SOPAC region it is important to ensure that MSR data and information be collected, processed and securely stored, in order that these

may be readily available for use in future resource management assessments and evaluations for exploration and exploitation.

Outputs 2001:

- SOPAC will continue to monitor and provide coordination support for research cruises in the region and keep member countries informed of planned cruises, provide completed data results produced and coordinate opportunities for participation/representation. Data will continue to be requested on behalf of member countries and added to the Secretariat databases. It is imperative that these activities be in compliance with the directives and obligations of the UNCLOS.
- Specific tasks involving assistance and facilitation of consent to conduct MSR process, arrangement of participation/representation, monitoring of post-cruise MSR obligations such as retrieval of data will be carried out for the following member countries: Fiji [FJ1998.008] Papua New Guinea [PG1998.003]
- An assessment of the status and integrity of data in the cruise database will be carried out to identify if outstanding requests, for data, exist. Follow-up requests for data, on the basis of results from the inventory assessment will be taken.

RT1997.021 Ocean Energy Program

Objectives: To monitor and assess technical data, information and advice on alternative marine energy resources, with particular focus on OTEC and, wave and tidal energy, in order to determine their feasibility for utilisation within the region.

Background: Since the concept of Ocean Thermal Energy Conversion [OTEC] was conceived approximately 100 years ago, a considerable body of experience, knowledge and lessons have been accumulated to develop the process and the technology.

SOPAC's mandate to promote ocean energy as a potential energy resource alternative in the region would be greatly enhanced by the identification of specific sites with energy resource potential. The identification of these sites would have to be based on the collection, collation and assessment of sound data and information. Resultant assessments would allow interested investors and/or donors an opportunity to make considered decisions on prospective development projects [Refer to Task RT1999.060 - Energy Resource Assessment]

Outputs 2001:

- SOPAC proposes to continue to pursue opportunities and seek to encourage further ocean/wave energy assessments in the region [Refer RT1999.060]

RT2000.047: Global Ocean Observing System Programmes in the SOPAC Region

Objectives: To co-operate and collaborate with international research programmes involved in global ocean ob-

serving systems such as the Triangle Trans-Ocean Buoy Network [TRITON] and Argo in relation to buoy and float deployment, maintenance and data utilisation.

Background: In-situ ocean observing systems such as TAO/Triton Array and Argo have been developed to improve our ability to describe and understand the state of the ocean. Data acquired from these types of ocean observing systems allows for improvements in predicting seasonal to decadal climate variability and climate change and extreme weather conditions and to significant improvements in environmental prediction. Data can also be used to predict ocean-fronts and changes in fish migration patterns in the region.

Consequently, such data and information and resulting products will allow SOPAC member countries to adapt to, and take advantage of climate and environmental change. Currently 25 Triton buoys have been deployed within SOPAC member country EEZs. It is envisaged that Argo floats will be deployed in the SOPAC region, however the number of floats is yet to be determined.

Outputs 2001:

- SOPAC will continue its collaboration with the Japan Marine Science and Technology Center (JAMSTEC) which is expected to continue the Triangle Trans-Ocean Buoy Network (TRITON) Programme.
- SOPAC will collaborate with NOAA on the ARGO float deployment and maintenance arrangements for floats to be deployed in the SOPAC region.

RT2000.046 Regional Bathymetric Map

Objectives: To update the bathymetry map of the Southwest Pacific region, which was originally compiled and published in 1983.

Background: In 1983 SOPAC produced a geophysical atlas of the South Pacific on a scale of 1: 6 442 192, with contour intervals of 500m. This bathymetry chart has been extremely popular, with some 10 000 prints, from two print editions, in circulation.

The present map is hand drawn and includes the Southwest Pacific region only. Since the production of this map SOPAC has acquired in its deepsea database, an enormous amount of data including bathymetric information from cruises and surveys in the region. In addition to these, SOPAC has acquired bathymetric data for the Federated States of Micronesia and the Republic of the Marshall Islands, which are both located in the North Pacific region. Consequently, an upgrade of the current chart is both timely and appropriate. It is envisaged that the upgrade will be digital and will include the northern parts of the Pacific as well.

Outputs 2001:

- SOPAC will continue to seek funds for the task. SOPAC will also continue association with the joint IOC/IHO GEBCO series as a reviewer for the Southwest Pacific and its role as an Observer for the Southwest Pacific Hydrographic Commission (SWPHIC).

RT2000.048 Development of a Maritime Boundaries Delimitation Program

Objectives: To ensure the effective transfer of the maritime boundaries delimitation project from the Forum Fisheries Agency [FFA] to SOPAC and its implementation within SOPAC.

Background: At the 28th Session of SOPAC held in October 1999, the Governing Council endorsed a proposal for the transfer of the Maritime Boundaries Delimitation Project from the Forum Fisheries Agency [FFA] to SOPAC. Similar endorsement was forthcoming from the Forum Fisheries Committee [FFC] at their 44th Meeting in May 2000, subject to preparation of a joint submission by FFA and SOPAC seeking approval from AusAID [Donor] for the Project and remaining funds to be transferred to SOPAC.

Under customary international law, as reflected in the United Nations Convention on the Law of the Sea 1982 [UNCLOS], each SOPAC member country is entitled to four maritime zones seaward of the territorial sea baselines, being the:

- 12 nautical mile territorial sea,
- Contiguous zone,
- 200 nautical mile exclusive economic zone,
- Continental shelf.

The 1997 review of Regional Coordination of Law of the Sea Issues in the South Pacific suggests that, in general SOPAC member countries lack the legal and technical expertise to equip themselves properly to maximise their maritime claims as permitted under international law. Consequently, external assistance continues to be a priority for Pacific Island Countries, for delimitation of maritime boundaries to determine national and resource jurisdiction over their living and non-living natural marine resources. This is reflected in ongoing requests by individual member country to provide specific technical assistance for delimitation of maritime boundaries. These specific requests for technical assistance will be considered following the successful establishment of a maritime boundaries delimitation programme, within SOPAC.

Outputs 2001: Design and implement a new Maritime Boundaries Delimitation Programme at SOPAC

RT2000.054: Preliminary Claims Preparation for Justifying Extended Continental Shelf Jurisdiction

Objectives: To identify, collect and collate existing data and information that will support extended continental shelf jurisdiction beyond the 200 nautical mile exclusive economic zone for the Federated States of Micronesia, Fiji, Papua New Guinea and Tonga. Further, to standardise the format of these data to be consistent with SOPAC data requirements and to initiate the UNCLOS process for preparation of a claim to the Continental Shelf Commission

Background: Article 76 of UNCLOS allows coastal States to extend their jurisdiction over non-living and specific living marine resources, in areas beyond the outer limit of their exclusive economic zones [EEZs] based on certain

provisions of the article. In 1996 SOPAC conducted a review to:

- Identify zones of potential continental shelf extension
- State the basis for defining the zone of potential continental shelf extension
- Review the likely data needed to support the claims

The review found a number of sea areas in the SOPAC region, for which jurisdiction could potentially be extended beyond the EEZ of some member countries. For the Federated States of Micronesia, two areas were identified, being the Euripik Ridge and the Musau Ridge. For Fiji, two areas were identified, being the Tonga Kermadec Ridge and Rotuma Ridge. For Papua New Guinea two areas were identified, being between the Euripik Ridge and the Musau Ridge. For Tonga two areas were identified, being the area between Fiji, Tonga and New Zealand and a 350 nautical mile limit around the relevant islands adjacent to the area.

As claims to the Continental Shelf Commission must be based on sound geological and bathymetric evidence, it is imperative that all data pertaining to these areas are identified, collected, collated and standardised. This will provide a basis for these coastal States to prepare their claims on the basis of all available evidence.

Outputs 2001:

- The following outputs will be completed under the following tasks for Federated States of Micronesia [FM2000.004] Fiji [FJ2000.011] Papua New Guinea [PG2000.003] and Tonga [TO2000.003]:

Identification, collection and processing of relevant data

Collation of dataset

- Evaluation to establish further requirements for claims preparation

RT2000.053 Justification of Extended Continental Shelf Jurisdiction – Geological Considerations

Objectives: To collect and evaluate existing geological data and information for evidence to identify zones of potential continental shelf extension, based on natural prolongation of the land mass of the coastal State.

Background: Article 76 of UNCLOS allows coastal States to extend their jurisdiction over non-living and specific living marine resources, in areas beyond the outer limit of their exclusive economic zones [EEZs] based on certain provisions of the article.

In 1996 SOPAC conducted a review to:

- Identify zones of potential continental shelf extension
- State the basis for defining the zone of potential continental shelf extension
- Review the likely data needed to support the claims

The review found a number of sea areas in the SOPAC region, for which jurisdiction could potentially be extended beyond the EEZ of some member countries. However, the review suggested that further studies were required to un-

derstand the geological nature of some islands and structures, if coastal States were to maximise their claims.

As claims to be submitted the Commission on the Limits of the Continental Shelf, for extended continental shelf jurisdiction, must be based on sound geological and bathymetric evidence, it is imperative that all data are identified, collected, collated and standardised.

Output 2001: Seek funds to initiate this task.

RT2000.084 Regional Workshop on Marine Scientific Research

Objectives: To convene a regional workshop involving all key stakeholders, on marine scientific research issues in the SOPAC region.

