

SOPAC

SOUTH PACIFIC APPLIED GEOSCIENCE COMMISSION

PROCEEDINGS OF THE TWENTY-SIXTH SESSION

**Nadi, Fiji Islands
29 September - 4 October 1997**

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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, Guam, Kiribati, Marshall Islands, New Zealand, Niue, Papua New Guinea, Samoa, Solomon Islands, Kingdom of Tonga, Tuvalu and Vanuatu. New Caledonia and Tahiti Nui 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. Sawell, CK	J.W. Brodie, NZ	—
FIFTH	Nov 1976	Rarotonga, CK	G. Sawell, 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. Terman, US	J. Wright, UK
NINTH	Oct 1980	Tarawa, KI	T. Oiang, 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. Iane, 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	B. Rao, FJ	G. Ayin, FSM	D. Tappin, UK	L. Bukarau/R. Howorth, TS

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



Participants at the Official Opening of the 26th SOPAC Session at the Tanoa International Hotel in Nadi, Fiji.

OPENING ADDRESSES

ADDRESS BY THE HONOURABLE RATU TIMOCI VESIKULA

Minister for Lands and Mineral Resources
on the Official Opening of the SOPAC 26th Annual Session
at the Tanoa International Hotel, 1 October 1997

Mr Chairman, members of the SOPAC Governing Council, members of the Diplomatic Corps, representatives of supporting governments and institutions, distinguished scientists, members of the SOPAC Secretariat, Ladies and Gentlemen.

I'm particularly pleased to be here this morning to welcome our friends from overseas to our shores and also to open this, the 26th Annual Session of SOPAC.

My Government is indeed honoured to once again host this annual meeting, this being the fourth time we have done so. The inaugural meeting of CCOP/SOPAC was held in Suva, Fiji in November of 1972 and it is fitting therefore, that this meeting is being held once again in Fiji as we celebrate 25 years of service by SOPAC to the member nations of the Pacific.

This Annual Session promises to be a busy, interesting and a crucial meeting. It has to be because I note that you're trying to fit the main business Agenda of Council in under 4 days. I wish you well. I therefore trust you have all come to this meeting well-briefed on the issues, focussed on the task at hand and committed to working together in a spirit of cooperation in the Pacific Way and for the collective good of the region.

It is no secret that the last few years have been trying years for SOPAC and, if the truth be known, for the Region in general. Through the various Reviews and the deliberations in past Council meetings some hard questions have been asked not only of SOPAC but indirectly of us, the members who belong to this regional organisation.

I hope that this process has served its purpose and been beneficial in providing the right answers. I hope it has also contributed towards getting us to take stock of the path we have travelled as a regional initiative and at the very least made us think about the issues and the need for a SOPAC.

The fact that SOPAC has been around for 25 years is indeed cause for celebration but, in itself is not sufficient argument for continuing something just because this is the way its always been or because its what we've always done.

Regional organisations, to some degree are like tools which we sharpen, oil and keep in good condition while (and because) they serve a useful purpose. The place for relics and memorabilia from the past are in archives or museums. I am hoping that the hard questions we have asked have been able to provide answers on just what type of tool we think SOPAC is and the job we want it to do for us in the future.

As a politician I keep reminding myself to look at the future because its the future issues, (and elections) that are things that are vital to my electorate (and for me if I want to get re-elected). The past and the inevitable are two things no one can do anything about. Reviews that focus primarily on dishing up bad news from the past serve little purpose and often are nothing more than misguided criticism. On the other hand Reviews which help us focus on and address the issues of the future, are often invaluable and save a lot of future heartache - not to mention money.

Fiji, amongst the Pacific countries is one of the few which does have national geoscience capacity or the equivalent of what SOPAC tries to do for you at the regional level. As part of my Ministry I have a Mineral Resources Department (MRD) which has existed a lot longer than SOPAC. But I think there are parallel lessons which we, and many other of our more developed neighbours have to offer when looking at SOPAC and what the future holds.

As Minister responsible I can proudly say that our Mineral Sector is looking extremely attractive and more importantly is developing at a time when we need a few more eggs in our economic development basket. This I must say

required several decades of data collection and interpretation.

Development of our other natural resources such as water similarly owe their viability to the investment we have made in long-term resource assessment. Our understanding of the impact of resource exploitation and infra-structural development on the environment will be underpinned by the information gathered and work carried out by MRD and some of its sister resource development agencies. This long-term planning and data collection/assessment is nothing unique, and is not peculiar only to us. Every country whose economy is successfully based on the rational and sustainable development of its natural resources has followed a similar formula.

MRD has had its reviews and is presently undergoing transformation with AusAID technical assistance that would make us better prepared for the future years to come.

I know that globally, and even in this region there are many countries who know very little about their natural resources, know even less about the impact of exploiting what they have and worse still have little idea of what the future holds. I hope that the lessons we have demonstrated by developing this capacity through a long-term commitment to resource assessment are the type of things you will bear in mind when looking to the future for SOPAC. It's worked for us, it's been good enough for Australia, New Zealand, Papua New Guinea and others so why shouldn't it work for the region and particularly the small island countries?

For many of you, and indeed in some areas even for us, SOPAC is the regional geoscience facility and therefore both for now and the future a worthwhile facility.

Anniversaries provide a great opportunity for reminiscing, sharing experiences or just plain old indulging in sentimentality. Apparently it's good for the soul and I don't want to detract from the value of us enjoying or celebrating such occasions. What I hope this occasion will do is also provide an opportunity to look to the next 25 years and for us collectively to chart the way forward.

We've often heard of how 25 or more years ago a few of our technical representatives when confronted with an offshore, resource development problem, sometimes called the Tongan oil seeps, through necessity adopted a regional approach in seeking a solution. The rest as they say in the movies "is history". Twenty-five years in the life of an individual or an organisation is

a significant milestone. *(If it was a wedding anniversary it certainly would be significant because it would be your silver wedding anniversary and they don't come cheap.)*

At this meeting, here in Nadi, the time is right to establish a new milestone in the history of this organisation. We've had the reviews, we've analysed the problems, we've heard of the needs so why shouldn't we now spell out what we as a region want to do - call it a new vision if you need to give it a name.

In another 25 years there is the question of where are we going to be or probably more importantly where do we want to be? The Prophets of doom offer scenarios about rampant over population, resource over-exploitation, destroyed reefs and wide spread environmental degradation and of course the very topical concern of climate change and global warming. Not only SOPAC but does the region have the answers or at least a strategy to address these questions? Blaming the rest of the world on the possible ills beyond our control might be acceptable but surely it does not absolve us of addressing the issues in our own backyard. I see a great danger in our pontificating about the global problems and yet failing to understand today's local concerns which may become tomorrow's disasters.

Shouldn't we be proactive and ensure that we have in place policies and work programs which start addressing these and other issues?

In 25 years seabed mining might be a reality, and based on recent reports coming out of the Cook Islands it could be a lot sooner. In the not too distant future the implementation of the UN Law of the Sea and all the rights and responsibilities which go with it might be the norm rather than the exception. In a very short time for our very survival we may have to monitor the oceans to the same degree of detail as we now do the atmosphere and the climate.

If these and similar activities are to be part of every day life shouldn't we be planning the activities of our regional organisations so they provide the decision makers of the future with the tools and information necessary to sustainably manage our region? Many years ago we subscribed to long-term geological surveys and the like and today we stand ready to exploit the benefits of such work.

Just as we look back to 1972, I sincerely hope that some day in the future our children can look back at this meeting as a similar significant milestone in our history. I hope they will be able to recognise the far-sightedness of those

who were able to look beyond their short term interests and set a course for SOPAC which allowed future generations to be able to genuinely sustainably manage the Pacific and all its resources for future generations.

I know your time with us at this meeting is short, however, I hope that with the right vision and a commitment to work for what is best for us all you will chart a new course for SOPAC.

Short though your stay might be I hope you do find the time enjoy yourselves. I certainly look

forward to meeting socially with you throughout the week.

Finally, as we celebrate SOPAC's 25th birthday let us not forget to be thankful for those who have devoted careers and even their lives to working for SOPAC and the peoples of the Pacific.

I now have much pleasure in declaring the 26th Annual Session of SOPAC officially open.

God bless you all and Vinaka Vaka Levu.

RESPONSE TO THE MINISTER'S OPENING ADDRESS BY MR ROBIN MOAINA, PAPUA NEW GUINEA

Honourable Minister for Lands and Mineral Resources, Ratu Timoci Vesikula, distinguished representatives of SOPAC member countries, representatives of donor governments and organisations, distinguished technical advisers, ladies and gentlemen.

Mr Chairman, I am naturally honoured to be accorded the privilege of responding to the Honourable Minister's most informative, thoughtful and interesting speech.

May I start by thanking you, Honourable Minister for the hospitality afforded to us by your Government. It is indeed fitting that Fiji hosts the session. We gladly recognise that we are gathered in Nadi for a rather special session of the SOPAC Governing Council. This is the twenty-sixth Annual Session, a celebration of 25 years of SOPAC's service in the South Pacific.

Mr Chairman, we should recognise that the reviews and deliberations the Honourable Minister refers to have focussed our attention upon our needs for SOPAC and the benefits it provides to us. Yes, SOPAC should be considered as a tool, I would suggest a well-crafted tool, one to cherish, and one that can be used to produce products of quality, for the benefit of all Pacific Island member countries.

We have heard reference Mr Chairman, to the need to evaluate our resources, to gather data about them and assess them. Like the Honourable Minister I also come from a country which has a national geoscience capacity. Com-

plementary activities relating to data gathering and institutional development strengthen both the national and regional facilities. I share the view that the viability of the development of natural resources throughout the SOPAC region depends on the investment made in resource assessment. Let us not forget another vital asset and a SOPAC priority, the development of our human resources.

In addition to the assessment of our resources, an understanding of coastal processes and assessment of geological hazards, SOPAC must rise to the challenge of newly recognised threats to the livelihood of Pacific Islanders. I refer of course to global issues such as environmental pollution, climate change and sea level rise.

We recognise a milestone, we recognise SOPAC's history and we acknowledge the sound foundation SOPAC has developed. This will underpin resource assessment, strategic research and an improvement in the regional prosperity.

Honourable Minister if I may quote you, "..... SOPAC is the regional geoscience facility and therefore both for now and the future is a worthwhile facility".

Mr Chairman, we have work to do; this session will be perhaps the most intensive ever.

Let us be proud of achievements so far and approach the next few days and the long term with confidence and objectivity.

Thank you.

CONCLUSIONS AND RECOMMENDATIONS

OPENING SESSION*

Member Countries

1. The **Australian representative** reported that his government shared the expressed sentiments of the SOPAC Governing Council last year which fully reaffirmed the value to its members of SOPAC and the programs it delivered. Australia was therefore committed to continuing its involvement with SOPAC and further developing these programs. To them, it seemed imperative to ensure that the SOPAC senior executive had clear direction and could deliver on SOPAC's members' needs. Without this direction at the senior level, Australia feels that Council would be very effectively, and seriously compromising their own organisation (see Australian statement, page 51).

2. The **alternate representative of Australia** reported that following a Workshop held in Vanuatu in February, a concept project was prepared for regional cooperation in the management of volcanic emergencies in the South Pacific by the International Association of Volcanism and Chemistry of the Earth's Interior (IAVCEI) and SOPAC. The Secretariat of IAVCEI is at present at Australian Geological Survey Organisation (AGSO) under the stewardship of Wally Johnson. AGSO was also continuing to explore ways in which its Cities Project could provide some research support for SOPAC's activities. AGSO, through Wally Johnson and Ken Grainger have offered a workshop on this style of activity (see Australian statement, page 52).

3. The **Cook Islands representative** drew attention to the work carried out by the SOPAC Sub-Committee and the SOPAC Interim Standing Committee on the future role and direction of the organisation. They were of the view that reviewing the Work Program and reforming SOPAC were important tasks and would, in the long run, sustain and enhance SOPAC's role and profile in the region (see Cook Island statement, page 52).

4. The **representative of the Federated States of Micronesia** (FSM) announced his government's readiness to host the 27th Session of SOPAC. The government also recognised and wished to record its immense appreciation to all donor countries and agencies who had contributed to efforts toward the development and improvement of the well being of this region (see FSM statement, page 53).

5. The **representative of Fiji** acknowledged SOPAC's assistance and technical support in a number of joint projects conducted over the 1996/1997 period. Staff constraints led to a general slowing down of many MRD projects. MRD suffered an outflow of qualified professional staff over the period 1995-late 1996, to emigration and the private sector. Fiji was particularly pleased with developments in their information technology capacity which has offered new and more interesting ways to manage and promote their mineral sector data (see Fiji statement, page 54).

6. The **representative of Guam** raised the point that geoscience projects proposed by Guam could not be funded as donors placed restrictions on providing assistance to US territories. He called for a reconsideration of this current arrangement given that Guam's membership contribution was the same as many other member states enjoying the full benefits of their association with SOPAC (see Guam statement, page 56).

7. The **representative of the Republic of Marshall Islands** (RMI) reported that his government recognised the rapid advances that were occurring in the region in information technology, and ocean-related activities and looked forward to increasing support from the Secretariat in these areas; apart from the areas of coastal management, deepsea minerals and water and sanitation which was already being addressed in joint programs between SOPAC and RMI. SOPAC programs, he announced, continued to receive support at the highest level (see RMI statement, page 57).

8. The **representative of New Caledonia** reminded Council that SOPAC member countries continued to stress the need for continued funding for seabed mapping, and that the ongoing vacancy of the Offshore Coordinator position within the Secretariat in response to the expressed need continued to concern New Caledonia. The representative offered to renew their

* Only sentiments that have bearing on the Work Program and the future role and direction of SOPAC were extracted from Plenary statements. All official delegations' statements appear in full in Appendices 5 & 6.

assistance to SOPAC for future cruises and work related to the Offshore program. He also drew attention to the new initiative in preparation with the French Fund for Global Environment (FFEM) to develop cooperation with French organisations across various sectors, including hazard and risk assessment areas, within the Pacific islands states (see New Caledonia statement, page 58).

9. The **representative of New Zealand** commended the work of the various committees on the future role and direction of SOPAC. They viewed the developments during the year, instigated by the work of the committees, as very positive and hopefully set the organisation on a solid footing for the immediate future. They also thought the developments helped to mature the organisation. Upon acknowledging some of the good work carried out by the Secretariat during the year, New Zealand also expressed interest in SOPAC's role in implementing provisions of UNCLOS relevant to the SOPAC Work Program. They hoped to be able to support work in the water and sanitation area in the new year (see New Zealand statement, page 59).