Background: Potentially contentious issues relating to access to exploration sites, sampling rights, commercial alliances of MSR researchers, data sharing, confidentiality of data and ship berthing rights have been raised by international researchers and tenement holders who conduct marine scientific research and exploration, respectively, in the Pacific region

In order to address these issues and concerns, the joint SOPAC Governing Council and Technical Advisory Group in the 29th SOPAC Annual Session recommended that a regional workshop be convened, early in 2001, to provide an opportunity for key stakeholders to discuss and resolve these issues and concerns.

Outputs 2001: Donor funding being sought to convene a regional workshop in the first quarter

RT2000.085 Regional Coordination of PacificGOOS in the SOPAC Region

Objectives: To develop and establish a Pacific Global Ocean Observing System [PacificGOOS] for the SOPAC Region.

Background: In early 1998 a preparatory GOOS meeting was held for the region where it was agreed that a PacificGOOS component of the Global Ocean Observing System [GOOS], the global initiative be established.

The Global Ocean Observing System [GOOS] is an international initiative co-sponsored by the United Nations Educational, Cultural and Scientific Organisation/Intergovernmental Oceanographic Commission [UNESCO/IOC], World Meteorological Organisation [WMO], United Nations Environment Programme [UNEP] and the International Council for Science [ICSU], with overall objectives to:

- Specify in terms of space, time, quality and other relevant factors the marine observational data needed
- On a continuing basis to meet the common and identifiable requirements of the world community of users of the oceanic environment.
- Develop and implement an internationally coordinated strategy for the gathering, acquisition and exchange of these data.
- Facilitate the development of uses and products of these data, and encourage and widen their application in use and protection of the marine environment.
- Facilitate means by which less-developed nations can increase their capacity to acquire and use marine data within the GOOS framework.
- Co-ordinate the ongoing operations of the GOOS and ensure its integration within wider global observational and environmental management strategies

Since 1998 a regional PacificGOOS Workshop was convened in which concept papers for CoastalGOOS initiatives in the region were developed. A special GOOS Working Group at the 29th SOPAC Annual Session recommended that these concept documents be drafted into detailed proposals and funding sought to assist in delivery of the proposed projects. In addition to this, the meeting agreed that a Strategic Plan be developed for PacificGOOS to provide medium-term direction and a way forward.

Outputs 2001:

- Concept documents will be developed to seek funds to develop and implement pilot projects identified at the PacificGOOS Coastal Workshop [RT2000.025].
- A strategy for PacificGOOS will be developed and distributed for consultation amongst key stakeholders

3. NATIONAL CAPACITY DEVELOPMENT PROGRAM

HEAD 3.1 HUMAN RESOURCES DEVELOPMENT UNIT

1. Objectives and Key Performance Indicators from the Strategic Plan

Objectives

Provide a variety of training and education opportunities at all levels to increase in-country capacity in the geosciences and resource management

Key Performance Indicators

- 40 graduates from the Certificate in Earth Science and Marine Geology Program
- Increase in the number (of at least one per country) Pacific Island Countries with degree in Earth Science
- Curriculum development and teaching course modules in ocean and earth sciences and non-living resources for schools
- 25 Island Nationals per year on-the-job training attachments

2. Staffing

Positions	Donor	Status
Training Coordinator	CFTC	Probable
Assistant Training Coordinator	Various	Unsecured

3. Work Program

RT1998.012 Certificate in Earth Science & Marine Geology

The future status of the course within the USP structure has been confirmed and actions relating to student registration and fuller use of the university facilities were taken (AS 28/10.7.1). In 2001 the students will enrol and receive full USP student status.

The third and final year of the current Certificate program will be completed and the successful participants graduate.

RT1998.013 SOPAC Fellowship/Attachment Schemes

The Fellowship Scheme provides for on-the-job training for periods of up to three months for technical training and experience at the SOPAC Secretariat and at places other

than the Secretariat including attendance at specialised workshops and conferences. Co-ordination of training attachments on cruise research vessels and follow-up evaluation workshops.

Outputs 2001: Fellowship attachments on a "needs arise" basis.

Advice and Assistance with Formal Education Programs

Assistance was provided as requested with the development of courses, visits and materials for secondary and tertiary institutions in the region, and in particular the assistance and advice with courses and teaching at USP.

Outputs 2001: Continued support to USP and other training institutions as requested.

Development of Distance Education Programs

Distance education programs in the geosciences continued to be evaluated with a view to the most effective method of applying these to member countries. The introduction of computer aided learning packages and experimental teaching of the Earth Science & Marine Geology course by extension through in-country courses and on the job training continued. Major constraints such as limited coverage for data transmission by e-mail and Internet availability remained but these continue to improve.

Deferred pending funding.

RT1999.064 'Mentors' Distance Education Programme

An initiative to establish technical distance education/learning activities in certain programme areas using SOPAC staff or SOPAC approved professionals with experience in the particular countries and programme areas as mentors to member country middle management or experienced technical staff was deferred due to funding constraints.

Deferred pending funding.

Skills for Development Program

A major new capacity building initiative 'Skills for Development' was deferred by the United Kingdom, DFID. A pilot project for the Pacific had been determined which was to address skills for development needs in the water sector through SOPAC.

Output 2001: Deferred pending funding.

HEAD 3.2 INFORMATION TECHNOLOGY UNIT

1. Objectives and Key Performance Indicators from Strategic Plan

Objectives

Provide technical support for establishment and maintenance of data management capabilities, and for the electronic exchange of information

Key Performance Indicators

- Information systems, designed and deployed in member countries
- Internet access implemented in member countries
- Databases with web access designed and deployed in member countries
- GIS and remote sensing capabilities developed in member countries
- Computer hardware and software to support Internet technologies, databases, GIS/remote sensing and modelling installed and upgraded in member countries
- Appropriate, cost effective and scaleable technologies transferred to member countries

2. Staffing

Positions	Donor	Status
Information Technology Manager	RB	Secured
Network and Database Developer	RB	Secured
Remote Sensing Specialist	XB	Secured
Information Technology Officer	RB	Secured
GIS & Remote Sensing Officer	France	Secured

3. Work Program

The key tasks were rationalised into three task development areas during 1999 to provide better transparency and ease of reporting as follows.

- Information Systems
- Communications
- GIS and Remote Sensing

During 2000 the fields of Information Systems and Communications have converged and in keeping with the goal of ease of reporting the task development areas have been further rationalised into two:

- **Information and Communication Technology**
- **GIS and Remote Sensing**

Information and Communication Technology (ICT) includes information system deployment, database development and

maintenance and more broadly, data warehousing. The Regional Data Centre holdings are included as well as organisation of offshore data (Law Of the Sea Issues). The dividing line between Information Technology and Communication Technology has blurred where the later includes wide and local area networking employing Internet as the predominant transport mechanism. Internet and Intranets are included in ICT as well as Internet Service Provider (ISP) operations.

GIS & Remote Sensing is fundamental to the operations of a Geoscience organisation and this task development area is often the final layer of the knowledge management system that is built upon the foundations of Information Systems with data warehouses and communications infrastructure.

Each task development area has been divided into two sections; member country support and secretariat support where both may include training or technology transfer. Task profiles, however, may address one section in one area or several sections in several areas and will vary according to the requirements of individual member countries.

It is also important to note that ICT and GIS and Remote Sensing are the fundamental tools of Island Systems Management that was introduced during the 1999 session.

SUPPORT TO MEMBER COUNTRIES AND THE SECRETARIAT IN INFORMATION AND COMMUNICATION TECHNOLOGY DEVELOPMENT

4.1 Support to Member Countries in ICT Development

SOPAC is dedicated to the support of all Member Countries in the development, installation and maintenance of appropriate Information Technology (ICT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing access to timely and accurate information. These systems are the building blocks of the knowledge management systems.

The objective is the provision of relevant and effective ICT systems to assist member countries in discharging their obligations under resource management objectives.

Training or technology transfer is essential to maintain skill levels of member country technical staff responsible for deployment and development of in-country information systems.

The objective is to provide adequately trained staff in member countries to ensure that information systems are maintained and developed. Activities will include the following.

Ongoing support for ICT development for all member countries will be provided in general as well as particular tasks:

Outputs 2001:

RT1997.006 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to

Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

RT1998.005 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate Information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

Cook Islands

CK1998.007 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

CK2000.011 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet

Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Federated States of Micronesia

FM1998.007 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

FM1998.008 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Fiji

FJ1998.006 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

FJ2000.020 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Guam

GU2000.002 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

GU2000.003 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Kiribati

KI2000.006 Assistance to MNRD with LAN/WAN

Approved: Review and maintain the equipment installed by SOPAC during its previous visit with a view to preparing for the 2000 Annual Session to be held in Kiribati.

The Information Technology Manager visited Kiribati early 2000. Upon its recommendation Kiribati has requested SOPAC to return and follow up.

KI1998.007 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

KI1998.008 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Marshall Islands

MH1998.009 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

MH1998.010 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Nauru

NR2000.002 Establish and Set Up Nauru Government Local Area Network (LAN) and IT Unit

Proposed: To improve work output and communication efficiency between Government departments.

With the use of an internal mail server within the LAN, this will enable quick up to date communications between the departments and distribution of memos, circulars can be instantaneous to the recipients;

Internet access can be controlled and monitored to safeguard the network by routing through a web server and user authentication system so only authorised users have access regulated for appropriate usage:

- Cost effective in terms of consumables
- Secure back up database information within departments
- Security within the network from outside viruses with the setting up of a firewall to protect the LAN and valuable and confidential information
- Standardisation of hardware and software

To improve work output and communication efficiency between Government departments. With the use of an internal mail server within the LAN, this will enable quick up-to-date communications between the departments and distribution of memos, circulars can be instantaneous to the recipients. Internet access can be controlled and monitored to safeguard the network by routing through a web server and user authentication system so only authorised users have access regulated for appropriate usage;

NR2000.003 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

NR2000.004 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

New Caledonia

NC2000.002 Fellowship Attachment from the University of New Caledonia

Proposed: To develop cooperation links between SOPAC and the French University of New Caledonia.

New Caledonia is working towards greater independence and cooperation with other Pacific Island countries. The exchange of professional staff to be trained in SOPAC will bring together the methodology of SOPAC member countries with New Caledonia's.

NC2000.003 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

NC2000.004 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Niue

NU1998.007 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

NU1998.008 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Papua New Guinea

PG1998.005 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

PG1998.006 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Samoa

WS1998.005 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to

assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

WS2000.003 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Solomon Islands

SB1998.007 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

SB1998.008 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow

local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Tonga

TO1998.008 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

TO1998.009 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

Tuvalu

TV1998.005 Support To Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

TV1998.006 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

TV2000.004 ISP Maintenance, Upgrade and Training

Proposed: To strengthen the running of the ISP in Tuvalu.

In 1999, SOPAC was requested by Tuvalu to set up the first Internet Service Provider (ISP) for the country. Tuvalu is requesting SOPAC to review the running of the ISP. SOPAC will perform maintenance and upgrade of the system.

Vanuatu

VU1998.006 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate Information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

VU1998.007 Support to Member Countries in Internet/intranet Development

Proposed: To provide Intranet and Internet services in Department of Geology, Mines and Water Resources.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has

the advantage of platform independence and low client resource requirement.

VU2000.007 VMRD Maintenance and Upgrade

Proposed: Upgrade Vanuatu Mineral Resource database and train technical staff.

In 1997, SOPAC with BGS developed and installed a Minerals Resource database for the government of Vanuatu. SOPAC provided continuous support, however it is now required to upgrade the system to current software and equipment. Furthermore SOPAC will train technical staff to use the new system.

4.2 Support to the Secretariat in ICT Development

The information system is a foundation for all activities within the Secretariat and provides all staff with access to organisational information via a server-based system where the servers include file and resource sharing, internet web services, Intranet web services and security. SOPAC is a web-centric organisation and continually migrates and reorganises datasets to be accessible through the common interface of web browsers.

Training or technology transfer is provided for Secretariat staff responsible for maintenance of the corporate information system as well as other staff on an as needed basis.

The objective is to provide ease of access to information through organised datasets using a common interface. Tasks include the following.

FJ2000.022 Fiji Internet Group Development

Proposed: Provide cost effective Internet connection for non-profit organisations, government departments, regional organisations and diplomatic missions.

The Internet service in Fiji does not allow the development of local content. The Fiji Internet Group (FIG) was created to promote local content, development of Internet related skills and reduced access costs to this new medium.

Nauru

NR2000.002 Establish and Set Up Nauru Government Local Area Network (LAN) and IT Unit

Proposed: To improve work output and communication efficiency between Government departments.

With the use of an internal mail server within the LAN, this will enable quick up to date communications between the departments and distribution of memos, circulars can be instantaneous to the recipients;

Internet access can be controlled and monitored to safeguard the network by routing through a web server and user authentication system so only authorised users have access regulated for appropriate usage;

- Cost effective in terms of consumables

- Secure back up database information within departments
- Security within the network from outside viruses with the setting up of a firewall to protect the LAN and valuable and confidential information
- Standardisation of hardware and software

To improve work output and communication efficiency between Government departments. With the use of an internal mail server within the LAN, this will enable quick up to date communications between the departments and distribution of memos, circulars can be instantaneous to the recipients. Internet access can be controlled and monitored to safeguard the network by routing through a web server and user authentication system so only authorised users have access regulated for appropriate usage;

NR2000.003 Support to Member Countries in Information System Development

Proposed: To provide relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

SOPAC is dedicated to the support of member countries in the development, installation and maintenance of appropriate information Technology (IT) systems. These systems are essential for improving the effectiveness of the relevant government department by providing ready access to timely and accurate information. This information allows policy makers to more effectively manage the regional resources while enabling the department to address their core business in a more efficient manner.

NR2000.004 Support to Member Countries in Intranet/Internet Development

Proposed: To provide Intranet and Internet services in member countries.

SOPAC has been investigating and developing access to Internet services by a variety of technologies that include commercial PSTN (Public Switched Telephone Networks) and satellite services. SOPAC has also undertaken a study and implementation plan to provide cost effective full Internet services via an international link. In addition, SOPAC has been developing Intranet services that allow local and national users access to information via Internet Web browsers. This new and innovative development of Web technology has enormous potential for providing access to information through a consistent user interface that has the advantage of platform independence and low client resource requirements.

NR2000.005 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

SUPPORT TO MEMBER COUNTRIES AND THE SECRETARIAT IN GIS AND REMOTE SENSING DEVELOPMENT

4.3 Support to Member Countries in GIS and Remote Sensing Development

SOPAC is dedicated to supporting member countries in the use of GIS and Remote Sensing technology; and supporting in-country technical staff involved in the development of GIS-related work.

The objective is the applied use of this technology to provide improved management of the resources in a sustainable manner through the development of knowledge management systems.

SOPAC has initiated the development of in-country Computer Mapping experience and has shown that the sustainability of these projects can only be achieved if proper training is supplied in-country or through attachments at the Secretariat.

The objectives include the training of users from the various government departments and to show the benefit of the use of GIS for high-level decision making.

There will be ongoing support for GIS and Remote Sensing development for all member countries will be provided in general as well as particular tasks:

Outputs 2001:

RT2000.002 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

RT1998.010 In-Country MapInfo Workshop

Proposed: To train technicians from the various government departments. To show the benefit of the use of GIS to high level decision-makers.

SOPAC has initiated the development of in country Computer Mapping experience and has shown that the sustainability of these projects can only be achieved if proper training is supplied in-country.

The training will involve the relevant government organisation and all other users or potential users in the country. These would include Agriculture, Environment, Fisheries, Forestry, Lands and Survey, Utilities and Urban Planning.

Three activities will be part of the training session:

- Introduction course to MapInfo
- Advance course to MapInfo
- Introduction to the benefits of GIS

Cook Islands

CK2000.012 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Federated States of Micronesia

FM2000.005 GIS and Remote Sensing Implementation, Kosrae – Phase II

Proposed: The objective of the Kosrae State Information System is the provision of remote sensing system which would bring together much of the geographical data held in the various governmental departments. The acquisition of satellite images would allow the creation of new data sets for infrastructure, vegetation and reef.

The government of Kosrae is currently funding an 18-month project to develop a shoreline management plan for the island to address current coastal zone management issues. This ongoing project has identified a significant amount of the geographical and special information that is held within the governmental departments on Kosrae and within private and off-island organisations.

The project has identified that by comparing the current datasets to newly acquired datasets, changed detection would be possible as well as providing up-to-date information of the island of Kosrae.

Fiji

FJ2000.005 Capacity Building of the Native Land Trust Board (NLTB) in Preparing Land Maps and Establishing Land Boundaries

Proposed: Production of maps establishing boundaries to assist landowners and land owning units by clearly defining ownership by area and transfer these maps to other sectors that include the Government sector of Forestry, Agriculture, Lands, Fisheries, Planning and Police as well

as the utilities that include Power, Telecommunications and Water;

To develop and build capacity in NLTB in carrying out land as well as undertake rapid and cost effective mapping and transfer this capacity to the other sectors using transferable, scalable, affordable and sustainable technology.

Land is of great importance to the development of the Republic of Fiji Islands in support of the major industries of sugar, native forestry, plantation forestry, tourism and the growing export industries that include vegetables, biochemical agricultural products and spices.

The sustainability and development of existing industries and development of new industries is threatened by a dispute between landowners, tenants and Government over land use and occupancy where in general the tenants are small scale farmers of Indian origin and the owners are traditional Fijians with 83% of their land managed by NLTB.

Many Fijian Landowning Units are now requesting the return of their land for their own use at the expiration of the Agricultural and Landlord and Tenant Act (ALTA) leases where approximately 6000 leases will expire between 1997-2005 and a further 7000 before 2028.

A common problem facing both Landowning Units and tenants is ill-defined or undefined boundaries and there is an urgent need to survey these boundaries in response to the impasse in a cost effective and timely manner.

In this regard, NLTB is charged with the responsibility of administering 83% of native land and has established a Native Land Management System (NLMS). This system seeks to incorporate the available technologies and tools of Global Positioning Systems (GPS), Geographic Information Systems (GIS) and Remote Sensing (RS) data from satellite imagery to continually update NLMS and produce maps and reports to respond to the need for better defined boundaries.

FJ2000.016 In-Country MapInfo Workshop

Proposed: To develop skills of technical officers in various Fiji government departments.

SOPAC has chosen MapInfo as the regional tool in GIS. Since 1995 SOPAC is conducting ad-hoc training workshops to develop local skills.

Guam

GU1998.001 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Kiribati

KI1998.006 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Marshall Islands

MH2000.005 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Niue

NI1998.006 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Papua New Guinea

PG1998.004 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

WS1998.001 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Solomon Islands

SB1998.006 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Tonga

TO1998.007 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Tuvalu

TV1998.004 Support To Member Countries In GIS And Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

Vanuatu

VU1998.005 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

4.4 Support to Secretariat in GIS and Remote Sensing Development

SOPAC as the recognised lead organisation in GIS and Remote Sensing employs these technologies within the broad range of technical programs and respective units. The Information Technology Unit has been tasked with co-ordinating these activities within the Secretariat.