10. The **representative of Niue** reaffirmed her government's support of the transfer to SOPAC of the energy and disaster programs, but cautioned a need for ensuring that the new and the old grafted into each other well (see Niue statement, page 60).

11. The **representative of Papua New Guinea** (PNG) disclosed his government's view of SOPAC as the geological survey of the South Pacific, and felt that recognising this role was important to the member countries. As in the past, Papua New Guinea would continue to strongly support SOPAC and its work programs in the future – to this end, Papua New Guinea would offer financial or in-kind assistance when they were able, particularly to the smaller island member countries (see PNG statement, page 60).

12. The **representative of Solomon Islands** recorded his new government's reaffirmation of its support to SOPAC. They noted the decline in SOPAC programs carried out for the Solomon Islands during the past year, and attributed it to the preoccupation with the review process carried forward from last year. They hoped to see an improvement in the level of SOPAC's activities for the Solomon Islands in the new year. The representative also registered his government's profound appreciation to the donors that supported SOPAC's work throughout the year (see Solomon Islands statement, page 62).

13. The **representative of the Kingdom of Tonga** conveyed greetings from the retired 'grand old man' Sione Latu'ila Tongilava*, one of the founding fathers of the organisation. Though plagued with ill health since retirement, Sione Tongilava specifically asked to be remembered at this meeting. The representative went on to especially urge the meeting to speedily and honestly deal with contentious issues arising out of the review process carried forward from last year to allow the Secretariat to proceed with delivering services to the member countries (see Tonga statement, page 64).

14. The **representative of Tuvalu** stressed the need to prioritise the wide range of activities arising from member countries' needs, in order to give the Secretariat clearer guidelines and to set a more realistic and achievable Work Program. He pointed out that the lack of a geoscientific capability in Tuvalu meant that their dependence on SOPAC would continue for many years to come. Although Tuvalu would find great difficulty in catering for an increase in membership contribution, as a member of SOPAC that greatly benefitted from its Work Program, Tuvalu would honour whatever the meeting decided on this issue (see Tuvalu statement, page 65).

15. The **representative of Vanuatu** recorded that irrespective of difficult times, their partnership with SOPAC was most rewarding. On the day of the official opening of the 26th SOPAC Session that celebrated 25 years of service to region, the representative was pleased to announce the granting of Vanuatu's first ever Petroleum Prospecting License. This milestone represented two decades of scientific investigations and evaluations by eminent scientists who were present at the meeting, and the representative recorded his deepest appreciation to the many players, but especially to the members of the Technical Advisory Group (TAG) and AusAID for their immense contribution to the development of an understanding of Vanuatu's petroleum potential. The representative recorded his government's concern that while there existed a basic need for SOPAC in the region, there was generally not a high appreciation of the organisation expressed by its own members. He felt this area needed to be worked on in the future (see Vanuatu statement, page 66).

*Sione Latu'ila Tongilava passed away late October while undergoing medical treatment in the US.

Supporting Governments

16. The **representative of the government of France** reiterated his government's continuing support and assistance to SOPAC through its provision of a computer geologist for the Secretariat's Information Technology Group. France recognised that SOPAC's work programs in the Pacific region were very useful, especially in the context of global warming and sea level rise – they addressed very specific needs in coastal management, water supply, and the development of mineral resources onshore and offshore (see French statement, page 68).

17. The **representative of the government of Japan** expressed sincere appreciation to the SOPAC member countries and the Secretariat for the support which enabled them to smoothly carry out cruises in the SOPAC region. Japan was into the third year of the third five-year program of the joint Metal Mining Agency of Japan (MMAJ)-Japan International Cooperation Agency (JICA)/SOPAC for deepsea minerals surveys in SOPAC waters. The representative also presented the Japan Marine Science and Technology Center (JAMSTEC) deep desire for collaboration from the SOPAC member countries in the deployment of a surface buoy network in the SOPAC region from March 1998 for the continuous observation of oceanographic and meteorological conditions in the Pacific. Japan believed the network would contribute to both the global and Pacific communities in improving weather and oceanic forecasting (see Japanese statement, page 68).

18. The **representative of Korea** recorded how his government was very optimistic and positive about the various roles of SOPAC in the region. With the ocean being the earth's last frontier that would play an essential part in oceanic states' economic and social status, Korea was striving to be one of the leading among the developed nations in oceanic research and technology in the next century. After conducting a maiden exploratory cruise in Marshallese waters, the representative reported that Korea was ready and willing to put her best efforts into conducting scientific research in the SOPAC region, through her leading technical agencies (see Korean statement, page 69).

19. The **representative of the People's Republic of China (PRC)** recorded how the Chinese government placed great importance on the economic and technological cooperation in South Pacific countries. The Chinese government found multilateral cooperation to be an efficient way to promote the economic and technological development among developing countries. The PRC government intended to continue

supporting island countries through exploration and exploitation of their natural resources, coastal surveys and the protection of their oceanic environment; and for this reason extended the services of the Chinese Coastal Geologist for the another year, after it expired in September 1997 (see Chinese statement, page 70).

20. The **US representative** attested that the US government was a long-time supporter of SOPAC. Although there was little direct US funding to SOPAC, they continued to support regional activities such as the seismic stations operated by the USGS in the SOPAC region and the NOAA TAO/TRITON cruises. The representative reported that the US National Science Foundation (NSF) recently committed US\$56,000 to support the Marine Benthic Habitats meeting scheduled for Noumea in November 1997. The representative expected this support of the region to continue (see US statement, page 70).

Supporting Agencies

21. The **representative of the Institut Francaise de Recherche pour l'Exploitation de la Mer (IFREMER)** spoke of his organisation's close relationship with SOPAC and expected it to remain close in the future. A future collaborative effort was the November Marine Benthic Habitat Conference in Noumea, New Caledonia. IFREMER was involved in numerous joint projects in SOPAC's area of operation, and the representative was particularly pleased to announce that the RV L'Atalante and the submersible Nautille were expected to be in the SOPAC region in 1999. IFREMER was proposing to take advantage of this opportunity to organise swath bathymetric surveys in some SOPAC countries to help in the extension of their continental shelves under UNCLOS (see IFREMER statement, page 71).

22. The **representative of the Korea Institute of Geology, Mining and Materials (KIGAM)** added to the Korean representative's comments to report on the signing of the MOU between SOPAC and KIGAM in June and some of the work that was carried out during the year. The KIGAM representative also reported that his organisations was considering seconding a geologist to the SOPAC Secretariat either to serve in the areas of sand and aggregate resources or in geohazards. KIGAM was also poised, if funds were available, to review the hydrocarbon program and the type of assistance that would enhance the value of the SOPAC Petroleum Databank at AGSO (see KIGAM statement, page 72).

23. The representative of **Intergovernmental Oceanographic Commission** (IOC) was pleased to announce the signing of the MOU between IOC and SOPAC for cooperation on the development of the Global Ocean Observing System (GOOS) in the South Pacific region. A GOOS capacity building workshop was to be co-sponsored in Fiji in February 1998. French government support had been pledged but further support was needed from other countries and donors. IOC hoped to also have cooperation from SPREP, FFA and USP in the GOOS program. The representative reminded the participants that 1998 was the International Year of the Ocean, and saw it as an opportunity for raising public awareness of the respective roles and interests concerning affairs of the ocean (see IOC statement, page 72).

24. The **IOC representative** (who also represented UNESCO) conveyed the UNESCO office's appreciation of the work done over the past year in the areas of water resources and natural disaster reduction. UNESCO expected cooperative effort in these sectors to continue into the 1998-1999 program, and the representative mentioned the area of new opportunities in building global links under UNESCO's Environment and Development on Coastal Regions and Small Islands (CSI) project (see UNESCO statement, page 73).

SPOCC Agencies

25. The **representative of the Forum Secretariat** (ForSec) reported on the current trend of thinking of the region's leaders: that they were serious about economic reform and are requiring all of us to play a role in assisting private sector development. This translated into keeping programs under continuous review to ensure that we were not doing the kinds of things that could be done as well or better by business people of the region, and that regional organisations needed to follow the example of many Forum countries in tightening their belts and trying to do their work at least possible cost. ForSec considered SOPAC a good parent for the regional energy program and looked forward to SOPAC's continuing constructive interest in the South Pacific Regional Organisations Coordinating Committee (SPOCC) (see ForSec statement, page 73).

26. The **representative of the South Pacific Regional Environment Program** (SPREP) stressed how, as regional organisations, both SPREP and SOPAC needed strong direction and support from all their member countries and the donor community who were serious about

the environment and sustainable development into the future. SPREP was especially interested in how the outcome of the current meeting would impact future collaboration between the two organisations (see SPREP statement, page 74).

27. The **representative of the University of the South Pacific** (USP) recorded anew the University's appreciation for the lecturing assistance provided by SOPAC staff to some degree-level university courses. The representative gave a progress report on the discussions between SOPAC and USP on the future of the SOPAC Earth Science and Marine Geology Course, as was directed by the SOPAC Council last year. Although the Vice Chancellor had agreed to SOPAC's request to allow the Course to continue in its present form until 2001, it was strongly urged by USP that the Course be developed further and brought in line with University practice to allow students to use the Certificate as a broad base for future degree studies. The University undertook to support the work of the committee set up to resolve the issue and hoped that a decision would be speedily reached (see USP statement, page 75).

POLICY SESSION

1. **Council directed** the Secretariat to report back to the next Council Session on the basis, justification and detailed operation of Revolving Funds and how these relate to the main funds authorised by the SOPAC Financial Regulations (paras 23-25)*.

2. **Council agreed** that the Secretariat correct the impression given in the Annual Report Summary 1996 that member countries as major beneficiaries of SOPAC's work made no financial contribution to the organisation. Council **also agreed** to a suggestion from Cook Islands that the Secretariat clear first with countries sections that are country specific before publication (paras 27 & 28).

3. **Council acknowledged** the value of the SPOCC process, and noted the comments by New Zealand that suggestions made during the various high-level committees deliberating on the future role and direction of SOPAC could be raised by SOPAC at SPOCC (paras 29-31).

*Refer to Summary Record, pages 23-34

4. **Council accepted** the TAG report, and agreed to consider TAG's recommendations in conjunction with looking at options for balancing the Budget for the 1998 Work Program. At the time of discussion, the SOPAC Work Program for 1998 required \$289,788 over and above secured funding for implementation (paras 35-37).
5. **Council asked** the Director to investigate further the integration of TAG into Council's Work Program and Budget discussion in future sessions (para. 45-47).
6. **Council agreed** that the issue of which posts and programs currently funded from Regular/Extra Budgetary and Extra Budgetary sources are to be absorbed into the Regular Budget was to be decided annually at Council, noting that it was unrealistic to expect membership contributions to meet this responsibility in the foreseeable future (paras 51-52).
7. **Council noted** that it was important to ensure that the costs to administer the organisation are reported separately from those to deliver the Work Program, and that every attempt be made to keep the corporate overhead costs to no more than 30% of the total operational staff salaries. Council also noted that 30% should be seen as target "most effective" figure, and that the figure was to be reported to Council annually (paras 53-54).
8. **Council endorsed** in principle that when considering new work programs to be incorporated into the Secretariat, SOPAC's purpose; possible impacts on ongoing operations; the regional strategy and linkages with SPOCC agencies; funding; and the strengths of the organisation must be considered (paras 55-56).
9. **Council asked** the Secretariat to provide Council with draft employment contracts for expatriate professional, local professional and support staff for attaching to the Staff SOPAC Regulation (para. 57).
10. **Council acknowledged** that the potential conflict of interest when members adopt roles of owner, client and stakeholder, was a fundamental governance issue. Council **agreed** that member representatives declare the role they were playing, where appropriate, and in particular prior to making a statement during Council meetings (para. 59).
11. **Council further noted** that there was a governance issue in regard to implementation of ownership responsibilities and **agreed** that the role of the Chair be strengthened in regard to activities between sessions (para. 60).
12. **Council agreed** that members should take note of suggestions for improving the role played by national representatives (para. 61).
13. **Council endorsed** that once communications between the Secretariat and a member country on any new task/project had been established through the national representative, subsequent contacts on technical matters should be directed to the appropriate technical body or department (para. 62).
14. **Council was updated** on those members who had deposited their instruments of ratification of the SOPAC Constitution: Samoa, Kiribati, Niue, New Zealand, Australia and Cook Islands. Council urged the remaining members to ratify the amendments as soon as practicable.
15. **Council approved** the recommendation by the Secretariat to set the base level of the General Reserve Funds at \$400,000 (para. 65).
16. **Council unanimously approved** the appointment of Mr Alfred Simpson as Director for a term of three years commencing in January 1998 (para. 66).
17. **Council agreed** that the Secretariat should work through the Regional Disaster Management Sub-Committee together with Australia, New Zealand and UNDP to work out a strategy, including funding and a time frame, for implementing the 1995 Forum decision to designate SOPAC as the regional coordination body for disaster management by 1 January 1998 and report back to Council at the next session or earlier should implementation not be possible by that date (paras 70-74).
18. **Council agreed** to the 1997 revised budget for the General Purpose Fund (para. 77).
19. **Council expressed** its deep appreciation to all donors and supporting institutions for their contributions to the Pacific through SOPAC and instructed the Director to convey their thanks in particular to Australia, New Zealand, France, Japan, People's Republic of China, Republic of Korea, United States of America, Commonwealth Secretariat, UNDP and IOC (para. 84).
20. **Vanuatu offered** to assist the Secretariat in discussions with the Government of France in regard to the expressed concern over decreasing support in recent times (para. 89).
21. **Council expressed** its appreciation to UNDP for funding most of SOPAC's water resources and sanitation activities (para. 94).

22. **Council noted** with appreciation New Zealand's intention to consider SOPAC project proposals in the water and sanitation sectors (para. 94).

23. Council **noted** that the staffing of the Corporate Management Unit and the Finance and Administration Unit was in accordance with the SSC recommendations, but **noted** that a more appropriate place for the Finance and Administration Controller would be as head of the Finance and Administrative Unit (para 108).

24. **Council agreed** to a 9.5% increase in membership contribution for 1998 (para. 119).

25. **Council noted** the indication by Associate Member New Caledonia, that although not bound by Council's decision to increase membership contribution in 1998, it would make every effort to increase its voluntary contribution by 9.5% (para. 120).

26. Council **noted** that a saving of around \$50,000 had been made in regard to the appointment of the new Director (para. 121).

27. **Council agreed** that every effort be made to secure the level of Work Program activity as indicated in the Budget and that equity between members be maintained (para. 123).

28. **Council agreed** that the holding of meetings on an annual basis was crucial at this time and also agreed to hold these meetings in Fiji due to budgetary constraints (paras 124-125).

29. **Council**, having established a ceiling of \$400,000 on the Reserve Fund, and having identified savings that reduced the budget deficit of \$289,788 to \$58,000 **directed** the Secretariat to eliminate the residual deficit by securing extrabudgetary resources, or create savings in the regular budget and only as a last resort utilise excess funds in the Reserve Fund to balance the 1998 Budget (paras 126-129).

30. **Council agreed** that the Program Manager position was crucial to ensuring that delivery of the Work Program was maintained at the highest level and for this reason the appointment should not be delayed (para. 132).

31. **Council agreed** that the Secretariat should provide a brief inter-session report to members in order to provide an update on Work Program and Budget matters (para. 133).

32. **Council noted** the Federated States of Micronesia's offer to host the 27th SOPAC Session, in Suva, Fiji, and suggested the dates 28 September – 4 October to hold it (paras 134 & 136).

33. **Council agreed** that the Secretariat liaise with other SPOCC agencies regarding the dates of their major events to avoid potential clashes (para. 135).

34. **Council noted** the appeal to add another full day to the meeting duration, as the 1997 meeting allowed very little time for TAG advisers to adequately advise on the SOPAC Work Program (para. 137).

TECHNICAL SESSIONS

RECOMMENDATIONS FROM STAR

(See Appendix 7 for STAR Report)

Resource Development Program

Mineral Resources Unit

1. The Working Group **recommended** that SOPAC urgently continue exploration for new offshore aggregate resources, especially in areas where the demand is likely to be high. The Working Group also **recommended** that SOPAC, as a matter of priority, facilitate a program of study to understand more fully how these resources were formed and have evolved, and any impact that may result from their exploitation (Coastal Working Group report, page 78).

2. The Working Group strongly **recommended** that the surveys planned for the French-New Caledonia-Australian project be extended into the South Fiji Basin to the Tonga-Lau ridges, in order to complete the assessment of the hydrocarbon potential of this region and determine provenance of some of the more distal terrains believed to be rifted continental fragments (Tectonics Working Group, page 82).

3. Noting the world wide interest in deep sea minerals, such as manganese nodules and cobalt-rich crusts, and noting the considerable amount of offshore data recently collected in the SOPAC region, the Working Group **recommended** that, with the concurrence of Member Countries, a synthesis of offshore mineral data in the hands of SOPAC and an analysis of regional mineral potential be undertaken. Further noting that MMTC has volunteered to coordinate a review of minerals and technology in the SOPAC region, the Working Group **recommended** that SOPAC take advantage of this offer and with SOPAC staff involvement proceed to synthesise and assess SOPAC regional

mineral potential. The working group **recommended** that the synthesis and assessment be done in the context of regional geology so that mineral forming processes can be better understood (Ocean Basin Mineral Resources & Technology Working Group, page 85).

4. Noting the recent Japanese project to evaluate benthic biological impacts associated with sea bed mining, the Working Group **recommended** that SOPAC encourages continuation of environmental impact studies associated with sea bed minerals extraction (Ocean Basin Mineral Resources & Technology Working Group, page 85).

5. Recognising that for sea bed mineral exploitation to occur in the SOPAC region SOPAC Member Countries need to have in place mineral mining policies, the Working Group **recommended** that SOPAC encourages, and where possible assist, Member Countries to establish sea bed mining legislation (Ocean Basin Mineral Resources & Technology Working Group, page 86).

6. Noting the need for technical assistance of SOPAC Member Countries to make decisions about applications for the granting of Authority to Prospect (ATP), the Working Group **recommended** that SOPAC organise a list of appropriate technical advisors with considerable diverse experience in minerals exploration that could respond to the call for technical assistance of the Member Countries (Ocean Basin Mineral Resources & Technology Working Group, page 86).

Water Resources Unit

The new Water Working Group made recommendations 7-19 below concerning strategic and Work Program issues (Water Working Group, pages 82-83):

7. SOPAC continue to provide adequate resources to its newly formed Water Resources Unit to enable it to implement its work program for the benefit of the member nations in the water and sanitation sector.

8. The Water Resources Unit of SOPAC adopt or include the following goal and strategies:

Goal:

To help member countries in the South Pacific to

- assess, develop, manage and conserve their water resources

- develop appropriate sanitation programs.

Strategies:

- Help identify regional needs
- Encourage regional projects
- Develop resource and personnel databases
- Develop appropriate information transfer strategies
- Develop training programs for water resources assessment, development, management and conservation and sanitation planning and management
- Facilitate research on water and sanitation directed at national and regional needs
- Provide ready access to research results

9. SOPAC and member countries enhance their efforts to encourage and attract donor funding for the work program of the Water Resources Unit.

10. SOPAC and member countries encourage donors to fund the proposed Water Resources Unit's project to promote, encourage and foster appropriate demand management and conservation practices in member countries, recognising that increasing pressure is being placed on freshwater resources and that currently developed water resources are often inadequately utilised due to system losses and sometimes wastage.

11. The Water Resources Unit include in its work program a project to encourage and assist member countries in developing water resources and sanitation legislation to address and promote appropriate water resources development, management, conservation and protection.

12. The Water Resources Unit explore, assess and report to SOPAC and the Water Working Group on the provision of temporary employment (6-12 months) for water and sanitation staff from member countries to work on appropriate projects at SOPAC, as a means of enhancing efforts for capacity building and human resource development amongst member countries.

13. SOPAC and the Water Resources Unit maintain and enhance co-ordination with regional and international organisations, donors and member countries regarding water and sanitation sector activities to avoid duplication of limited resources.

14. The Water Resources Unit publish and distribute a quarterly newsletter for member countries and interested agencies which co-ordinates information on water related activities within the region and relevant activities outside the region.

15. The Water Resources Unit develop a regional database to store, retrieve and disseminate water resources and other related information for the benefit of member countries and researchers assisting the region.

16. The Water Resources Unit assist with the development and application of national databases for the long-term storage of water resources and other related information.

17. The Water Resources Unit co-ordinate a waterwell driller training and a pump maintenance scheduling and training project in order to strengthen the capacity of many member countries' groundwater agencies to effectively undertake their own drilling and pump maintenance so as to satisfy the need to adequately and sustainably develop their groundwater resources.

18. The Water Resources Unit assist and, where possible, participate in water investigation projects which have been identified as regionally important, such as the following projects:

- Catchment and communities
- Groundwater recharge and modelling
- Groundwater pollution
- Groundwater and surface pollution
- Appropriate groundwater extraction systems
- Rainwater catchment study
- Integrated island water resources study

19. The Water Resources Unit distill and disseminate the results of research projects of importance to member countries in a form appropriate to their needs. A current example is the need to prepare a guideline on groundwater modelling appropriate to the needs and capacity of member countries.

Environmental Science Program

Coastal Unit

20. The Working Group **recommended** that SOPAC actively encourage research in interested research institutions and work to develop networks of researchers and research programs. As part of this, the Working Group **recommended** that SOPAC seek funding to sup-

port programs aiming to quantify sediment budgets. It further **recommended** that SOPAC establish a fund of seeding money to help researchers set up programs to be primarily supported elsewhere (Coastal & Nearshore Resources Working Group, page 78).

21. The Working Group **recommended** that each member country should aim to acquire imagery of their coastlines and suggests that SOPAC should guide member countries in this (Coastal & Nearshore Resources Working Group, page 79).

22. The Working Group **recommended** that SOPAC expand the resources put into acquiring information on the physical position, composition and dynamics of the coastal zone which all contribute to achieving ideal integrated coastal zone management (Coastal & Nearshore Resources Working Group, page 79).

23. The Working Group was concerned that continuity of the records be maintained and in this context **strongly recommended** that the base sites for past surveys be surveyed into position globally so that they are not lost (Coastal & Nearshore Resources Working Group, page 78-79).

24. The Working Group **recommended** that SOPAC investigate what additional assistance is required by member nations, with a view to providing advice on appropriate resource development (Coastal & Nearshore Resources Working Group, page 79).

25. The Working Group **recommended** that SOPAC should consider its role on an urgent bases, specifically its participation in the coastal module of GOOS and in the preparation of a proposal to potential donors to support this activity. The Working Group **recommended** that SOPAC co-ordinate its participation in GOOS with its sister organisations in the region, particularly SPREP, FFA and USP (Coastal & Nearshore Resources Working Group, page 79).

Hazard Assessment Unit

26. The Working Group **endorsed** the cooperation initiated between the Australian Cities and Pacific Cities Projects and recommended that SOPAC give priority to the Pacific Cities Project (Geohazards Working Group, page 80).

27. The Working Group **recommended** that a regional database that would include all geohazards research and activities be established and maintained which is easily accessi-

ble by disaster managers and urban planners within the region (Geohazards Working Group, page 80).

28. The Working Group **endorsed** the recommendations put forward by the Volcanic Hazards Workshop, particularly those relating to future work needed at the “high risk” volcanoes of the region and that a second workshop be convened to look at Savo volcano (Geohazards Working Group, page 80).

29. The Working Group **strongly urged** that the SOPAC National Representatives communicate and coordinate with the National Disaster Management Offices in their respective countries concerning both the Pacific Cities Project and the recommendations of the Workshop on Volcanic Hazards and Emergency Management (Geohazards Working Group, page 80).

30. The Working Group **recommended** that a concerted effort be undertaken to target sources for funding further sub-projects of the Pacific Cities Project and for a future field-based workshop on Savo volcano (Geohazards Working Group, page 80).

Ocean Unit

31. The Working Group **recommended** that SOPAC should consider its role on an urgent bases, specifically its participation in the coastal module of GOOS and in the preparation of a proposal to potential donors to support this activity. The Working Group **recommended** that SOPAC co-ordinate its participation in GOOS with its sister organisations in the region, particularly SPREP, FFA and USP (Coastal & Nearshore Resources Working Group, page 79).

32. Noting the regional concern about the sustainability of living resources and the multidisciplinary need to evaluate fisheries and other living resources habitats, the Working Group **recommended** that SOPAC continues to encourage the participation of SOPAC Member Country nationals familiar with geology, physical oceanography and fisheries biology, as well as fisheries managers, to attend the Habitat Conference in November. The Working Group further **recommended** that the Member Countries’ representatives and managers to the conference come to New Caledonia with specific problems that they would like to see addressed at the workshops of the conference (Habitat Working Group, page 84).

33. Noting the ability, and desire, of geoscientists to apply geophysical and geologi-

cal techniques to the characterisation of fisheries and other benthic organisms’ habitats, and the need to protect the sustainability of living resources of the SOPAC region, the Working Group **recommended** that SOPAC encourage Member Countries to initiate cross-fertilization of geological, biological and physical and chemical oceanographic disciplines within their countries (Habitat Working Group, page 84).

34. Recognising the importance of informing regional fisheries and other biological organisations within the SOPAC region of the value of utilising geological and geophysical techniques in characterising living resources habitats, the Working Group **recommended** that SOPAC ask Member and Donor Countries to encourage organisations such as SPREP, FFA, USP and other agencies to send representatives to, and to participate in, the Habitat conference in November (Habitat Working Group, page 85).

35. Noting the desire to move rapidly ahead in formulating work plans to investigate SOPAC regional living resources habitats, the Working Group **recommended** that in cooperation with the SOPAC Secretariat a Working Group meeting is convened in Noumea, at the end of the Habitat Conference, to evaluate the results of the conference specific to SOPAC needs and recommend further action (Habitat Working Group, page 85).

36. Recognising the diversity of the Habitat Conference sessions, the Working Group **recommended** that a committee be organised to evaluate and report upon the cross-cutting nature of the conference. The Working Group further recommended that in cooperation with the SOPAC Secretariat a group be formed to publicise the results of the conference (Habitat Working Group, page 85).

37. Participants of the SOPAC annual meeting **recognised** that the TAO/TRITON Array will give fundamentally important oceanographic and atmospheric data for daily weather forecasts, coastal management, tourism, marine safety and fishery resource management. The real time data is of great benefit to South Pacific countries (Time Series Ad-Hoc Working Group, pages 87-88).

38. SOPAC **should encourage** member countries to grant blanket clearances to the TAO/TRITON project for scientific cruises to service the buoys, and conduct oceanographic and meteorological measurements in their EEZ. A blanket clearance is required to service and repair the buoys on short notice in case of dam-

age to the sensors. The buoys are located in the EEZ of Kiribati, Tokelau, Tuvalu, Nauru, Federated States of Micronesia, Solomon Islands, Papua, New Guinea and Palau. In particular, since deployment of TRITON buoys will commence in the EEZ of the Federated States of Micronesia in March 1998, cooperation from the Federated States of Micronesia is urgent and vital for the successful maintenance of the TRITON buoys (Time Series Ad-Hoc Working Group, page 88).

39. Education of fishing fleets operating in SOPAC countries is **strongly encouraged**. The TAO/TRITON Project has developed a brochure in 5 languages, (Japanese, Chinese, Korean, English and Spanish) to inform fisherman about the Array. Also, participation of fishing observers and oceanography or fisheries students in TAO cruises aboard the NOAA Ship Kai'imimoana and JAMSTEC R/V Kaiyo and R/V Mirai is encouraged, especially during 1998 the International Year of the Oceans (Time Series Ad-Hoc Working Group, page 88).

40. SOPAC **should assist** the TAO/TRITON project in developing legislation or regulations to discourage fishing vessels from damaging or interfering with the operation of the buoys and to protect this valuable regional information resource (Time Series Ad-Hoc Working Group, page 88).

National Capacity Development Program

Information Technology Unit

Recommendations 41-46 were made by the Information Exchange Working Group (see pages 86-87):

41. Internet e-mail should be available immediately.

42. Full Internet should be implemented in the medium term.

43. Internet services provided should be reliable and affordable where lack of reliability excludes PEACESAT as a service provider.

44. Individual countries should decide the selection of services.

45. SOPAC should identify a donor for implementing Internet connectivity for member countries where services are unavailable or not affordable and should continue negotiations with UNDP as a possible donor and, should investigate using existing telecommunications carriers or alternative satellite services.

46. SOPAC should investigate options for upgrading existing Internet services in member countries where those services are inadequate or not affordable.

47. The representative of Tonga recommended SOPAC develop GIS data exchange standards for the region and the representative of IOC asked that SOPAC consider using world-wide standards when it does so.

RECOMMENDATIONS FROM TAG

(See Appendix 8 for TAG Report)

Resource Development Program

Mineral Resources Unit

48. The representative of Canada emphasized the importance of baseline studies prior to any mine development. TAG encouraged and **recommended** all Member countries carry out baseline environmental surveys prior to commencement of new mining activity (paras 17-18).