The objective is co-ordinated development of scalable and transferable systems that assist all SOPAC programs in effectively carrying out their respective tasks. Tasks include the following.

Outputs 2001:

FJ1998.005 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer.

FJ1998.010 Production and Organisation of Coastal Data

Proposed: To produce digital data sets.

SOPAC is producing a large amount of data in digital form. GIS technology provides opportunities to organise and secure it. Digitisation and quality check are also an essential component of data production.

NC2000.005 Support to Member Countries in GIS and Remote Sensing Development

Proposed: To support in-country technicians and departments involved in development of GIS/RS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems.

SOPAC has developed many geographical data sets of the region. The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer

RT2000.056 Production and Organisation of Regional Data - SOPAC Data 2001

Proposed: To compile and produce regional data sets for member countries.

SOPAC is producing a large amount of data in digital form. GIS technology provides opportunities to organise and secure it. Digitisation and quality check are also an essential component of data production.

RT2000.065 GIS and Remote Sensing Development

Proposed: To support the Secretariat in GIS related work.

One of SOPAC's regional mandates is to study and implement geographic information and remote sensing systems. SOPAC has developed many geographical data sets of the region.

The purpose of this project is to strengthen Pacific Island countries in these fields and to provide technology transfer. Because of the growing technology in GIS and Remote Sensing, the ITU is involved in upgrading and providing help desk services to the Secretariat staff involved in this related field.

HEAD 3.3 DISASTER MANAGEMENT UNIT

1. Objectives and Key Performance Indicators

Objectives:

To reduce the compound risks of natural, human induced, technological and environmental hazards through risk management and to encourage the development of an efficient response and recovery process

Key Performance Indicators:

- DMU established, management and monitoring links within SOPAC structure developed
- Project monitoring and evaluation systems designed and implemented
- DMU Operational Plan and staff performance system in place
- Project progress reports prepared and distributed
- Evaluation of professional development needs completed
- Regional training plan developed

- Regional resource database established
- Regional Advocacy strategy developed

2. Staffing

Position	Donor	Staff
Disaster Management Coordinator	DFID	Alan Mearns
Program Support Services Adviser	Aust/NZ	Atu Kaloumaira
Professional Development Adviser	Aust/NZ	To be appointed
Program Assistant	Aust/NZ	Vive Vuruya
Project Assistant	Aust/NZ	To be appointed

3. Work Program

Following the formal endorsement of the DMU Design document the following initiatives will form the basis of the units work program for the year 2001.

RT2000.069 Project monitoring and evaluation systems designed and implemented

Objective: To implement the agreed project monitoring and evaluation systems

Background: The DMU Project is required to be monitored and evaluated by an independent process to ensure stakeholder satisfaction with the progress being made. It was agreed at the annual regional disaster management meeting in Niue in September 2000 that this would be carried out by the establishment of a project monitoring and evaluation group.

Outputs 2001: The Project Monitoring and Evaluation Group (PMEG) are scheduled to meet in February 2001 and will carry out the preparation of M&E methodologies and tools and the establishment of documenting and reporting systems for this ongoing activity. Ongoing activities will include selected in-country visits and six-monthly review meetings.

RT2000.070 Annual Performance Management System developed for DMU staff

Objective: To develop criteria and monitoring systems for DMU staff development and performance and conduct annual reviews.

Background: To ensure that DMU Staff performance meets stakeholder expectations annual performance management plans will be developed in line with the SOPAC organisational requirements. These will include agreed Key Performance Indicators (KPIs) and six monthly reviews. At the end of each twelve months period a management report will be developed including identified staff development needs.

Outputs 2001: Duty statements for all DMU will have been prepared and staff performance plans agreed that align to the achievement of business planning priorities. During the year six and twelve monthly reviews will be conducted and reports prepared for SOPAC management.

RT2000.071 Project Progress Reports prepared and distributed

Objective: To prepare and disseminate accurate and timely project activities reports

Background: To ensure that relevant and timely information is made available regarding the progress of the DMU project quarterly activities reports will be prepared and distributed to key stakeholders including SOPAC Secretariat and Donors. Six-monthly reports will also be prepared and distributed in a timely manner for Project Coordination Meetings.

Outputs 2001: Quarterly reports will be prepared and distributed and two project coordination meetings conducted.

RT2000.072 Results of Training Evaluation Process Implemented

Objective: To develop a regional training plan based on identified professional development needs

Background: In order to effectively meet the current and future professional development needs of the various stakeholder groups involved in disaster management activities in the region a database of existing training courses and resource materials will be developed and existing courses adapted and/or new courses developed to meet the needs identified in the training evaluation review.

Outputs 2001: The professional development needs evaluation process will have been completed with appropriate stakeholder consultation and a regional training plan developed that effectively reflects the training and development needs of the region.

RT2000.073 Professional Development Courses Institutionalised

Objective: To develop partnerships with recognised training establishments

Background: The long-term objective of the DMU training program will be the institutionalising of appropriate courses within recognised training establishments such as regional and international universities in order to enhance the professionalism of the disaster management community of the South Pacific and to assist the process of advocacy within government.

Outputs 2001: Significant progress will have been made in the development of appropriate partnerships arrangement with recognised training institutions such as universities and international disaster/risk management centres.

RT2000.074 Annual Evaluation of National Skills

Objective: To undertake annual evaluation of in-country skills

Background: A key component of the project monitoring and evaluation process will be the annual evaluation of nation skills that ensures the appropriateness of the training provided. This will be conducted and reported on as

part of the activities of the project monitoring and evaluation group's activities.

Outputs 2001: An annual evaluation of the appropriateness of the training delivery for the stakeholders

RT2000.075 Comprehensive Hazard and Risk Management (CHARM) Programs Developed

Objective: To assist countries with the adoption of a CHARM approach

Background: A major initiative of the DMU project is the adoption of a Comprehensive Disaster Management Program by countries. To achieve this the DMU will assist with the design of a program framework for major hazards and determining country priorities in consultation with governments, policy and development planners. This will be achieved using a risk management approach and identifying existing and proposed activities, which can then be monitored and evaluated. Following an initial activity in Kiribati, this program has been renamed Comprehensive Hazard and Risk Management (CHARM).

Outputs 2001: Countries will have a framework for identifying, prioritising and managing major hazards and country priorities will be determined using a risk management approach and in consultation with governments, policy and development planners.

RT2000.076 Annual DMU Operational Plan Developed

Objective: To develop a DMU Operational Plan

Background: To ensure a professional approach to meeting stakeholder's expectations the DMU will conduct an annual planning workshop to develop an operational plan for the following 12 months. This planning framework will address the project document requirements and ensure alignment to the SOPAC Business Plan and SOPAC Unit interdependencies.

Outputs 2001: A DMU operational plan that reflects the requirements of the project logframes and is aligned to the SOPAC organisational business plan

RT2000.077 SPDRP 2 Activities Reviewed

Objective: To review any outstanding SPDRP 2 activities

Background: The transition process of the closure of the SPDRP 2 and the start up of the new DMU involves a review of any outstanding SPDRP 2 activities and where appropriate the incorporation of SPDRP 2 outputs and activities within the DMU work plan.

Outputs 2001: The incorporation, where appropriate, of SPDRP 2 activities within DMU work plans.

RT2000.078 Regional Resource Database Established

Objective: To develop a regional resource database

Background: In order to enhance the overall programming support mechanisms to countries a regional resource database needs to be established. The development of the database will be facilitated through a regional workshop involving members of the Project Advisory Group. The database will be available within the DMU and be utilized to enhance program support to countries.

Outputs 2001: A regional resource database established at the DMU

RT2000.079 Register of Outsource Capabilities developed and maintained

Objective: To develop a register of outsourcing capabilities

Background: In order to deliver the necessary programming support to countries a database of potential consultants will need to be developed and maintained. The process will involve advertising for expressions of interest and then validating each outsourced serviced provider according to technical assistance field of expertise.

Outputs 2001: A register of outsourcing capabilities

RT2000.080 Uniform Disaster Management Terminology

Objective: To develop agreed terminology for the region

Background: In order to enhance the DMU programs and develop consistency across the region a project task force will be established to develop a set of operating guidelines for the development of draft disaster management for application in the region. A marketing and communication strategy will also be developed to support the adoption of uniform terminology amongst technical support agencies and outsource providers.

Outputs 2001: Uniform disaster management terminology agreed and adopted throughout the region.

RT2000.081 Development of Regional Advocacy Strategy

Objective: To develop a three-year advocacy strategy

Background: The development of a three-year advocacy strategy is a key element of the Partnership Component of the DMU Project Design Document. The process for the development of this strategy will be through the appointment of a regional reference group and conducting an advocacy-planning workshop. The task of the reference group will be to identify the key issues and agree on a strategic approach that will be able to influence key government decision makers to adopt a risk management approach to national planning.

Outputs 2001: A three-year advocacy strategy will have been developed to promote the benefits of risk management

RT2000.082 Region's interests represented at International forums

Objective: To prepare a schedule of key regional and international events

Background: The DMU have a responsibility to ensure that the region's interests are represented at appropriate regional and international disaster and risk management forums. Appropriate events will be scheduled and budgeted for as part of the DMU business plan and post activity reports will be prepared and disseminated for information.

Outputs 2001: The region's interest will have been represented at appropriate regional and international disaster and risk management forums.