49. The representative of FSM acknowledged the work of MMAJ, Japan, and noted that this phase is coming to an end. He requested that MMAJ extend its current program. TAG **recommended** that MMAJ, Japan be encouraged to continue working in the region and to consider a further, five-year phase of scientific investigations in the region (paras 33-34).

50. The representative of Australia described the value to the region of the work undertaken by Peter Butler in the petroleum data bank at AGSO in Canberra. TAG also expressed thanks to Patrick Coleman for his assistance in updating the petroleum displays and **recommended** that SOPAC seek ways of maximising the use of the display material at conferences such as APPEA and AAPG (para. 37).

51. TAG, noting the high priority placed by several member countries on the Onland Minerals program, **recommended** that the Secretariat continue work in this area, and also to consider related environmental issues such as baseline studies, environmental monitoring and legislation (para. 20).

Energy Unit

52. TAG **recommended** that the meeting take note of the recent FOC decision in the Cook Islands and also note the Executive Summary of the Final Report on the Programme Review

of the Core Energy Programme of the South Pacific Forum and make comment, as appropriate, on paragraphs 8 and 9 which make reference to future work needs as presented in TAG/26/1.3 Paper 1 (paras 54-56).

Environmental Science Program

Coastal Unit

53. The representative of Cook Islands proposed that the Secretariat consider a regional coastal bathymetric mapping project, while the representative of Niue suggested a project along the same lines, but developed sub-regionally, stage-by-stage. It was also suggested the use of remote imagery as a tool for mapping coastal areas and seamounts be considered. TAG **recommended** that the Secretariat assess the advantages of a comprehensive regional coastline mapping project as opposed to the present approach of individual country mapping projects (paras 59-62).

Hazard Assessment Unit

54. TAG **noted** the efforts that have been put in place since the last Annual Session to align the Pacific Cities and the Australian Cities projects. TAG reiterated the excellent opportunities that exist for all parties in the close collaboration between the two projects. TAG **recommended** that funding agencies be encouraged to provide top-up funding to maximise the interchange of personnel and standards between the two projects with a view to the completion of hazard zonation, database collation, and disaster scenario modelling related to the vulnerability to geological hazards of communities in seven major Pacific cities (paras 74-75).

55. The representative of Fiji noted that MRD is working closely with the Secretariat in this program area. He noted that the new MIKE21 software, training and support will enable modelling of disaster scenarios for hazards such as pollution, erosion, tsunami and storm surge. TAG **recommended**, in view of the size and importance of this investment, and the limited capacity of SOPAC and member countries to fully employ this software, that donors urgently consider providing support funds for consultancies, or directly contributing the services of consultants with expertise in MIKE21 software, to ensure its extensive and timely use in disaster scenario modelling (paras 79-80).

56. In addition, TAG **recommended** that donors urgently consider supporting SOPAC and member country marine investigation programs that will be required to provide meaningful input into MIKE21 analysis (para. 81).

Ocean Unit

57. TAG **recommended** that SOPAC be the regional organisation responsible for technical aspects of Law of the Sea matters (para. 97).

58. **Samoa recommended** that TAG seek advice from Japan (TRITON project) as to whether data from drifting buoys in mid-latitudes be made available in real-time either through the Aeromantical Fixed Telecommunications (AFTN), Global Telecommunication System (GTS) or otherwise (para. 94).

59. **Samoa recommended** that TAG retrieve all data from participant countries in the TOGA/WOCE Cruises for storage in the SOPAC database (para. 95).

60. Recognising that 1998 is the International Year of the Ocean as decided by the United Nations and that UNESCO/Intergovernmental Oceanographic Commission (IOC) is tasked with coordinating the activities and that SOPAC has been designated as the coordinating agency for the South Pacific, and noting that preparations must urgently be made if activities are to occur on time, TAG **recommended** that:

- SOPAC designate a coordinator for the International Year of the Ocean (IYO) who can assist in the region and also input the IOC - IYO home page.
- SOPAC to take a proactive role in encouraging countries, organisations and other groups to identify and undertake activities supportive of IYO.
- SOPAC to organise events and activities in the region that will fulfil the objectives IYO and subsequently increase the profile of SOPAC in the region (para. 136).

61. Concerning the Global Ocean Observing System (GOOS) TAG **recommended** the following:

- SOPAC should urgently undertake the collection of information that will serve as background for the upcoming activities (inventories, assessments, evaluations) while recognizing that such information may be preliminary but nevertheless useful.

- SOPAC should designate a Secretariat staff member as the GOOS contact who would be given the responsibility for implementing GOOS activities at the secretariat.
- SOPAC should identify GOOS as a program activity.
- SOPAC should establish a dialogue with potential GOOS partners to encourage support and cooperation throughout the region (paras 88-93).

Other Matters

62. TAG, noting the limited amount of time devoted to TAG involvement during recent SOPAC Annual Session, and the continuing desires of member countries to receive timely and pertinent technical information from the experts that participate in TAG, TAG **strongly recommended** that at future SOPAC Annual

Session adequate time provided for TAG discussions, that should be scheduled so as to enable member countries to give appropriate consideration to TAG recommendations (para. 139).

63. TAG, noting the budget constraints that SOPAC operates under in respect to facilitating secretarial services during Annual Sessions and noting the willingness of many TAG representatives to assist SOPAC in secretarial tasks, such as rapporteuring and editing, TAG **recommended** that selected TAG members be called upon to assist SOPAC in its reporting and documenting duties associated with future SOPAC Annual Sessions (para. 140).

64. Noting Dr Ulrich Von Stackelberg's past contributions and support of SOPAC, TAG **recommended** that a letter of thanks and good wishes be sent, expressing SOPAC's appreciation for all his assistance (para. 36).

SUMMARY RECORD OF THE TWENTY-SIXTH ANNUAL SESSION

1. OPENING

1. Official Opening

The Twenty-sixth 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 Nadi, Fiji from 29 September to 4 October 1997.

2. The official opening of the SOPAC 26th Annual Session by the Minister of Lands and Mineral Resources, the Honorable Ratu Timoci Vesikula was preceded by a Prayer by Father John Bonato. Mr Robin Moaina, representative of Papua New Guinea responded to the official opening address on behalf of the member countries. The Director of SOPAC, Mr Philipp Muller made opening remarks. These addresses are appended to the Record of the Meeting (Appendix 1).

3. Delegates from the following member countries attended: Australia, Cook Islands, Federated States of Micronesia, Fiji, Guam, Kiribati, Marshall Islands, New Zealand, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu. New Caledonia also attended as an associate member.

4. The following supporting governments and organisations attended as observers: Canada, France, Japan, People's Republic of China, Republic of Korea, United States of America, UNDP and IOC. The following SPOCC organisations also attended: Forum Secretariat, South Pacific Regional Environment Program, Tourism Council of the South Pacific and the University of the South Pacific.

5. Other institutions and organisations which were represented included: A & P Development Consultants, ACTEW Corporation, AGSO Cities Project, Australian National University, Australian Volcanological Investigations, Avian Mining Pty Limited, British Geological Survey, FSM/Sea Grant COM-FSM, French-Fiji Cooperation, Hawaii Sea Grant Extension, IFREMER/DRO/GM, Korea Institute of Geology, Mining and Materials (KIGAM), LADS Corporation Ltd, Massey University,

NOAA/Pacific Marine Environment Lab, ORSTOM, Pacific Power Association, United States Geological Survey, University of Western Australia, University of Hawaii, UNDHA/SPPO, Victoria University of Wellington and Water Research Foundation of Australia. A full list of participants is attached as Appendix 2.

2. ELECTIONS

6. Chair of SOPAC

The representative of Fiji was elected Chair with acclamation. The outgoing Chair made some observations on the role of the Chair noting that, since nothing had to be done to earn the role, little was expected beyond the nominal function of chairing the Annual Session. The Outgoing Chair praised the work of the SSC but expressed some reservations about the approach taken by the ISC. He also suggested that the Governing Council should find some way to maintain contact with the Secretariat between Annual Sessions. The full text of the Outgoing Chair's remarks can be found in Appendix 1. After these remarks Fiji took over the Chair thanking the outgoing Chair for his timely advice.

7. Vice-Chair of SOPAC

The representative of Federated States of Micronesia was elected Vice-Chair in accordance with the Rules of Procedure.

8. Chair of STAR and TAG

Dr Keith Crook of the University of Hawaii was re-appointed Chair of STAR and Mr David Tappin was appointed Chair of TAG

9. Rapporteur

Lala Bukarau was appointed Rapporteur.

3. ADOPTION OF AGENDA AND WORKING PROCEDURES

10. The Director made comments on the organisation of the meeting and announced that Agenda Item 6.2.3 would be considered within Agenda Items 8 and 11. Cook Islands requested clarification of the timetable. The Director commented that the Anniversary Dinner placed a firm cut-off on Saturday and that it may be necessary to consider the record on Sunday.

11. Samoa recalled a concern expressed at the closure of last year's Council Session by the Head of the Fiji delegation about the imbalance in recording country interventions in the record of proceedings. He further recalled that the 1993 Council had agreed to take a more detailed record than before but this had deteriorated over recent years. Samoa also pointed out that other SPOCC agencies summarise country interventions in their meeting records.

12. Fiji commented that strict verbatim reporting would pose difficulties for the Secretariat and suggested that member countries could assist by providing a written statement to go on the record. The Director explained that the Secretariat staff assigned to take record of Council cannot cope with a more detailed record.

13. The working procedures of the meeting as proposed by the Secretariat (AS26/3.1 Rev.1) were adopted by Council.

14. The Revised Agenda is presented in Appendix 3.

15. Drafting Committee

A Drafting Committee to oversee the production of a draft Record of Proceedings of the meeting was formed comprising Federated States of Micronesia (Chair), Vanuatu, Australia and Samoa.

4. REPRESENTATION

16. Council was invited to make amendments to the designation of National Representatives Paper (AS 26/2 Info 2). The list of National Representatives to SOPAC is attached as Appendix 4.

5. STATEMENTS BY MEMBER COUNTRIES, DONORS AND SUPPORTING GOVERNMENTS AND INSTITUTIONS.

17. The Chair invited statements from member countries, supporting governments, institutions and SPOCC organisations. The common sentiments expressed in these statements were those concerning support for the work being carried out under the auspices of SOPAC for its member countries; and those wishing the outgoing Director well in his future endeavors. The statements are presented in full in Appendices 5 and 6.

6. REPORTS

6.1 Issues Arising from 25th Annual Session

18. The Director introduced paper AS 26/6.1 and invited Council to review actions reported as taken.

19. On a query from the representative of Samoa about two other matters he understood to also need follow-up, the Director confirmed that the chosen auditor, Coopers & Lybrand did agree to match the lowest quote for auditing services to SOPAC; and that ADB's rejection of the SOPAC coastal project was due to their policy of "no funding on a regional basis".

6.2 Director's Annual Report

20. The Director introduced the annual report for 1996/1997, making special mention of the donors who supported SOPAC throughout the year. His suggestion to Council to defer discussion of sub-agenda items 6.2.2 and 6.2.3 to after the TAG Session on Thursday was agreed to.

21. On the concern expressed by the Vanuatu representative that inadequate acknowledgement was given in the annual report to projects carried out by SOPAC utilising bilateral funds, the Director promised that future reports will correct this oversight.

6.2.1 Financial Report 1996

22. The Secretariat tabled the 1996 financial reports AS26/6.2.1

23. The representative of Samoa sought clarification from the Secretariat of the Revolving Fund alluded to in the 1996 accounts as he was aware of only three funds – the General Fund, the Special Fund and the Reserve Fund – established by the Financial Regulations.

24. Taking into account the clarification by the Secretariat, the representative of Samoa asked that revenue earned by the Secretariat through hiring out of its expertise and use of its services and property be recorded in the General Fund together with associated expenditure. However, Revolving Funds for the sale of individual member countries properties be maintained separately.

25. Council directed the Secretariat to report back to the next Council Session on the basis, justification and detailed operation of Revolving Funds and how these relate to the main funds authorised by the Financial Regulations.

6.3 Miscellaneous Reports

6.3.1 Report on the 1997 Accounts

26. Council noted the report on 1997 accounts (AS26/6.3.1). The Secretariat presented an updated schedule on the status of membership contributions as at 30 September 1997. Council noted pledges by member representatives that despite chronic national financial difficulties they would endeavor to honour their financial obligations to SOPAC.

6.3.2 1996 Annual Report Summary

27. The representative of Samoa commended the Secretariat for another professionally produced document. He was concerned however at the negative connotations of the introductory section of the Report which lists island countries as the main beneficiaries of SOPAC but does not include them as contributing to the financing of the organisation.

28. Council agreed that the Secretariat rectify this omission. Council also agreed to a suggestion from Cook Islands that the Secretariat clear first with countries sections that are country specific before publication.

6.3.3 SPOCC Summary Record and Report

29. Council noted the reports of the SPOCC meetings held in August 1996, and April 1997.

30. Council acknowledged the value of the SPOCC process, and noted the comments by New Zealand that suggestions made during the SOPAC SSC and ISC deliberations could be raised by SOPAC at SPOCC.

31. On the suggestion by New Zealand that the Secretariat be tasked with pursuing the merging of the maritime delimitations division of FFA with the proposed Oceans Unit at SOPAC that would deal with LOS issue - the Director replied that donor acceptance of such a merger should be prerequisite to such a pursuit.

6.3.4 A Review of Non-living Resources and Threats in the Pacific Region

6.3.5 Review of Regional Coordination of Law of the Sea Issues in the South Pacific

6.3.6 Review of the Core Energy Program of the South Pacific Forum

32. Council noted the reports which were to be discussed by its Technical Advisory Group, before coming before Council again for endorsement.

TECHNICAL SESSION

7. REPORT BY THE STAR CHAIRMAN

33. STAR with Dr Keith Crook as Chair met during the 26th Session. Council noted with acclamation Dr Crook's references to STAR as a "tool, in an array of tools" for SOPAC member countries. Council especially appreciated Dr Crook's attempt to clarify the relevance and the great value and benefit to be derived from having a group of international, eminent scientists available and accessible to SOPAC at no cost.

34. The STAR Report appears in full in Appendix 7 with the full text of the STAR Chair's presentation to Council as an attachment.

8. TECHNICAL ADVISORY GROUP (TAG) SESSION

35. TAG with Dr Dave Tappin as Chair met during the 26th Session to consider the 1998 Work Program. The summary report of TAG appears in full in Appendix 8.

36. Council received the summary report of TAG and commended TAG for its thorough work. Council considered the list of TAG recommendations which included those STAR recommendations which were adopted by TAG.