RT 2000.083 Non-Traditional Donors Support Systems Established

Objective: To conduct briefings with non traditional donor agencies

Background: The development of a strategy to encourage the involvement of non-traditional donors is an important element in ensuring long term funding for DMU initiatives and ongoing country program support. This will involve conducting a number of briefing with selected donors and reporting the outcomes of these briefings at the annual meetings.

Outputs 2001: Support systems established to facilitate the entry of non-traditional donors as partners in risk management programs

HEAD 3.4 PUBLICATIONS AND LIBRARY UNIT

1. Objectives and Key Performance Indicators from the Strategic Plan

Objectives

Provide access to information in the geosciences and related fields

Key Performance Indicators

- Increased use by member countries and other regional development agencies of basic data gathered, compiled and managed by SOPAC for use in development projects
- Increased use of written, audio-visual, photographic, cartographic data and other information resources held in the SOPAC library
- Increased readership on the SOPAC mailing lists from 700 to 1500 people

2. Staffing

Positions	Donor	Status
Publications Coordinator	RB	Secured
Librarian	RB	Secured
PLU Assistant	Various	Probable

3. Work Program

RT 1999.001 Routine Corporate Publishing

Objective: Proceedings of annual meetings (council & technical meetings); Annual Report, SOPAC Projects, SOPAC Quarterly Gazette, various newsletters, and other corporate promotional material will continue to be published.

Outputs 2001:

- Proceedings of the 29th Session, Tarawa, Kiribati.
- Annual Report Summary 2000, (Budgeted for external consultants)
- 2 issues of SOPAC Projects.
- 2 issues of SOPAC Gazettes.
- 2 issues of SOPAC News.

RT 1999.018 Non-routine Corporate Publishing

Objective: Special publications out of major regional workshops or synthesis-type publications that update the region's pool of geoscientific knowledge will continue to be published and is an ongoing activity.

Outputs 2001:

- Geology and Stratigraphy of Central and Southwest Guam: An Eocene/Oligocene Volcanic Arc with special emphasis on the Alutom Formation, map and bulletin by Frank Kilmer.

Work will continue for the following (these have been ongoing and are being coordinated through external compilers and editors). New publications will be added on for 2001 when new ones come to light to enter to publishing process.

- Technical bulletin of papers presented at the 1997 Workshop on Volcanic Hazards and Emergency Management in the Southwest Pacific/Paul Taylor (editor).
- Technical bulletin based largely on papers presented at the Pacific Exploration Technology (PET98) Conference, Nadi, Fiji Islands/Mike Petterson (editor).
- Tuvaluan translation of "Coasts of Pacific Islands."

RT 1999.019 Internally-Produced Reports

Objective: Technical review, editing, publication and distribution of Work Program reports to principal clients will continue and is an ongoing activity.

Outputs 2001:

- The objective is to maintain the same level as year 2000 (>70 reports as output from technical unit work program). Expected to be higher if the EU Project goes ahead.
- Assistance will continue to be provided for English-as-a-second-language authors working at the Secretariat and other cooperating agencies with written composition.

RT1999.020 Reimbursable (external) publishing

Objective: Publishing assistance to member countries and cooperating agencies will continue on an as-requested, and charitable basis when time and resources permit.

Outputs 2001:

- The late Stuart Kingan's book "Paradise or Comic Opera?" (subject to next-of-kin approval).
- Dependent on member-country extra-Work Program requests.

RT1999.021 Public Education and Awareness

Objective: An ongoing activity that aims to educate the Pacific audience on appropriate or best practices in the sectors within SOPAC's mandate. Also monitors feedback on the use of information produced, compiled and/or distributed by SOPAC. Products are usually press releases, information notes, and special-publications/resource materials. Activities are usually funded under special grants.

Outputs 2001:

- Various public awareness resource materials for Kiribati & Tuvalu (vernacular).
- World Water Day 2001 information kits, stickers and leaflets.

RT1999.022 Information (Library & Bibliographic) Services

Objective: Library and bibliographic services will continue for member countries, Secretariat staff, researchers and students who have cause to use the SOPAC Library.

Outputs 2001:

- Maintain same level as year 2000 or higher.

RT1999.023 Member-country Library Assistance and Transfer of Skills

Objective: Assistance to island member countries with their geoscience reference collections and libraries:

Outputs 2001: VU 2000:005: Assessment and Re-organization of Department of Geology & Rural Water Supply Library.

RT1999.024 Miscellaneous Services Support to the Member Countries, Secretariat, staff & other agencies

Objective: Editing, publishing, graphic designing, drafting, color & large-format photocopying, lamination, coordinating photographic film development, in-house production of reports, etc. are available at or can be arranged by the Unit.

Support services in pre-meeting arrangements by the Administration, and rapporteuring services for annual SOPAC meeting will also continue to be provided.

Outputs 2001:

- The objective is to maintain the same level as Year 2000, but will most likely be higher if the EU Project goes ahead.
- Render rapporteuring services at SOPAC 29th Session.

RT2000.052 Pacific Women and Her Environment: Support for ECOWOMAN, and other environmental Information Networks

Objective: In-kind support will be given to regional women's environmental networks as a contribution to making science and technology more accessible to Pacific women.

Outputs 2001:

- Publication Coordinator will continue participation ECOWOMAN Collective and Steering Committee Meetings.
- Publication of 2 newsletters for Once and Future Action Network (OFAN) of which ECOWOMAN is the Pacific node.
- Continue advisory assistance with database and Internet services in conjunction with IT.
- Librarian to continue the association begun with the Pacific Environmental Information Network (PEIN) by attending their 3rd meeting.
- By virtue of the SOPAC Librarian's being the Representative for the Pacific Islands Regional Group to the International Association of Aquatic and Marine Science Libraries and Information Centres (IAMSLIC), her attendance at IAMSLIC annual meetings is a service to the region.

4. CORPORATE SERVICES PROGRAM

HEAD 4.1 CORPORATE MANAGEMENT UNIT

1. Goal, Purpose, Outputs & Activities

Goal

Improved health, wealth-generation opportunities, and sustainable development of natural resources in member countries.

Purpose

Ensure effective, efficient and relevant service by SOPAC to member countries.

Outputs

- A cost-effective, efficient and productive operation.
- PIC nationals well trained in resource management and environmental science.
- A resource database and information technology system servicing member countries.
- Project reports, maps and publications.

Activities

- Facilitate decision-making meetings by Council.
- Seek advice and direction from member countries.
- Report to the SOPAC Governing Council, stakeholders and donors.
- Manage the human resources and technical and financial operations of SOPAC.
- Advise member countries on matters relevant to the areas of SOPAC's operations.
- Source funds for the continued effective operation of SOPAC.
- Direct the Secretariat in the development of a work program.
- Coordinate SOPAC activities with other national, regional and international initiatives.
- Liaise with relevant organisations in the areas of SOPAC's operations.

2. Staffing

Positions	Donor	Status
Director	RB	Secured
Deputy Director	(Proposed to re-establish)	Pending
Finance & Administration Controller	RB	Secured
Personal Assistant	RB	Secured

3. Work Program

The following reports on the work program of the Corporate Management Unit. This work program is ongoing and specific comments of relevance to the year 2001 are mentioned.

3.1 Formulate and Implement the Annual Work Program and Budget

Formulate the annual Work Program and Budget for SOPAC and ensure the effective implementation and follow up of the approved tasks and activities in accordance with Council's approved Work Program and Budget and other directions given by Council.

3.2 Liaise with Member Countries on the Work Program

Provide advice and keep member countries informed of SOPAC's Work Program activities and projects. An attempt will be made to ensure that each member country is visited at least once by either the Director or the Program Manager.

Liaise with member countries on requirements and effectiveness of the Work Program and ensure that member countries interests are fully served through interaction, participation and collaboration. Continue to develop and maintain the Task Profile Database such that every task can be defined, monitored and evaluated.

Outputs 2001:

The Director or the Program Manager will visited member countries at least once during 2001

3.3 Maintain an Effective and Efficient Secretariat

Maintain an effective and efficient Technical Secretariat with appropriate scientific, technical, administration and support staff. Try to improve the effectiveness of the Secretariat by encouraging National Representatives to ensure inputs are driven by national policies and outputs reach in-country clients.

3.4 Seek Funding for Resourcing of the Secretariat

Seek funding and support for adequate financing and resourcing of the organisation to enable SOPAC to achieve its goals and objectives.

Plan, co-ordinate and monitor aid program and projects. Seek ways to increase the political profile of SOPAC's programs with donors by initially participating in the Post-Forum Dialogue meetings and holding regular HLCs with traditional donors. Promote Council and/or the SOPAC Chairman to co-ordinate Donor round-table meetings and

encourage increased "cost sharing" of programs as a funding option.

3.5 Represent SOPAC at International and Regional Meetings

As and when required, the Director or his nominee will represent the region and SOPAC at these meetings.

3.6 Implement Evaluations and Reviews

Ensure the proper implementation and reporting of any evaluations and reviews directed by the Governing Council or required by donors.

HEAD 4.2: FINANCE AND ADMINISTRATION UNIT

1. Goal, Purpose, Outputs & Activities

Goal

Facilitate the operation and enhance effectiveness of the Corporate and other Work Programs of the Secretariat.

Purpose

Provision of effective financial, administrative and general support services necessary for the efficient management and delivery of SOPAC's Work Program.

Outputs

- Monthly trial balances, financial accounts and variance reports.
- Reports for the Management and Project/Team Leaders.
- Six-monthly, annual and ad-hoc donor and project financial reports.
- Audited annual financial statements and management report on internal controls.
- Annual SOPAC work program and budget and related reports.
- Financial reports and papers for the Annual Session.
- Revision and implementation of personnel/staff and financial rules and regulations.