37. Council accepted the TAG report, and agreed to consider the recommendations in conjunction with looking at options for balancing the Budget for the 1998 Work Program. At the time of discussion, the Work Program for 1998 required \$289,788 over and above secured funding for implementation.

9. Reports of SOPAC Sub-Committee & Interim Standing Committee

38. In opening this item for discussion, the Chair reminded Council that the Subcommittee on SOPAC's Future Role and Direction had reported to Council out of session with twenty (20) recommendations, ten (10) of which required an urgent Council decision. Although not unanimous, Council had agreed by consensus on the implementation of SSC Recommendations 1,2,6,7,8,14,15,16,19 and 20.

39. The Chair indicated that he would give delegations an opportunity to comment briefly on these recommendations as a group and then move to discuss individually the remaining recommendations and make decisions as necessary.

40. The generally approved recommendations are as follows:

- SSC Recommendation 1: That Council endorse the optimal Work Program structure with immediate effect, and that the Secretariat move towards implementation as soon as practicable and that future reporting be in this format.
- SSC Recommendation 2: That Council endorse the optimal organisation profile and that this take effect as soon as possible, no later than 1 January 1998; that the Director position be advertised; that the Deputy Director position be left vacant; and that a position of Program Manager be established.
- SSC Recommendation 6: That a simplified accounting format be developed to reflect the new operational structure.
- SSC Recommendation 7: That a Disaster Reduction Unit be established, the work to focus in the immediate future on regional coordination, and some research and information activities.
- SSC Recommendation 8: In the light of previous Forum considerations, the Sub-Committee

recommends that given its resource development implications the core Energy Program be housed at SOPAC. The Sub-Committee noted the intention of New Zealand to carry out a review of the activities of the current Energy Program, and further recommends that the review be completed early in 1997, to facilitate securing funding for 1998 and beyond.

- SSC Recommendation 14: That the 26th Governing Council meeting be convened at ministerial level.
- SSC Recommendation 15: That STAR and TAG be retained, and the format of future annual sessions be changed in order to facilitate the interaction between STAR, TAG and Council.
- SSC Recommendation 16: That Council play a more active role in promoting SOPAC's benefits and providing linkages to decision making authorities in member governments, and further recommends that Council take the opportunity of the Forum Economic Minister's Meeting in mid-1997 to promote:(i) the importance of geoscience in the management of nonliving resources and the environment in order to achieve sustainable economic development in the region; and (ii) the role which SOPAC plays in the region.
- SSC Recommendation 19: The Sub-Committee recognises that there are several recommendations in this report that require immediate implementation, and therefore recommends that it continue to meet to carry out the tasks of an interim standing committee (Refer Recommendation 12).
- SSC Recommendation 20: That the approved 1995-1999 Medium-Term Plan and the Strategic Plan be revised to reflect the new Work Program and operational structure in time for consideration by the next Council meeting, and that this task be overseen by the interim standing committee.

41. The Chair invited Council members to make statements in regard to these recommendations noting that several had already been acted upon as reflected in the Report of the ISC (SOPAC Miscellaneous Report 262).

42. On Recommendations 1, 2 and other associated ones, Samoa explained that his support is only to the general principle of member governments progressively moving to take greater responsibility for the organisation. His country however does not support the Subcommittee's optimal Work Program plan to incorporate into the core budget over the next 3-4 years additional XB posts as this is unrealistic and unsustainable for Pacific island countries. Niue agreed with these comments.

43. Australia, FSM, and New Zealand commented on recommendation 7 seeking clarification on the role that SOPAC's proposed Disaster Reduction Unit would play. Australia, noting that most of its support of disaster activities in the region had been for training, further advised that what was needed now was to develop a mechanism to clearly define a strategy to implement this recommendation. The Director advised that: SOPAC's coordination role would focus on acting as an information gathering, storage and dissemination focal point building on the Secretariat's geohazards, and information technology strengths; SOPAC should not become involved in activities such as community level training and disaster relief. He further added that if donors supported this Disaster Reduction Unit as part of an overall disaster preparedness strategy for the region, the costs incurred for disaster relief activities might be significantly reduced.

44. On Recommendation 8, New Zealand reminded Council that the review of the Forum Secretariat Energy Program had been completed and discussed at the recent meeting of FOC. New Zealand supported the recommendations in the Energy Review Report and would be discussing the implications of these with the SOPAC Secretariat during the upcoming HLC in Suva.

45. On Recommendation 15, Samoa and New Zealand expressed the view that while not detracting from the aim of the recommendation, experience thus far including the proceedings of the current session, indicate that while there is a need for a stand alone STAR session, TAG discussions could easily be merged with Council deliberations of the Work Program and Budget. This would fully integrate TAG with Council as well as save time and effort, and they so recommend to Council. The Director reminded Council of how TAG came into being due to lack of technical expertise amongst Council members and that this was still true; TAG was a forum to provide technical advice on Work Program matters; and it was Council's ultimate responsibility to prioritise and determine the Work Program dependent on resources available.

46. In response to the Director's comment, Samoa indicated that he shared the same view and this need is met by the continued role of STAR and TAG but the recommendation dealt only with the mechanisms of incorporating TAG input into Council discussions to further improve session procedure and time.

47. The Director accepted this and Council asked the Director to investigate further the

integration of TAG into Council Work Program and Budget discussion in future sessions.

48. On Recommendation 16, in response to a query from the Cook Islands, the Director advised that a draft paper prepared by a consultant to enunciate the role of geoscience in social and economic development had not been completed but he would endeavour to do so.

49. The Chair and the Director introduced the remaining SSC recommendations deferred for consideration by Council at this meeting.

50. Council discussed SSC Recommendations 3 and 4 recognising that they are both closely linked to the issue of expression of commitment to SOPAC by its owners.

51. On Recommendations 3 and 4, the Representative of Samoa recalled the comments he made earlier on Recommendations 1 and 2 from which Recommendations 3 and 4 derive. He reiterated that his support for these recommendations are only in principle and not for the plan proposed by the SSC and ISC. The issue of what posts and programs currently in the RXB and XB that are to be absorbed into the Regular budget are to be decided annually at Council.

52. Council agreed with this and noted that it was unrealistic to expect membership contributions to meet this responsibility in the foreseeable future.

53. In regard to SSC Recommendation 5, Samoa sought clarification of what costs are included in corporate overhead costs and asked that these costs include all administrative and support expenses of the Secretariat as distinct from program delivery costs. Secretariat advised that the corporate overheads are those costs required to fund Head 4 of the 1998 Budget and that figure for 1998 was anticipated at 21.5% and increases to 32% if special costs such as those incurred for the annual meeting are included. Australia suggested that instead of including a percentage, the recommendation should urge the Secretariat to be as effective and efficient as possible in its corporate operations as the 1998 anticipated figure of 21.5% had already brought into question the validity of the 30% target. Council noted that it was important to ensure that the costs to administer the organisation are reported separately from those to deliver the Work Program.

54. Council endorsed in principle SSC Recommendation 5, that every attempt be made to keep the corporate overhead costs to no more than 30% of the total operational staff salaries. In so doing Council noted that 30% should

be seen as target “most effective” figure, and that the figure is to be reported to Council annually.

55. In introducing SSC Recommendation 9 the Director reminded Council that (i) if the original SOPAC mandate had been strictly enforced, about half the current member country needs as expressed in the current Work Program could not be addressed; (ii) members always had problems prioritising work; (iii) donors had increasing tendency to attach constraints to funding; and (iv) considerations to apply when accepting new programs should equally apply to discarding programs.

56. Council endorsed in principle SSC Recommendation 9, that when considering new work programs to be incorporated into the Secretariat, SOPAC’s purpose (refer Article 2 of the Constitution), possible impacts on ongoing operations, the regional strategy and linkages with SPOCC agencies, funding, and the strengths of the organisation must be considered.

57. After some discussion on SSC Recommendations 10 and 11 Council agreed that no action was necessary on either of these recommendations. Adequate provisions were made in the Staff Regulations, and that these provisions were conveyed to all staff in their letter of appointment. The Council asked the Secretariat to provide Council with draft employment contracts for expatriate professional, local professional and support staff for attaching to the Staff Regulations.

58. Council discussed SSC Recommendations 12, 13, 17 and 18 together noting the close relationship and overlap between them and that these recommendations could be interpreted as interfering with sovereign rights.

59. Council while appreciating the need to address some ownership issues of SOPAC have not endorsed SSC Recommendation 12, that a fundamental governance issue is the potential conflict of interest in Council where members adopt roles of owner, client and stakeholder as this could impinge fundamental sovereign rights of members. However, Council agreed that members should take note of sentiments expressed. During Council meetings, in particular, individuals should declare the role they are playing whenever appropriate prior to making a statement.

60. Council did not endorse SSC Recommendation 13 that a standing committee of Council to be known as the “Management Advisory

Committee”, be established. However, Council noted that there is a governance issue in regard to implementation of ownership responsibilities and agreed that the role of the Chair be strengthened in line with the Rules of Procedures 14 (c), (d) and (e) in regard to activities between sessions.

61. Council did not endorse Recommendation 17 in regard to the need to define the role of the national representative. However, Council agreed that members should take note of the suggestions for improving the role played by national representatives as outlined in Attachment 4 of the ISC Report.

62. Council endorsed SSC Recommendation 18, that once communications between the Secretariat and a member country on any new task/project had been established through the national representative, subsequent contacts on technical matters should be directed to the appropriate technical body or department.

10. ESTABLISHMENT AND ADMINISTRATION

10.1 Rules and Regulations

10.1.1 Ratification of SOPAC Constitution

63. Council received an update of those members who had deposited their instruments of ratification. Fiji Government as the Depository confirmed receiving the following member countries instruments of ratification: Samoa, Kiribati, Niue, New Zealand, Australia and Cook Islands. Council urged the remaining members to ratify the amendments as soon as practicable.

10.1.2 Management Advisory Committee Procedures

64. In line with Council’s decision under Agenda Item 9 (para 55) this agenda item was no longer relevant.

10.1.3 Proposed Control over the General Reserve Funds

65. Council considered paper AS26/10.1.3, and approved the recommendation by the Secretariat to set the base level of the General Reserve Funds at \$400,000.

10.2 Staff Matters

10.2.1 Appointment of Director

66. Council unanimously approved the appointment of Mr Alfred Simpson as Director for a term of three years commencing in January 1998.

67. The Council approved the draft contract terms and conditions of the Director Designate and authorised the Chair to sign the contract on behalf of Council.

10.3 Appointments

10.3.1 Appointment of 'Executive Appointments Committee'

68. Council saw no immediate need to make such an appointment and acknowledged existing procedures had adequate provision for the Chair to act in any emergency.

10.3.2 Appointment of Management Advisory Committee

69. In line with the decision taken under Agenda Item 9 (para 55), this agenda item was no longer relevant.

11. APPROVALS

11.1 Consideration of TAG recommendations

70. The Chair invited the representative from Fiji to introduce paper AS26/11.1.1 on the resolution from the 1997 Pacific Regional Disaster Management Meeting. Council noted the request that SOPAC establish an operational Disaster Reduction Unit within its Secretariat in order to implement the 1995 Forum directive.

71. Council was advised that the first phase of the UNDP South Pacific Disaster Reduction Program will end in December 1997 and a draft second phase project document was currently being considered by UNDP in the hope that implementation could begin in January 1998. UNDP funding for the second phase was up to US\$500,000 until 2001 as mandated at the Saipan MiniMAC. As part of the second phase UNDP would actively encourage donor co-funding. As a result of impending changes in the UN structure, DHA would no longer exist and support for the DHA-SPPO would cease in 2-3 years.

72. Australia advised that its position as a donor in regard to support of disaster related activities was that it had no intention to reopen the 1995 Forum decision, and that a strategy to assist with the implementation of the Forum decision was required.

73. Several countries expressed concern that it was critical that adequate future funding be secured before the Secretariat could implement the 1995 Forum decision and little progress had been made in securing funding, and support from Australia, New Zealand and UNDP was requested.

74. Council agreed that the Secretariat should work through the Regional Disaster Management Sub-Committee together with Australia, New Zealand and UNDP to work out a strategy, including funding and a time frame, for implementing the 1995 Forum decision to designate SOPAC as the regional coordination body for disaster management by the 1 January 1998 and report back to Council at the next session or earlier should implementation not be possible by that date.

11.2 1998 Draft Work Program and Budget

1997 Revised Budget

75. The Secretariat introduced paper AS26/6.2.3 Supplementary Paper on the 1997 revised budget for the General Purpose Fund (GPF). The approved 1997 budget for the General Purpose Fund was \$1,360,800; the revised budget is \$1,475,800 with an increase of \$115,000. The increased expenditure had arisen since the anticipated support for the Deputy Director position had not materialised.

76. The Secretariat explained that the increase would be met from (i) savings in the GPF (ii) increased income in the Regular Budget and (iii) revenue available from the SPF and (iv) \$50,000 from the Reserve Fund.

77. Council members agreed to the 1997 revised budget for the GPF noting that further clarification was available from the Secretariat if members needed it.

1998 Work Program and Budget

78. The Secretariat introduced the proposed 1998 Work Program and Budget (AS26/6/2/3) and addressed the budget which had been prepared in line with the SSC recommendations.

79. A budget of \$5,508,000 is proposed made up of: \$1,526,000 Regular Budget (RB) funds (28%); \$951,000 Regular Extrabudgetary (RXB) funds (17%); and \$3,031,000 Extrabudgetary (XB) funds (55%).

80. The optimal budget of \$2,477,000 comprised both the RB and RXB amounts.

81. The RB funds secured totalled \$1,236,212 leaving a budget deficit of \$289,788. To meet this solely from member country contributions would require a 32.3% increase.

82. Australia and New Zealand advised that level of commitment equivalent to that of the 1997 level was expected for 1998 though final approvals were still required. New Zealand further advised that support for the Water and Energy Units would be discussed at the HLC to be held in Suva following the Council meeting.

83. Council expressed its deep appreciation to all donors and supporting institutions for their contributions through SOPAC and instructed the Director to convey their thanks in particular to Australia, New Zealand, France, Japan, People's Republic of China, Republic of Korea, United States of America, Commonwealth Secretariat, UNDP and IOC.

84. The Representative of Samoa drew the Council's attention to an explanatory note in the Secretariat's budget, that secretariat salaries were adjusted monthly on movements of the SDR relative to the Fiji dollar. He asked the Secretariat to check on this practice and correct or report back to Council, as his recollection was that the SPOCC approval of the use of the SDR included the recommendation of the reviewer to make annual adjustments on movements up or down 5% or greater.

85. The Secretariat explained that the revolving funds are showed under the Special Fund Budget.

86. The Secretariat also explained that the allocation of funding for tasks/activities is based on requests from countries together with prioritisation, Secretariat attempts to ensure equity between members and staff time commitments.

87. Cook Islands advised that it was desirable to give an indicative cost for those items where no funding was available but in fact some work would be assured as part of the activities of one or more staff on a "part time" basis.

88. Vanuatu offered to assist the Secretariat

in discussions with the Government of France in regard to the expressed concern over decreasing support in recent times.

89. Council then considered the Work Program and commented on particular issues and activities as follows.

Mineral Resources Unit

90. Vanuatu expressed strong support for the Mineral Resources Unit and asked about funding for the Resource Economist.

91. The Secretariat advised that two Resource Economist positions were in the Budget. Following a suggestion from Australia at the last session a request had been made to AusAID for support of a Resource Economist under Responsible Management of Resources funding, but no response had been received. In the meantime funding from UK/ODI had been secured for a junior professional Resource Economist appointment to the Secretariat in conjunction with Fiji MRD.

92. Vanuatu requested that task VA98.22 relating to mineral fiscal regime policy development be deleted and be replaced with a new task for a confidential analysis of Vanuatu's tax system in regard to mineral development.

Water Resources Unit

93. Council expressed its appreciation to UNDP for funding of water resources and sanitation activities at the Secretariat and noted with appreciation that New Zealand had indicated its intention to consider project proposals recently submitted by the Secretariat.

94. Niue advised that task NU98.12 relating to waste management was low priority for 1998.

95. Vanuatu advised that task VA98.17 relating to a draft water sector plan for rural areas be deleted as assistance was secured from New Zealand.

96. Vanuatu also advised that a project to collect data in areas of proposed mining will likely require SOPAC technical assistance on a cost-reimbursable or contract basis.

97. Samoa advised of two new tasks requested during TAG. Samoa also asked the

Secretariat for some explanation on the method or rationale used by the Secretariat in choosing which country projects receive funding and which don't. He observed from the work plan before Council that countries have varying numbers of country projects.

98. He accepted this as a reflection of the different resource potential of the island members and hence their need and ability to benefit from the various programs. He had therefore felt that in the interest of equity the Secretariat would give priority to projects of those members not benefiting from other programs of SOPAC. He was concerned that Samoa had only three projects in the entire program but only one is funded. The Secretariat confirmed that the Samoan projects would be funded in 1998.

Coastal Unit

99. Tonga advised of an additional project on coastal erosion requested in TAG.

100. Vanuatu advised of funding from ADB to carry out an urban infrastructure study in Port Vila and Luganville, and SOPAC was likely to be asked to carry out circulation studies on a cost-reimbursable/contract basis.

Ocean Unit

101. Council noted with concern the importance of work now forming part of the Ocean Unit and that the Secretariat urgently pursue funding for the Unit Coordinator.

Human Resources Development Unit

102. Niue and Samoa asked for priority to be given to funding technical officers to the Certificate in Earth Science and Marine Geology scheduled to begin its final three-year cycle according to its present format, in 1999.

Information Technology Unit

103. Samoa commended the Secretariat on the technological advances made by this unit and the services it was able to provide. He was concerned however that from the presentation by the Secretariat, it now appeared that the Secretariat is venturing into the commercial sphere as an internet service provider. He pointed to

the danger of this and reminded the Secretariat that it should focus on its primary mandate of providing data and information support to the Secretariat program and management support to member countries and where possible advisory assistance to other SPOCC agencies and organisations on a cost recovery basis. It is not expected however that it go into commercial services for only financial reasons.

104. The Director agreed with this view and promised that this would be borne in mind in this work and other areas.

Publications and Library Unit

105. In response to a query from New Zealand, Council was advised that the difference between the Technical Editor and Publications Coordinator was primarily one of the former requiring geoscience skills, and the latter media skills particularly in desktop publishing. The two positions complement one another rather than in any way duplicate.

106. Vanuatu advised of an additional request to edit and publish a minerals review of Vanuatu, likely to be prepared in two volumes.

107. Samoa advised of an additional request to re-establish the Library at the Apia Observatory and put in place an effective catalogue system including the main Ministry's library.

Corporate Services Program

108. Council noted that the staffing of the Corporate Management Unit and the Finance and Administration Unit was in accordance with the SSC recommendations, but noted that a more appropriate place for the Finance and Administration Controller would be as head of the Finance and Administrative Unit.

109. New Zealand requested that some effort might be made by way of discussion between the Secretariat and the various donors in order to harmonise reporting procedures between the donors thereby making the Secretariat's job easier.

General budgetary matters

110. Samoa reaffirmed the view that TAG considerations should be incorporated into the Work Program and Budget consideration in Council.

111. The Secretariat advised that members do not respond in a timely manner when the draft Work Program is circulated about mid-year.

112. Vanuatu urged the Secretariat management to spend more time in the member countries raising the in-country and regional profile of SOPAC. The Director expressed the hope that Secretariat management would be able to commit more time in 1998 to visiting member countries now the SSC and ISC activities are completed.

11.2.1 Options for the Implementation of the 1998 Work Program and Budget

113. The Director introduced paper AS26/11.2.1 on options for the implementation of the 1998 Work Program and Budget. The options as enunciated in the ISC Report (pp 3-5) were received.

114. He stated the deficit of \$289,788 could be met by increasing member country contributions; reducing the Regular Budget as a result of savings and cuts within the Work Program, securing additional external funding; or a combination of each of these options.

115. In relation to financing the budget deficit, the representative of Samoa preferred to first consider cost saving options of holding all future sessions in Suva (with the permission of FSM), possibly deferring the recruitment of the Program Manager, savings on recruitment and other miscellaneous items identified by the Secretariat before looking at the other options involving the reduction of the Work Program, raising contributions or reducing staff salaries.

116. He also pointed out to Council that after establishing the ceiling of the Reserve Fund at \$400,000 including other deductions proposed by the Secretariat, there was a sum of some \$228,238 left outstanding to be used in an appropriate manner. He proposed that this sum be used to balance the remaining deficit without having to increase contributions. This would still leave a significant sum available for any other use determined by Council.

117. On Niue's query on whether budgetary provision had been made for SOPAC's coordination of the regional activity associated with the International Year of the Ocean (1998), the Director responded that no provision had been made in the budget and that the use of the Reserve Funds may be required.

118. Papua New Guinea recognised that the new Work Program and Budget secured fund-

ing for some key personnel and that every effort should be made to eliminate the budget deficit.

Member Country Contributions

119. A number of countries stated that an increase in member country contributions would send a strong message to the donors that member countries were committed to SOPAC. Council agreed to a 9.5% increase in membership contribution for 1998.

120. New Caledonia indicated that whilst as an associate member it was not bound to the membership contribution it would make every effort to increase its voluntary contribution by 9.5%

Work Program Considerations

121. Council noted that a saving of around \$50,000 had been made in regard to the appointment of the new Director.

122. Australia and New Zealand noted the introduction of a category regular extra budget and reaffirmed their flexibility in regard to use of their funding support during 1998. Australia however requested that during its consultations with SOPAC the Secretariat retain the current reporting format of: (i) member country contribution and (ii) extrabudgetary support.

123. Council agreed that every effort be made to secure the level of Work Program activity as indicated in the budget and that equity between members be maintained.

Annual Sessions

124. Council agreed that the holding of meetings on an annual basis was crucial at this time.

125. Council also agreed that for budgetary purposes each annual session should be held in Fiji. Nonetheless, the host government in any year had the prerogative to host in-country but any additional costs should be borne by that country not the organisation.

Use of Reserve Funds

126. Council recognised that having established a ceiling of \$400,000 on the Reserve Fund there was likely to be an excess of close to \$200,000 on the fund at the beginning of 1998.

127. Council agreed that utilising these excess funds to offset the budget deficit would not be wise as it would provide a “once only” solution. Any excess in the Reserve Fund should, if utilised, be for Work Program implementation over and above activities budgetted.

128. In summary Council noted that in regard to the budget deficit of \$289,788 and recognising that savings had already been made in the appointment of the new Director, a 9.5% increase in member country contributions and holding of the annual sessions in Fiji together with flexibility in the use of Australia and New Zealand funding would reduce the deficit to a residual of \$58,000.

129. Council directed the Secretariat to make every effort to eliminate this residual by securing new extrabudgetary resources, create savings in a regular budget, and as a last resort utilise excess funds in the Reserve Fund.

130. Council urged members to advise the Secretariat to defer any activities which were not of highest priority to their country work program in order to make additional savings.

131. Samoa indicated that in view of the comments and proposal that he had made earlier on using the excess \$228,238 from accumulated reserve funds that are unused, he would have to reserve his position on the 9.5% contributions increase.

Program Manager

132. Council agreed that the Program Manager position was crucial to ensuring that delivery of the Work Program is maintained at the highest level. For the same reason it was also agreed that appointment should not be delayed.

12. OTHER BUSINESS

Inter-Session Reporting

133. Council agreed that the Secretariat should provide a brief inter-session report to members in order to provide an update on Work Program and budget matters.

13. VENUE AND DATE OF 27TH ANNUAL SESSION

134. In line with Council's decision under Agenda Item 11.2.1, Council noted the Federated States of Micronesia's offer to host the 27th SOPAC Session, in Suva, Fiji.

135. On the issue of the late September-early October timing of the SOPAC Annual Sessions, Council noted the Director's comments on its proximity to the annual Forum meeting and the potential clashes with other regional meetings. Council agreed to Samoa's suggestion that the Secretariat liaise with other SPOCC agencies regarding the dates of their major events.

136. Council noted that TAG advisers and STAR participants had become accustomed to the current timing and suggested that the dates for the 1998 Annual Session would be 28 September – 4 October.

137. Council also noted the Secretariat's appeal for another full day to be added to the meeting duration, as the 1997 meeting allowed very little time for TAG advisers to carry out their business of advising on the SOPAC Work Program.

14. ADOPTION OF AGREED RECORD OF PROCEEDINGS

138. The summary record of the 26th Annual Session of SOPAC was adopted.

15. CLOSING

139. The Chair invited the Outgoing Director of SOPAC to say a few words.

140. The Outgoing Director, Philipp Muller began by thanking the Samoan government for releasing him from the civil service so he could serve the region. He compared himself to the “old soldier” in the saying which records how “they never die, but simply fade away.” He spoke of the importance of Human Resources Development and Training, urging Pacific islanders to show greater commitment to the region. He

felt that what was lacking was a “little more guts” in the make-up of the fledgling leaders of the Pacific. The Director felt that he had left the Secretariat in a ship shape condition, ready for his successor; whom he advised to not be too daunted by the task, and to take it a step at a time. He expressed pride in the Secretariat staff and greatly valued the input of the TAG and STAR advisers. He concluded what became an emotional farewell by thanking his family and especially his wife for having to bear the brunt of his bad temper during the trying times of the years at SOPAC. He thanked the SOPAC member countries for the privilege given to him to serve them.

141. The Chair, on behalf of Council, thanked Philipp Muller for the years of hard work and service to the peoples of the Pacific.

142. The representative of Papua New Guinea expanded the Chair’s sentiments of gratitude, by acknowledging the immense contribution Philipp Muller had made to the region throughout his life. He attributed the difficulties experienced at SOPAC as being result of circumstances beyond the region’s control and the sometimes unnerving attitude of some donors to choose when to and when not to support the region. He spoke also of the favourable impression he had received about the organisation during only two years of personal association with it. He commended the staff and the Direc-

tor for pooling talents and getting on with the job despite the great difficulties.

143. The Incoming Director, Alf Simpson, paid a public tribute to Philipp Muller on behalf of the Secretariat staff to honour a visionary and a man of great repute. He spoke of the rigours of the rear guard action that was fought by the Secretariat with Philipp Muller at the helm, and attested to the masterly management and wisdom of his mentor to leave things in ship shape at the time of his exit. On a personal note, the incoming Director felt that the greatest thing he had learned under the leadership of Philipp Muller was the importance of being a Pacific islander. The education and western values and views could be acquired along the way, but that being a Pacific islander was to be viewed as one’s greatest asset and focus on this should be part of the way forward for SOPAC and the region in general.

144. The representative of Cook Islands acknowledged the Chair’s part in the smooth conclusion of a very successful meeting, on a very tight schedule – congratulating him at his adroitness in creating the right atmosphere. He also wished him well on the mandate given to him by Council to be more proactive in lending support to the Secretariat throughout the coming year.

145. The Chair officially declared the 26th Session of SOPAC closed.

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APPENDIX 1

OTHER ADDRESSES

STATEMENT BY THE DIRECTOR

In this my sixth and final report to Governing Council, I am proud to report that SOPAC, as a regional organisation dedicated to the use of geoscience toward the development objectives of Pacific Island members, approaches the optimal capacity and effectiveness to deliver its services. SOPAC is now capable of harnessing a full range of complex and sophisticated technology to apply to the required range of geological and geophysical problems.

A summary of some of these successful activities over the past year include the following, and for which details are available in attachments and in the 1996-1997 Work Program report.

- 5 completed field surveys
- 4 in-country seminars
- 4 workshops
- 53 published reports and 4 published maps
- 20 Earth Science & Marine Geology Course participants from 8 member countries
- 26 fellowship awards
- 8 scholarship students supported

SOPAC has greatly improved its own technical capacity through computer mapping, GIS and field survey equipment which has contributed significantly to its increased output. This technological development is being transferred progressively to island member countries by strengthening their national capacity to access data and information on CD-ROM. At the same time, every effort has been put into improving communication with members and the enhancement of the use of PEACESAT over the last two years has been developed.

SOPAC's capacity and strength in information technology has earned its lead role among SPOCC organisations in dealing with information transfer, GIS and remote sensing for the South Pacific. This capacity has instigated efforts in the application to other earth science and resource management areas. Developments in Internet services through the Fiji Internet Group (FIG) over the past two years has been considered as a pilot project with wider application to other members.

The upgrade of field survey equipment and computing capacity has greatly advanced SOPAC's work in aggregate resource assessment and coastal erosion studies mainly in the smaller island member countries. SOPAC's capacity to investigate sea circulation has also been strengthened. Although a shallow-water swath-mapping system could greatly magnify SOPAC's output in this area, the current high cost has precluded its acquisition. SOPAC nevertheless maintains a very creditable output in its coastal activities through upgrades in existing equipment.