Activities

- Daily provision of professional accounting and financial services.

- Daily posting of financial transactions.
- Preparation and reconciliation of monthly, six-monthly and annual financial reports for donors, management and program leaders.
- Support management in personnel and related matters.
- Manage the general operations and day to day administrative, office and property maintenance guidelines of the Secretariat.
- Assist the management in the preparation of the annual work program and budget.
- Maintenance of the Secretariat's computerised accounting and internal control systems.

2. Staffing

Positions	Donor	Status
Accountant	RB	Secured
Assistant Accountant	RB	Secured
Administrative Assistant	RB	Secured
Secretary/Clerk	RB	Secured
Receptionist/Clerk	RB	Secured
Driver/Clerk	RB	Secured
Office Assistant/Cleaner	RB	Secured
General Accounts Clerk (Temp)	Various	Probable

3. Work Program

The following reports on the work program of the Finance and Administration Unit. This work program is ongoing and specific comments of relevance to either 2000 or 2001 are mentioned.

3.1 Provide Professional Financial Services

Provide professional finance and accounting services to the Secretariat in accordance with the rules, regulations and policies approved by the Governing Council and ensure that the requirements of the Financial Regulations are properly and effectively applied.

3.2 Advice to Management on Financial Matters

Provide sound advice to Management and other program leaders on a broad range of financial matters and ensure that Management is fully informed of the financial position of the organisation at all times

3.3 Prepare Timely Management, Financial and Audit Reports

Prepare timely, accurate, relevant and complete management information reports, including financial statements for annual audit verifications.

3.4 Assist in the Preparation of Work Program and Budget

Provide assistance in the preparation and finalisation of the Annual SOPAC Work Program and Budget and other related documents including papers for the Annual Session.

3.5 Provide Professional Personnel Services

Provide professional personnel management and other staff related services and advise in accordance with the rules, directions and Staff Regulations of SOPAC.

3.6 Provide Administration, Office and Property Support Services

Provide efficient administrative, office and property support services to Unit Heads and Management, including timely advice and information to Management.

3.7 Design, Implement and Maintain Operational Systems

Design, install, implement and maintain internal controls, computerised accounting and operational systems to enable the efficient and effective operation of the finance, accounting, personnel management and general administrative support services of the Secretariat.

3.8 Develop and Maintain Project Database

Develop, implement and maintain a database on all projects and aid funding to SOPAC including timely updates.

3.9 Ensure Timely Preparation and Reporting of Donor Financial Reports

Ensure timely preparation and reporting to donors.

HEAD 5.1 TECHNICAL WORK PROGRAM MANAGEMENT

1. Goal, Purpose, Outputs & Activities

Goal

To ensure the technical work program contributes to the development needs of the member countries.

Purpose

To ensure that the technical work program is developed, implemented and reported on in a timely and cost-effective manner.

Outputs 2001:

- Completion of country tasks as described in Project Profiles.
- The Annual Technical Work Program Report and Draft Future Work Program to Council.
- Project proposals for future funding.

Activities

- Overall coordination and management of the Resource Development, Environmental Science and National Capacity Development Programs.
- Maintain ongoing liaison with National Representatives to ensure that country work requests are built into the technical work program, completed tasks are reported on in full including briefing sessions held in-country and appropriate public relations are attended to.
- Maintain ongoing liaison with external support agencies especially within the umbrella of STAR to ensure the latest science and technology contributes to the Work Program whenever appropriate.
- Prepare submissions and project proposals for consideration by donors whilst keeping in close collaboration with other CROP agencies and the "Regional Strategy" being developed by the Forum Secretariat.

2. Staffing

Each of the three technical programs has a Program Assistant (PA) whose responsibilities are shared by the units in that program.

Positions	Donor	Status
Program Manager	RB	Secured
Resource Development PA	RXB (New Zealand)	Secured
Environmental Science PA	RXB (New Zealand)	Secured
National Capacity Development PA	RXB (New Zealand)	Secured
National Capacity Development TA	RB	Secured
EVI Project Leader	NZ, Ireland, Norway	Secured
EVI Project Assistant	NZ, Ireland, Norway	Secured

In addition the Environmental Vulnerability Project will continue with the services of Craig Pratt, Reginald Pal on short term agreements as Project Officers.

3. Work Program

This work program is ongoing and specific comments of relevance to outputs for 2001 are included where necessary.

3.1 As described above under the Work Program unit reports.

3.2 Environmental Vulnerability Project Phase 2 (RT1999.036)

Vanuatu: (VU1999.004) Environmental Vulnerability Profile

Samoa: (WS1999.025) Environmental Vulnerability Profile

Tuvalu: (TV1999.009) Environmental Vulnerability Profile

Fiji: (FJ2000.009) Environmental Vulnerability Profile

Phase II of the Environmental Vulnerability Project began in June 1999 with continued funding from the New Zealand government. The primary goal of this phase was to obtain extensive international peer review of the proposed methodology for determining environmental vulnerability. The first major step in this review process was the convening of an International Expert Group Meeting on Environmental Vulnerability whose task was to peer-review the environmental vulnerability index in order to make the methodology acceptable and operational in the international community (SOPAC Technical Report 299).

The environmental vulnerability index (EVI) then underwent preliminary testing with real environmental vulnerability data from Fiji, Samoa, Tuvalu and Vanuatu. Phase II of the project was completed in February 2000 and presented in SOPAC Technical Report 306.

Work in SOPAC member countries has continued with work in Cook Islands (CK2000.002), Kiribati (KI2000.002), Nauru (NR2000.001) and Tonga (TO2000.002).

Environmental vulnerability data profiles for Federated States of Micronesia (FM2000.002) and Marshall Islands (MH2000.001) are also expected to be complete by the Annual Session.

3.3 Environmental Vulnerability Project Phase 3 (RT 99.096)

The project proposal document for Phase 3 was completed in late 1999, and during the first half of 2000 funding was secured from New Zealand, Ireland and Norway. Further funding is being sought to complete all activities outlined for Phase III.

APPENDIX 8

EXPANDED DISCUSSION ON AGENDA ITEM 10.4 SPC/SOPAC INTEGRATION

The Director introduced paper AS29/10.4 (SOPAC/SPC Integration) and its supplement, the Final Consultants Report on the SOPAC/SPC Integration Study (SOPAC Miscellaneous Report 392*). He gave some background to the initiative and a report on the progress during the year. He also expressed regret the final consultants report had not been ready in good time for Council to make considered deliberations on the consultants' findings. (Delegations received the report when they registered on arrival at the meeting).

At the Chair's invitation, the consultants briefed Council on their work, the consultation processes and the series of meetings they conducted throughout the region. The places they couldn't visit, they conducted telephone interviews. They thanked Council members and all the organisations that facilitated their work for their assistance during their consultations. They acknowledged that the delay in release of their final report was primarily due to the difficulty in extracting comments from the various stakeholders on the draft report sent out by the consultants in July.

The consultants then walked Council through their report, chapter by chapter, and especially highlighted Annex 4: the balance sheet of advantages and disadvantages of an SPC/SOPAC merger. Essentially their report supports the integration of the two organisations. It discusses a number of organisational models and recommends the simplest - that of SOPAC integration into SPC as a new division with its own Director, given that the chief concern among stakeholders is that the integrity of SOPAC's programs be preserved. They presented their model of the one merged, restructured organisation, and identified an annual savings of \$480,000 if the model were to be acceptable for implementation by Council. They also identified a further \$35,000 savings if there was a common facility in Suva to house both the operations, but they also pointed out that the emergence of such a common facility is most probably delayed given the situation in Suva. The consultants recommended that these annual savings be channelled back into the work program rather than returned to the member countries.

The consultants also drew Council's attention to the synergies they identified between some technical programs of the two organisations, and how a merger

would certainly result in improving quality and efficiency of services to the region. They commended highly the dynamism, initiative and objectivity of the two CEOs in starting the whole process of serious analyses of an SPC/SOPAC merger based on their collective perception of these very synergies.

Chair thanked the consultants on the comprehensive presentation of their final report and invited Council to take advantage of the presence of the consultants at the meeting to field questions and commentaries to stimulate discussion on the matter at hand.

Cook Islands thanked the consultants for the comprehensive and detailed report, but he felt that member countries would rather go back home with the report, hold more detailed discussions in their capitals, and study more closely the legal implications of the merger, and its effect on SOPAC's key activities. He felt more discussion was required on the paper and suggested that Council defer this to a later date so delegations were more familiar with the contents of the report and therefore more prepared to discuss its contents.

Tonga expressed support for the views of the Cook Islands and noted that Annex 6 of the report showed that Tonga was not consulted at all by the consultants. The consultants reported that they had made contact with the SPC representative and that Tonga had reserved their contribution to bring along to this meeting.

At the invitation of the Chair to make preliminary remarks, SPC's Jimmy Rogers assured Council that his understanding of what was required of Council was that member countries would now make their own observations and look at issues themselves. He felt that the consultants had addressed well all that they were asked to look at, and it appeared to him member countries were nervous about the impression of one organisation subsuming another. SPC's position at this juncture was that they were more comfortable listening to SOPAC Council members expressing their views on key issues and seeking clarification on others.