SOPAC's smaller island member countries are especially vulnerable to water shortages due to variable rainfall and polluted sources. Many depend on rain as their only source of clean drinking water. In drought situations, reservoirs empty and people are frequently forced to drink from contaminated wells. This in-turn leads to the spread of disease. SOPAC began to address these and other water and waste disposal related issues in late 1994, when it assumed responsibility for water and sanitation at the regional level.

Besides taking aboard WASP other major achievement include the establishment of the Pacific Water Association and the SOPAC/UNEP publication: Technology for Augmenting Freshwater Resources in Small Island Developing States. The move represented an expansion of practical technical assistance, and continues to propel SOPAC toward the role of being a regional geological survey.

The next step will be to find ways and means to transfer these advances in technology to SOPAC island member countries to meet their own needs. This next step will contribute significantly to national capacity building, an important aspect of which, training, has for many years been a developing and high profile activity within SOPAC's Work Program. In reaffirming this, the 25th Governing Council Meeting stated that human resource development must continue to be a prime focus to support the minerals and environmental areas of the overall Work Program. Of particular note in this area I am pleased to be able to advise Council that a further two scholarship students gradu-

ated during the past year, Fano Patolo from Tuvalu and Douglas Billy from the Solomon Islands.

Major publication which have been produced in recent years are the Japanese Atlas of Deepsea Mineral Resources, the results of the SOPACMAPS seabed mapping cruises and the brochure on Ocean Energy in the South Pacific - The Resource and its Utilisation.

For the International decade for National Disaster Reduction, SOPAC has focussed its activities in a program of studies on the vulnerability of population centres including Suva, Honiara, Nukualofa and Port Vila. Toward this end much of the geological, geographical and asset inventories are being assembled.

Promotions of mineral development can not be over emphasised. In Solomon Islands the Gold Ridge proposal is expected to dominate export earnings into the future. SOPAC's complimentary, though small, contribution will continue to provide a promotional role as well as policy development which will increase in importance as more mining prospects mature.

This past year has seen achievement in all established areas with some success in expanding external funding support. However, management effort and resources needed to be diverted to the exercise on SOPAC's future role and direction. SOPAC has not been spared the uncertainties arising from the declining donor climate now prevailing at both the national and regional levels.

The deliberate policy to focus on a few program areas has paid dividends particularly in the coastal and human resources development programs. Despite the continuing funding constraints, declining staff numbers and the heavy demands of external reviews and program formulation, a very creditable output of country programs including field surveys, published reports and maps together with training activities has been maintained.

STATEMENT BY THE OUTGOING CHAIRMAN

It has been my pleasure to be Chairman of the SOPAC Governing Council for the last 12 months. This has led me to make some observations that I will take this opportunity to share with you. This is a rare opportunity as there is no agenda item for discussion of this matter and it is not often that I get the chance to say something that people cannot contradict me on before it goes into the record.

The role of SOPAC Chairperson is one that a person inherits by rotation through being a member of the Governing Council. Consequently, I did nothing to earn the position and found that nothing was really expected of me, beyond acting as the chairperson for the Annual Session. The expectations of the Chairperson are set at such a level that it does not matter if an incumbent contributes or not. You are marginalised from the functioning of the organisation and the position is actually a nominal one. Having said that, I have attempted to contribute in some manner, and due to the present review process have probably had to have more input than would otherwise normally be required.

On events during the past year, I must state my gratitude to the Vice-Chairman of the Governing Council and the incoming Chairman for their stewardship of the two subcommittees that have been convened. Thanks also to all the participants of the SOPAC Sub-Committee (SSC) and the Interim Standing Committee (ISC) for freely giving of their time and effort. The SSC had a hard task and a strict deadline, but was able to meet these requirements and carry out the mandate that was given to it by the Governing Council. It is a shame that the same cannot be said of the ISC. Rather than assist the Secretariat to implement the recommendations of the SSC as approved by Governing Council, they revisited every recommendation and even attempted to unilaterally expand their mandate to carry out the functions of other yet to be formed sub-committees.

Consequently, rather than reviewing the implementation of our decision, Governing Council is now being asked to reconsider issues which have already been dealt with four times through Governing Council in Rarotonga, SSC, Governing Council again and ISC. I would therefore urge delegates sitting at the table to not revisit the SSC recommendations that have already been approved but to confine themselves to discussion of the recommendations that were referred to the Council.

As a member of the Governing Council, we are all managers with a dedicated staff that work for us. The Secretariat, as our employees, have been hamstrung by the continual review process of the last 18 months and morale has been sorely affected. As employers we must be cognisant of this fact. If we expect them to do a job for us, then the least that we can do is to give them clear direction through timely decisions.

As a Chairman, I have attempted to give some guidance to the Secretariat when called upon. This has not always been to the extent that it

should have been. I am strongly of the view that Governing Council needs to maintain some contact with the Secretariat in between Annual Sessions. This could be through the Chairperson or by some other means, but it is necessary so that we can lend support when necessary. This is a governance issue that is attempting to be dealt with through the formation of the Management Advisory Committee. While I will reserve my opinions on this until the appropriate agenda item, it is a problem that needs to be dealt with if we are to ensure the continued effectiveness of the Secretariat.

Let me finish by encouraging each of you here today to carefully consider what you contribute to the functioning of this organisation. As members of the Governing Council, we are not simply here to ensure that we get our pound of flesh via one means or another. We each have to contribute in our own way. Whether managerial, advisory, financial or simply through moral support, we all have a responsibility to do our best to ensure the continued existence of an effective and efficient organisation that meets our needs.

Thank you.

**STATEMENT BY THE HONOURABLE
MINISTER FOR FOREIGN AFFAIRS,
BERENADO VUNIBOBO, CHIEF GUEST,
SOPAC 25TH ANNIVERSARY CELEBRATION
DINNER**

Ladies and Gentlemen, thank you for your kind invitation for me to speak at this, the 25th Anniversary Dinner of SOPAC. Let me say at the outset that the Fiji Government considers it a great honour to be host to the SOPAC Secretariat throughout its history. Since its first meeting in Suva in 1972, SOPAC has developed into a fully fledged regional organisation that has established a fine reputation in the area of mineral research in the region. As the new Minister for Foreign Affairs and External Trade, I must assure you that we are committed to enhancing relations with regional institutions and to facilitate when and where possible their activities.

I understand that Dr Loren Kroenke is here tonight. Few will remember that it was Loren who arrived in Suva on sabbatical from the University of Hawaii in September of 1974 to set up the first SOPAC office. Of course, at that time it was CCOP/SOPAC, which sounded more like some complex chemistry formulae, if not an intelligence code, than a regional geo-scientific body for Pacific island nations.

At that time I was Secretary in the Ministry of Agriculture but, thanks to the efforts of the then staff member of Mineral Resources, Ron Richmond, who many of you will also remember, Fiji was able to make Loren feel most at home. From the time of the First Annual Session held in Fiji in November 1972 much of the formal history of SOPAC is recorded in its Annual Session Proceedings. I would like however, to take a few moments now to share with you some of the unwritten parts of SOPAC's pre-history from the years 1969 to 1972.

In May 1970, the Fiji Government despatched Ron Richmond to a meeting of a body named CCOP. That meeting was held in Saigon, Vietnam. CCOP was a UN-managed project of the Committee for Co-ordination of Offshore Prospecting executed by ECAFE an acronym for the UN Economic Commission for Asia and the Far East with responsibility for the Pacific, now known as ESCAP. On arrival in Saigon, Ron recalls he was warmly greeted not only by late night visitors with keys to his room, but also by missile attacks close to his hotel. Upon his return Ron's report to the Fiji Government stated: *"only a few Pacific Island countries had geological surveys, all the countries had extensive offshore areas and the Pacific Island countries needed to work together"*.

By August of the same year, Ron was in Bandung at the annual meeting of ECAFE and Fiji moved a recommendation to establish a body to be known as CCOP/SOPAC for Pacific Island countries. It was passed in stunning silence and thankfully with no dissent. Fiji offered to host the Secretariat of the fledgling CCOP/SOPAC and its First Meeting.

In July of the following year 1971, in conjunction with the annual meeting of ECAFE in Manila a preparatory meeting to establish CCOP/SOPAC was held. Fiji, strongly supported by New Zealand along with Tonga, Solomon Islands and Papua New Guinea successfully resisted a move to have the Pacific countries join with the Asian countries in ECAFE for just one CCOP. CCOP/SOPAC was born.

In November 1972, at the First Annual Session held at the Grand Pacific Hotel in Suva, Ron met many new friends including Loren, with whom he had been attending classes at the University of Hawaii in 1967. At this first session was also a young Samoan, Philipp Muller. Philipp's younger twin brothers had been classmates of Ron at high school.

Philipp played a large part in chairing the Apia meeting of SOPAC in 1974. At that meeting Sione Tongilava was heading the Tonga delega-

tion, a position he has held at every SOPAC meeting since, until his retirement in July of this year. Many will recall Sione's enormous contributions in Council. Affectionately admired for his protests that "*English was always his second language*" he was most eloquent. Whenever, ESCAP or UNDP indicated the possibility of funding difficulties, Sione reminded delegates at SOPAC annual meetings of his three cats, one called 'CC', the second "OP" and the third "SOPAC". According to Sione, there was no way SOPAC could complete its work whilst his cats were alive, and as everyone knew cats have nine lives.

Looking now into the future, I have been made well aware of the critical self examination that SOPAC Council has been undertaking over the past 12 to 24 months. I am delighted to note the positive outcomes of this process and wish the organisation well for the future.

Council has, I understand, agreed that the focus of the future work of the organisation will be on mineral resources assessment, environmental geoscience and human resources development. The combination of these three main focuses, I am pleased to say is in line with the philosophy behind sustainable development to which the recent FORUM continued to re-affirm its commitment; because it is vital to the social and economic development aspirations and livelihood of all Pacific Island member states.

The coming into force of the UN Convention of the Law of the Sea [UNCLOS] in November 1994, brings new challenges and new responsibilities, and whose strategy of sound conservation and management measures, is rooted as well in the concept of sustainable development. So also does the implementation of the new South Pacific Forum initiative to develop a Regional Strategy without our regional agencies of which SOPAC of course is the one with a strong scientific and technical focus.

I am particularly pleased that SOPAC and its technical advisers have put a very human face to SOPAC's work by including water resources and disaster reduction in the Work Program. It shows a sensitivity that is necessary if development is to be people focused or human ori-

entated, rather than profit motivated for the benefit of a particular class or an already wealthy established group. This pro-people development approach by SOPAC, is I believe what genuine development is truly about, and will be the sustaining and dynamic force that will keep SOPAC always relevant to the needs of the time.

SOPAC has brought on-line new management at this meeting whilst at the same time saying farewell to its current Director, Philipp Muller. Philipp is a person I have known for some time, his contribution to work in regional fora has been exemplary and an example for all that follow in his steps. His astuteness, camaraderie, sensitivity to the political and development aspirations of Pacific Island nations, and not forgetting his ability to show many people how to catch the biggest fish, will live long in the memories of those who have had the fortune to have worked with him. He will be sadly missed. On a personal note, I would like to take this opportunity to wish you Philipp, Marie and your family all the best for the future.

In closing I would like to thank everyone who has shared in the history of SOPAC for their efforts and of course to all of you here tonight, member country representatives, donors, supporting international agencies and organisations and last but not least, the staff of the Fiji Mineral Resources Department and the SOPAC Secretariat.

How time flies, for it was only upon receiving your invitation, that I was suddenly jolted into realizing that we have been together for 25 years. I am sure that those of you who were present at the birth of SOPAC and recalled with a sense of nostalgia perhaps, the early struggles, would agree with me, that it was worth it all, given the reputable achievements and excellent progress SOPAC has made since then.

And so Ladies and Gentlemen, it is with much joy and pride that I request you stand with me as I propose a toast.

"Here's to SOPAC on the occasion of its 25th Anniversary Celebration Dinner and for a further 25 years of successful achievements."

APPENDIX 2

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APPENDIX 3

REVISED AGENDA

STAR SESSION

(STAR) Science, Technology and Resources Network
(Council and STAR consideration)
(Interim Standing Committee could meet)

OPENING SESSION

1. OPENING
2. ELECTION OF: Chairman of SOPAC
Vice-Chairman of SOPAC
Chairman of STAR AND TAG
Appointment of Rapporteurs
3. ADOPTION OF AGENDA AND WORKING PROCEDURES
4. REPRESENTATION
 - 4.1 DESIGNATION OF NATIONAL REPRESENTATIVES
5. STATEMENTS
 - 5.1 STATEMENTS FROM MEMBER COUNTRIES
 - 5.2 STATEMENTS BY SPOCC ORGANISATIONS
 - 5.3 STATEMENTS FROM SUPPORTING GOVERNMENTS AND INSTITUTIONS
6. REPORTS
 - 6.1 ISSUES ARISING FROM 25th ANNUAL SESSION
 - 6.2 DIRECTOR'S ANNUAL REPORT 1996/1997
 - 6.2.1 Financial Report 1996
 - 6.2.2 Work Program Report 1996-1997
 - 6.2.3 Draft Work Program and Budget 1998
 - 6.3 MISCELLANEOUS REPORTS
 - 6.3.1 Report on 1997 Accounts
 - 6.3.2 1996 Annual Report Summary
 - 6.3.3 SPOCC Summary Record and Report
 - 6.3.4 A Review of Non-Living Resources and Threats in the Pacific Region
 - 6.3.5 Review of Regional Coordination of Law of the Sea Issues in the South Pacific
 - 6.3.6 Review of Core Energy Program of the South Pacific Forum
7. REPORT BY STAR CHAIRMAN

TECHNICAL SESSION

8. TECHNICAL ADVISORY GROUP (TAG) SESSION
(COUNCIL AND TECHNICAL ADVISORS CONSIDERATION)

POLICY SESSION

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

9. REPORTS OF SOPAC SUB-COMMITTEE & INTERIM STANDING COMMITTEE
10. ESTABLISHMENT AND ADMINISTRATION
 - 10.1 RULES AND REGULATIONS
 - 10.1.1 Ratification of SOPAC Constitution
 - 10.1.2 Management Advisory Committee Procedures
 - 10.1.3 Proposed Control over the General Reserve Funds
 - 10.2 STAFF MATTERS
 - 10.2.1 Appointment of Director
 - 10.3 APPOINTMENTS
 - 10.3.1 Appointment of 'Executive Appointments Committee'
 - 10.3.2 Appointment of Management Advisory Committee
11. APPROVALS
 - 11.1 Consideration of TAG recommendations
 - 11.2 1998 Draft Work Program and Budget
 - 11.2.1 Options for the Implementation of the 1998 Work Program and Budget
12. OTHER BUSINESS

Other business includes items identified at the time of the adoption of the Agenda.
13. VENUE AND DATE OF 27th ANNUAL SESSION
14. ADOPTION OF AGREED RECORD OF PROCEEDINGS
15. CLOSING

APPENDIX 4

DESIGNATION OF NATIONAL REPRESENTATIVES

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APPENDIX 5

STATEMENTS BY MEMBER COUNTRIES

AUSTRALIA

Policy Statement

Last year's governing council meeting fully re-affirmed the value to the states of the South Pacific of SOPAC and the programs it delivers on their behalf. Australia shares that sentiment, and is committed to continuing its involvement with SOPAC and further developing these programs. We also value the contribution SOPAC makes to the affairs of the region generally, through SOPAC and otherwise. That contribution is never more valuable - be it actual or potential - than at a time of rapid change, such as the region is now undergoing, and as the minister described this morning.