Tuvalu sought clarification about the annual net savings identified in the Executive Summary, under Chapter 5, whether it was for each organisation or the combination of the two? The consultants clari-

fied that the savings was for both organisations combined and was the result of a reduction in management team, meaning with two organisations coming together, the resultant organisation should retain the best people and sacrifice redundant positions in the new structure.

Tuvalu was pleased with the findings of the study, and commended the two CEOs for initiating the process. He stressed the need to ensure that the delivery of services was not compromised. He also echoed the sentiments expressed earlier, that due to the fact that they only got the final report at registration, that they needed to go home with the report and put more time into understanding it before they could discuss its contents.

Marshall Islands expressed their concern on a perceived imbalance of more SOPAC activities versus SPC activities on the ground in the Marshalls. SPC replied that the Marshall Islands' perception meant that SPC's communication/networking arrangement was not working as well as it should, if there was no awareness of their many programs with currently ongoing activities in the Marshalls.

Fiji asked whether a comparison had been made as to which of the two Council arrangements was the better. The consultants replied that having Council meetings in Fiji was a savings to the member countries. Part of what contributed to the annual savings identified by the consultants, was that the merged organisation had one governing body less, which meant less meetings to attend all round. The consultants suggest the retention in the merged entity of the SOPAC arrangement for the STAR/TAG group, as the importance of continued contact with such a group was very apparent. Consultants were encouraged by the fact that most island countries desired an operational presence of the new merged entity in their countries, as is the case with USP. The consultants therefore exhorted Council to progress towards having this operational presence in countries, to eliminate the complaint that benefits accrue to only a few of the countries.

Cook Islands asked the consultants for more details on the areas they identified where savings could be made. The consultants briefly summarised what they thought was the procedural order of restructuring of the new merged entity - to some, the merger meant 'downsizing' which translates to cutting costs and therefore jobs. The consultants immediately saw two middle-management positions as redundant. They informed Council that both governing bodies would have to set the rules about who to let go and who to retain.

Cook Islands thanked the consultants for spelling out his area of concern. He told Council that he had been part of a restructuring exercise in his own coun-

try and it was painful. He made a plea that something be in place for the people who would lose their jobs if the merger were to be implemented. The consultants assured that job losses was not their concern at this point but that efficient delivery of services was. The governing bodies of both organisations would be the entities to make the arrangements to put something in place for those likely to be displaced by the merger.

Fiji raised the point that the merger move was towards creation of a larger organisation, and experience has shown that the geoscientific arm of large agencies usually drew the short end of the stick.

The consultants conceded that in their observation of the trend in governments and other agencies; important scientific fields suffer from neglect. Given that the greatest concern of Council was to preserve the integrity of SOPAC Programs, the consultants found that donors saw their priorities through programs which made priority setting for them not such a big issue.

Papua New Guinea asked whether the options provided to Council by the consultants were the only options, or could SOPAC continue to act alone? The consultants hastened to say that it wasn't their decision but that of Council, based on how important to Council science and technology was. Council could very well decide to remain as they are, but the consultants were tasked with looking at options for merger.

On the issue of SOPAC losing out, in the merged entity, on effective delivery of its programs to member countries, SPC's Deputy Director-General, Jimmy Rogers, gave a brief overview of the SPC technical programs and how they were managed. He reported that SPC ran bigger technical programs, and that he saw SOPAC, if the merger went ahead, as being grafted into SPC as a stand-alone technical program with its own divisional head. There was independence within a division, and the Director-General and Deputy had little to do with the running of the technical programs. He said that the proliferation of regional organisations (8) was the result of them being set up only when regional countries perceived the gaps in their development needs and moved to correct the deficiency. The trend now was that member countries wanted considered opinion with respect to technical programming in the region. Some type of priority setting by them was needed to serve as guidance to the larger technical programmes. Linkages with other technical organisations needed to be identified to help with priority setting. He went on to reassure Council that neither SPC nor SOPAC was pushing integration. He discerned that one of the main fears by member countries is that one program gets subsumed by another. Both organisations are just looking at improved service to the countries, and

he was thankful that at least SPC's CRGA would have had ample time to cite the report and be better briefed on it, when the same consultants' report gets tabled at its next session.

Marshall Islands wanted to know from the consultants, who had possibly examined all the facts contributing to the merger of SOPAC and SPC, firstly, if the merger would serve the interest of the region. Secondly, would there be any problems with the two organisations working together with different work programs; and would that have an effect on the delivery of projects and services.

The consultants remarked that in any merger, so much depended on the culture of the two organisations - that everything was possible when people put their mind to it; and they were gungho and motivated about it. SPC and SOPAC are both scientific organisations with technical people and a devoted management who were already working very closely together; the consultants were optimistic and had no doubts that a merger would work out, but they could be entirely wrong.

New Zealand raised two points of concern: i) the basis of the assertion on page 10 that said "SOPAC has attracted adequate funding but there is some concern over its financial viability in the longer term", which appeared to be at odds with the reports presented to the Council meeting; and ii) a question as to whether or not the predicted savings were realistic or an illusion.

Discussion on pp 22-23 on dilution of benefits presented three suggestions if SOPAC was to have to deliver to more countries. Firstly, new members could pay similar core contributions to existing members. New Zealand considered this would not cover the likely costs of additional program delivery. Secondly, the question of additional donor funding. New Zealand observed that this could not be counted on unless new donors were identified. The third suggestion was to use savings generated. New Zealand noted that this would mean in effect that there would be no savings. New Zealand was of the view that some costing of the impact of the extra members needed to be done.

The consultants conceded that the difficulty in securing funds for SOPAC activities was a thing of the past. On the dilution of services, the consultants admitted that they had made certain assumptions based on information given to them by all the stakeholders in their calculations, and this was what they based their suggestions on. It was, however, up to the governing body what to do with the savings. The consultants still felt that the equity arrangement was best, where both members and non-members were to make contributions if they received the benefit of the services.

Fiji raised the question of continuing their annual tax grant, since the taxation arrangement for SPC was not the same as SOPAC. The consultants informed Council that Fiji nationals at SPC enjoyed a tax-exempt status, although they could find no law on which to hang such a privilege. Their understanding was that domestic law overrode international practice, so that they wondered whether some legal research ought to be carried out to clarify the situation. The consultants pointed out that it would be a matter of attitude and for the management of the new enlarged organisation to decide on.

The Director of SOPAC further explained that SOPAC staff paid tax, and the Fiji Government returned 15/16th of that money to SOPAC in the form of an annual grant. This arrangement would appear to be redundant if SOPAC staff were to take up the same tax-exempt status as SPC staff if there was a merger. The consultants again questioned the legality of the tax-exempt status of SPC staff, and suggested that the special grant should not cease but rather be derived from the accrued benefits to Fiji of the presence of such an organisation within its borders. The consultants insisted that if Fiji (or any other country) has benefitted as a country from hosting an organisation that the special grant not be removed; and that its derivation should be something for Council and the host country to talk about.

SPC's Jimmy Rogers explained the two categories of SPC staff: professional and technical support, and that both categories were tax exempt, although local support staff salaries were tax adjusted before payout. The consultants saw no justification in the other countries picking up the costs of what was essentially a benefit only to the host country, should the merger go through and the tax-exempt status is applied to local staff. They do not recommend the removal of the annual grant but that it be calculated based on the accrued benefits to the host country of the presence of the organisation within its borders.

After these discussions and because most members had only just seen the final report, Council agreed that the issue be deferred for consideration at its next annual session, to allow more time for full consideration in capitals. Council further agreed that SOPAC and SPC work together over the next year to ensure that member-country concerns were more fully explored and addressed. Council instructed the Secretariat to convey this deferral decision to the Secretariat of the South Pacific Community.

**Copies of the consultants' report are available from the SOPAC Secretariat on request.*

APPENDIX 9

LIST OF CONFERENCE ROOM DOCUMENTS

AS 29/1/Info 1	Information Circular
AS 29/1/Info 2	Program for Official Opening
AS 29/3.1	Provisional Agenda
AS 29/3.1/Info 1	Draft Working Schedule
AS 29/3.1/Info 2	Working Procedures
AS 29/3.1/Info 3 Rev. 1	List of Conference Room Documents
AS 29/3.1/Info 4	Provisional list of Participants
AS 29/4.1 Rev. 1	Designation of SOPAC National Representatives
AS 29/5.1	Introduction to Director's Annual Report to Council
AS 29/7.1*	Issues Arising from 28 th Annual Session and Special Session (26 th Nov 1999)
AS 29/7.2*	Summary Report of 2000 Donor Support
AS 29/7.3*	Financial Report 1999
AS 29/7.4*	Report on 2000 Accounts to 30 June
AS 29/7.5	Summary of New Project Proposals
AS 29/7.6	EU Lome IV Second Protocol SOPAC Project
AS 29/7.6 Suppl. 1	Reducing Vulnerability of Pacific ACP States through Island Systems Management
AS 29/7.7	Member Country Profiles
AS 29/8.1	1999 Annual Report Summary
AS 29/8.2	CROP Summary Record and Report
AS 29/8.2 Suppl. 1	CROP Summary Record and Report
AS 29/8.3	STAR Chair Report (To be circulated to Council following STAR)
AS 29/8.4	Draft Poverty Policy Paper
AS 29/8.4 Suppl. 1	Draft Poverty Policy Paper
AS 29/9	Work Program Report 1999-2000 and Draft Work Program and Budget for 2001
AS 29/9.2.1	Strategic Action Plan on Municipal Wastewater in the Pacific
AS 29/9.3 Info. 1	STAR Energy Working - Report to the Chair of STAR
AS 29/9.3.1	CROP Energy Working Group
AS 29/9.3.1 Suppl. 1	CROP Energy Working Group
AS 29/9.3.2	Preparation of a Regional Energy Position Paper for CSD9
AS 29/9.3.2 Suppl. 1	Preparation of a Regional Energy Position Paper for CSD9
AS 29/9.3.3	Demand Side Management Project (RT 1999.054)
AS 29/9.3.4	Regional Biomass Resource Assessment (RT 1999.007)
AS 29/9.3.5	Pacific Islands Renewable Energy Network (PIREN)
AS 29/9.3.5 Suppl. 1	Pacific Islands Renewable Energy Network (PIREN)
AS 29/9.3.6	Capacity building on technological and economic integration of wind energy and other relevant renewable energy technologies into the electricity systems of Pacific Island Countries

AS 29/9.3.7	Model Training Program for the Pacific Islands on Sustainable use of Renewable Energy for Water Pumping
AS 29/9.4 Info.1	Coastal and Nearshore Processes Working Group Report
AS 29/9.5 Info.1	Geohazards/Tsunami Working Group Meeting
AS 29/9.5.1	Catastrophe Insurance Proposal
AS 29/9.6 Info.1	Working Group on Global Ocean Observing Systems
AS 29/9.6.1	CROP Marine Sector Working Group – Regional Ocean Policy in the Pacific
AS 29/9.6.1 Suppl.1	CROP Marine Sector Working Group – Regional Ocean Policy in the Pacific
AS 29/9.6.2	Transfer of Maritime Boundaries Project from the Forum Fisheries Agency to SOPAC
AS 29/9.6.2 Suppl.1	Transfer of Maritime Boundaries Project from the Forum Fisheries Agency to SOPAC
AS 29/9.6.3	Global Ocean Observing System [GOOS] – PacificGOOS Coastal Initiative
AS 29/9.6.3 Suppl.1	Global Ocean Observing System [GOOS] – PacificGOOS Coastal Initiative
AS 29/9.8.1	Bridging the information Exchange Divide
AS 29/9.8.2	Opportunities from INET Conference
AS 29/9.8.3	Developments in Remote Sensing
AS 29/9.8.4	GIS Open Source Development
AS 29/9.9.1	DMU Disaster Management Project
AS 29/9.9.1 Suppl.1	DMU Disaster Management Project
AS 29/9.9.2	Developing a regional mechanism to address humanitarian needs during times of civil crisis
AS 29/9.9.2 Suppl.1	Developing a regional mechanism to address humanitarian needs during times of civil crisis
AS 29/9.9.3	9 th Pacific Regional Disaster Management Meeting Agreed Summary Record
AS 29/9.11	Environmental Vulnerability Index (EVI)
AS 29/10.2*	Deputy Director position
AS 29/10.3*	CROP Remuneration Working Group Report
AS 29/10.3* Suppl.1	CROP Remuneration Working Group Report
AS 29/10.4*	The SPC-SOPAC Relationship: A Planning Sequence for Integration
AS 29/10.4* Suppl.1	The SPC-SOPAC Relationship: A Planning Sequence for Integration
AS 29/10.5*	Draft SOPAC Business Continuity Plan: a response to the impact of the Fiji political crisis on the operations of the Secretariat
AS 29/10.6*	Status of Ratification of SOPAC Constitution
AS 29/10.7*	Rules of Procedure
AS 29/10.8*	Reappointment of Contract Staff since 28 th Session
AS 29/10.9*	International Market Allowance
As 29/10.10*	SOPAC/SPC/TCSP Headquarters "Pacific Village"
As 29/10.11*	Status of MOU's with other organisations
AS 29/11.1*	Reserve Fund Ceiling
AS 29/11.2*	Justification for services to be provided from funds generated by income earning activities
AS 29/11.3*	Appointment of an Auditor for audit of 2000 Financial Statements
AS 29/11.3* Suppl. 1	Appointment of an Auditor for audit of 2000 Financial Statements

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APPENDIX 10

LIST OF ACRONYMS

AAPG	- American Association of Petroleum Geologists (Tulsa, USA)
ACP	- Africa, the Caribbean and the Pacific countries of the Lome Convention
ADB	- Asian Development Bank
AGSO	- Australian Geological Survey Organisation
ARGOS	- A satellite location and data collection system (CNES/NOAA)
AUD	- Australian Dollar
AusAID	- Australian Surveying and Land Information Group
AUSLIG	- Australian Surveying and Land Information Group
BGS	- British Geological Survey
BRGM	- Bureau de Recherche Géologiques
CD-ROM	- Compact Disc Read Only Memory
CEO	- Centre for Earth Observation
CFTC	- Commonwealth Fund for Technical Co-operation
COE	- Corps of Engineers (properly USACE) (USA)
COMSEC	- Commonwealth Secretariat (UK)
CP1	- Core Project 1, the Global Description of the World Ocean
CRGA	- Committee of Representatives of Governments and Administrations (of South Pacific Community)
CROP	- Committee of Regional Organisations of the Pacific (formerly SPOCC)
CSA	- Cambridge Scientific Abstracts (USA)
CSD	- Commission of Sustainable Development (of United Nations)
DFID	- Department for international Development (UK)
DMU	- Disaster Management Unit
DTM	- Digital Terrain Modelling
EEZ	- Exclusive Economic Zone
EIA	- Environmental Impact Assessment
ENSO	- El Niño /Southern Oscillation
ESMG	- Earth Science and Marine Geology (SOPAC certificate course)
EU	- European Union
EVI	- Environmental Vulnerability Index
EWG	- Energy Working Group
FAO	- Food Agriculture Organisation
FFEM	- Fonds Française pour l'Environnement Mondial (French Funds for Global Environment)
FEMS	- Fiji Forest Export Marketing System
FFA	- Forum Fisheries Agency
FJD	- Fijian Dollar

FOC	- Forum Officials Meeting
FSM	- Federated State of Micronesia
GDIN	- Global Disaster Information Network
GEF	- Global Environmental Facility (World Bank-UNEP-UNDP)
GII	- Geophysical Institute of Israel
GIS	- Geographic Information Systems
GIS/RS	- Geographic Information Systems and Remote Sensing
GOOS	- Global Ocean Observing System
GPA	- Global Plan for Action
HAU	- Hazards Assessment Unit
ICT	- Information Communication Technologies
IFREMER	- Institut Francaise de Recherche pour l'Exploitation de la Mer (Formerly CNEXO)
IHO	- International Hydrographic Organisation (of IOC/UNESCO) French Oceanographic Research Institute
IMA	- International Market Allowance
IOC	- International Oceanographic Commission
ISPRS	- International Society for Photogrammetry and Remote Sensing
ITTO	- International Tropical Timber Organisation
ITU	- Information Technology Unit
JAMSTEC	- Japan Marine Science and Technology Centre
JICA	- Japan International Co-operation Agency
KIGAM	- Korea Institute of Geology, Mining and Minerals
KORDI	- Korea Ocean Research and Development Institute
LAN/WAN	- Local Area Network/Wide Area Network
LDG	- Less Developed Countries (UN)
MMAJ	- Metal Mining Agency of Japan
MNRD	- Ministry of Natural Resources Development
MOU	- Memorandum of Understanding
MRU	- Mineral Resources Unit
MSR	- Marine Scientific Research
NIWA	- National Institute for Water and Atmospheric Research (New Zealand)
NLTB	- Native Land Trust Board (Fiji)
NZIGNS	- New Zealand Institute of Geological and Nuclear Sciences
NZODA	- New Zealand Overseas Development Assistance
ODI	- Overseas Development Institute
ODP	- Ocean Drilling Program
OTEC	- Ocean Thermal Energy Conversion
PacESD	- Pacific Centre for Environment and Sustainable Development
PCGIAP	- Permanent Committee on GIS Infrastructure for Asia and the Pacific
PDC	- Pacific Disaster Center
PDF	- Portable Document Format

PIC	-- Pacific Island Country
PIREN	- Pacific Island Renewable Energy Network
PPA	- Pacific Power Association
PNG	- Papua New Guinea
PRC	- People's Republic of China
PRDMM	- Pacific Regional Disaster Management Meeting
PREA	- Pacific Regional Energy Assessment
PWA	- Pacific Water Association
RAO	- Regional Approving Office (EU)
RB	- Regular Budget
REM	- Regional Energy Meeting
ROC	- Republic of China
SDR	- Special Drawing Rights
SIWIN	- Small Islands Water Information Network
SOPAC	- South Pacific Applied Geoscience Commission
SPC	- South Pacific Commission
SPREP	- South Pacific Regional Environment Program
SPOCC	- South Pacific Organisations Coordinating Committee
STAR	- Science, Technology and Resources Network
TAG	- Technical Advisory Group
TCSP	- Tourism Council of the South Pacific
TEPB	- Tonga Electric Power Board
TRITON	- Triangle Trans-Oceans Buoy Network
UK	- United Kingdom
UN	- United Nation
UNCLOS	- United Nations on the Law of the Sea
UNDP	- United Nations Development Program
UNESCO	- United Nations Educational Scientific and Cultural Organisation
UNEP	- United Nations Environment Program
UNFCCC COP	- United Nations Framework Convention on Climate Change(Conference of the parties)
USD	- United States Dollar
USGS	- United States Geological Survey
USP	- University of the South Pacific
VMS	- Vessel Monitoring System
WHO	- World Health Organisation
WMO	- World Meteorological Organisation
WRU	- Water Resources Unit
WSSCC	- Water Supply & Sanitation Collaborative Council