Let me say at the outset that this shared view of SOPAC's value was strongly reflected in the work of the SOPAC Subcommittee of Council (SSC) and the Interim Standing Committee (ISC). Speaking personally, I was pleased to participate in what seemed to me to be a very constructive exercise with colleagues from member states, in the review of the organisation's role and direction, and I would certainly be remiss if I did not acknowledge the patient, if I suppose, sometimes exasperated Secretariat in servicing the needs of both committees.

I commend those committee's work to all national representatives. In particular, during its many meetings this year, the ISC has built on the good work of the SSC to produce a concise and transparent report that provides, in our view, a realistic picture of the budgetary situation of SOPAC. The importance of that will be apparent as we move in due course to consider the Work Program and Budget for 1998 and organisational matters.

We all want SOPAC to meet client needs as well as it possibly can. It is essential therefore that we work together at this meeting to clarify what we want SOPAC to do, how we, the membership, expect SOPAC to operate in future and how we, the membership, can assist SOPAC meet these goals.

The framework we set for the organisation to maximise its capacity to meet members' needs within available resources, will rely on the un-

equivocal support of governing council. The agenda for this meeting requires that we make a number of important decisions which will set the course for SOPAC for the near future. It is, it seems to us, imperative that we reach agreement to ensure the SOPAC senior executive has clear direction and can deliver on its members needs. Without that direction, we are very effectively, and seriously, compromising our own organisation.

In this context, one of our important, if inevitably sad, tasks will be to select a new director to take over the reins from Philipp Muller. I take this opportunity to join many others in thanking Philipp very deeply for his contribution over the last six years, and of course long before that. He has, with skill and wisdom, managed what we all agree is a technical organisation of particular complexity during a challenging period as SOPAC has sought to deliver a comprehensive array of geoscientific services to island members at a time of drastically shrinking resources. Philipp has had to bear the full burden of increasing competition for available donor funds and I can be no more hopeful to say that his successor will face the same daunting challenge. That, of course, is a challenge we all must deal with.

Philipp has had a long and distinguished career serving Pacific interests, initially in his country as the founding Director of the Forum Fisheries Agency, and as Director of SOPAC. He has been honoured for his work, including, may I say, honorary membership of the order of Australia. Speaking for myself, I have had the honour to call him friend for over twenty years, and I hope I can continue to do so for another twenty. We wish him very well. I might say how gratified I was to see such a large field of candidates expressing interest in the position of Director. I'm sure we all very much appreciate the unenviable task Chairman Newnham took upon himself in fearlessly pruning the list of candidates to more manageable proportions. There can of course only be one appointment, but I acknowledge the quality of the short-listed field and conclude by saying that Australia stands ready to give its full support to the successful candidate in addressing the future geoscientific needs of the region.

Activities of Relevance to SOPAC in 1997

General Australian Scientific Activities

AGSO has been carrying out an AusAID contract for the study of mineral resource potential in Fiji, for the design, supervision and interpretation of an extensive airborne geophysical survey (magnetometer, gamma-ray spectrometer and elevation) of the main islands and adjacent offshore areas. It is aimed primarily at onshore minerals, in particular copper and gold, but will have significance in mapping the structure of sedimentary basins as an aid to petroleum resource assessment. The survey data acquisition is being concluded at present. The results should be released in May 1998 and are likely to generate a great deal of interest among mineral exploration companies, and may be of interest to some petroleum explorers. A major part of the project consists of the training of MRD staff in the handling and interpretation of such data.

Arising from the *Workshop on Volcanic Hazards and Emergency Management* held in Vanuatu in February this year, a project concept document has been prepared for regional cooperation in the management of volcanic emergencies in the South Pacific. This was designed collaboratively by the International Association of Volcanism and Chemistry of the Earth's Interior (IAVCEI), and SOPAC. The Secretariat of IAVCEI is at present at AGSO, and Wally Johnson is its Secretary General.

AGSO, through Wally Johnson and Ken Grainger, is continuing to maintain contact with SOPAC's Pacific Cities Vulnerability work. AGSO is continuing to explore ways in which its Cities Project can provide some research support for SOPAC's activities. Grainger will attend the STAR Meeting and has offered to give a workshop on this style of activity.

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. In November 1996, CSIRO's RV *Franklin* returned to the eastern Manus Basin for further studies at PACMANUS and nearby areas. Another cruise with RV *Franklin* is planned, when the objective will be to drill shallow cored holes into the PACMANUS hydrothermal system, using the PROD drill being developed at the University of Sydney. A proposal to drill at and near

PACMANUS has been made to the Ocean Drilling Program.

SOPAC Petroleum Data Bank

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. The collection now contains about 45 000 line km of seismic data. The data, in the form of 4200 seismic tapes, 1700 seismic sections and maps, and assorted reports, are available to petroleum exploration companies. They have been widely publicised at conferences, and through the distribution of brochures. All the digital data are stored commercially in Canberra, and the paper data at AGSO.

A number of individuals and exploration companies requested information during the year, and were sent petroleum data catalogues listing all available information. Three orders for seismic data were processed; the data bought covered Solomon Islands (including 80 seismic lines) and Vanuatu (11 seismic lines). The data catalogues have been undergoing changes as further information becomes available. Information on data holdings is now available on 3.5" disks in Microsoft XL format.

The Petroleum display has been updated with the addition of the results of the Vanuatu Petroleum Promotion project and new information for Solomon Islands, Fiji and Tonga.

Australian Financial Support

During 1997 (Australia's 1996/97 financial year) AusAID provided funding of \$A720,000 as membership contribution and extra-budgetary support to SOPAC as follows:

i) membership contribution	\$A308,000
ii) normal extra-budgetary support	\$A412,000
Total AusAID funding for 1997	\$A720,000

COOK ISLANDS

The Cook Islands Government would like to extend our gratitude to the Government of Fiji for their generous offer to host this 26th Annual Session. It is enjoyable to be here in such pleasant surroundings and I am sure that our

short stay will continue to be just as enjoyable. Our congratulations to the new Chair and Vice-chair for your respective appointments and we wish you both well in this coming session and for the rest of your terms.

Mr. Chairman, we would like to commend the Secretariat for the successful implementation of a number of projects involving the Cook Islands over the last year. I also take this opportunity to express our gratitude to the various governments and institutions for the support and contributions rendered to the Cook Islands via SOPAC over the last 12 months.

The Cook Islands Government would like to make particular mention of the work carried out by the SOPAC Sub-Committee and the Interim Standing Committee. We are optimistic that most of the recommendations and options suggested by them, will in the due course of this meeting be acted upon by this Council. The Cook Islands feels that the important task of reviewing the Work Program and reforming SOPAC will in the long run sustain and enhance SOPAC's role and profile in the region.

Mr Chairman, I will reserve substantial comments until the appropriate agenda items. The Cook Islands government would however like to state our full support for SOPAC. We feel that as an organisation, they do have an important role to play in the continued development of our country and of the region.

In finishing Mr Chairman, the Cook Islands would like to acknowledge our sincere appreciation to the Director of SOPAC, Mr Philipp Muller for his service at the helm of SOPAC over the last 6 years. Philipp, through his time at the Forum Fisheries Agency and SOPAC has contributed greatly to the development of the region. He has given unstintingly of his time. In fact, his presence will probably be missed the most at the late night conferences held over cold ales where the problems of the region and indeed the world, were solved. We wish him well in his future plans upon his retirement from SOPAC.

FEDERATED STATES OF MICRONESIA

On behalf of the Government of the Federated States of Micronesia, I would like to thank the government and people of Fiji for their kind and generous gesture in hosting and chairing the 26th SOPAC Governing Council meeting. My government further expresses its sincere appreciation to Fiji for its efforts in hosting and chairing this 26th Session on short notice as it proved not possible for us to host this year.

It is with great pleasure I announce that the FSM is prepared to host the 27th SOPAC Annual Session.

I take this opportunity to express my government's appreciation to the Secretariat for its assistance during the year in extending work under the Water Program, the Coastal Program and the deepsea mineral resources survey project with funding from Japanese sources.

Mr Chairman, my government recognises and appreciates the assistance from donor countries and organisations who have contributed to the work programs of the Commission in some way. Their continued efforts to the development and improvement of the well being of this region is immensely appreciated.

Small Pacific island member countries such as the FSM, require special care and attention in the management of its coastal resources which are fundamental to our people's survival. It is in this context that my government values the work programs of SOPAC.

Given the financial realities being faced by member countries including the FSM, as well as the uncertainty of continued donor funding for regional projects, we believe the time has come for the Council to make serious decisions regarding the SOPAC Work Program and its future direction.

Under the Work Program for the next cycle (1998), my government is happy to keep the current focus of the in-country work but to extend the same program to the other two principal main islands in the western portion of the country (i.e. Chuuk and Yap).

At the 25th Council Meeting in Rarotonga last year, the Council reaffirmed the value of SOPAC's current work program being delivered to its island member countries. At the same meeting it acknowledged the need for programs to be tightly focussed to ensure efficiency and effective delivery. A plan of action was called for and drafted which clearly outlines the direction of the organisation.

To this end, the Interim Standing Committee has before the Council a range of issues and recommendations which this Council must try to achieve consensus on at this Session. This call for action, Mr Chairman, can no longer be delayed. My delegation comes here prepared to contribute and assist in any way we can to find the solutions to the difficulties we face.

It is in the interest of all member governments that the Secretariat is able to deliver programs of priority interests to its constituencies in an

effective and efficient manner. But in order to accomplish that, we the member countries must be prepared now to assume a more progressive supporting role in the development of SOPAC.

FJI

Policy Statement

The Fiji Government is indeed honored to host this the 26th Annual Session of SOPAC and would like to extend its assurances of continued support to this most important regional organisation. We welcome you to Nadi and sincerely hope that all the delegates involved in the session will be able to find some time away from their hectic schedules to enjoy some of the delights our island group has to offer.

Fiji would like to take this opportunity to acknowledge SOPAC's assistance and technical support in a number of joint projects conducted over 1996/97. This assistance has been timely as we have as yet not developed specialist skills in all areas of our operations. Although in the early years of the organisation much assistance was in the fields of hydrocarbons and minerals assessment or training, the portfolio of requests has expanded to include assistance with seismic risk assessment, assessment of vulnerability to sea-level rise and information technology. This last, a new aspect of our work is giving us more interesting ways to manage and, through the Internet promote our mineral sector data.

A number of our larger in-country projects are aid-funded and I would like to take this opportunity to also thank the Australian, French and Japanese representatives present here today. We wish to record here our sincere appreciation for their assistance and support through their bilateral aid-programs in Fiji.

Australia has been a major donor in 1997 funding an extensive aero-magnetic survey of the Fiji group and also assisting the MRD in institutional strengthening; France continues to fund a technical expert and has provided grant funding assistance for satellite bathymetric survey of the Exclusive Economic Zone and for a groundwater development project on Vanua Levu; Japan (through the MMAJ) has funded a mineral exploration project, also on Vanua Levu.

Since SOPAC's inception in 1972, its services have been invaluable to member countries. SOPAC has been providing expertise in the de-

velopment, execution and coordination of geoscientific work in the region. Fiji has been one of the beneficiaries, but has at the same time continued to build up its own national capability. In this regard we wish to strongly endorse the HRD and Capacity Building functions of SOPAC.

Over the years SOPAC has evolved from a marine based geoscientific organisation into one based on marine and land geoscience services. Its membership has also grown from the essential few founding members in 1972. As it expanded, over the last few years, it has, naturally had to face constraints. We in Fiji are aware of this and try our utmost not to be selfish and make too much of a demand on the organisation.

Mr Chairman SOPAC stands at a crossroad in its destiny. It has completed what we feel are 25 good years of service. There has been much discussion, as those attending the ISC Meetings on the Future Role and Direction of SOPAC will tell you, of the various shortcomings of the organisation and its future direction. Fiji took full part in these discussions because of the words "Future role and direction", and we look forward in the days to come to taking an active part in all the issues tabled for this governing council deliberations. We hope that the council soon will agree with the ISC recommendations and reach a consensus on the future role and direction for SOPAC which will allow the organisation to flourish and grow from strength to strength over the years to come, that is the next 25 years and beyond.

Finally, I would like to join with my colleagues in recognising the Director, Philipp Muller's long and distinguished service to SOPAC. We are very grateful indeed for the hard work and dedication he has put into this organisation. We thank him for it and wish him all the best for the future.

Highlights of Geoscience Activities

General

Staff constraints have led to a general slowing down of many of MRD projects. Over the period 1995-late 1996 MRD has suffered from a outflow of qualified professional staff either through migration or to the private sector. A highlight of the year was the formal approval by Cabinet of a Mineral Policy Statement that was published and widely distributed both locally and overseas. This coupled with a glossy promotional document "*Share in the Mineral*

Wealth of Fiji” were formally promoted at the Prospector’s and Developers Association of Canada Meeting in March of 1997.

Mineral Exploration

1997 has generally been a good year for mineral exploration and overall there has been a general upsurge in activity. Much of the known prospective ground on Viti Levu is presently under licence or under application. The lifting of the moratorium on exploration on Vanua Levu in early July also attracted much interest.

A major project underway is the Airborne Geophysical Survey of Fiji. Funded by AusAID and managed by AGSO the project aims to acquire high quality magnetic and radiometric data over much of Fiji’s landmass and intervening ocean areas, particularly those areas outlined by SOPAC as having hydrocarbon potential (the Bligh Waters and Bau Waters Basins). Data is expected to be released in March of 1998.

The Metal Mining Agency of Japan (MMAJ) has now completed all fieldwork related to its project “*Mineral Exploration on Vanua Levu*”. Over the life of the three-year project, it has looked at detail at three major epithermal gold prospects on Vanua Levu. This year work has concentrated on drilling and related studies at the Dakuniba prospect. A final report is expected in March of 1998.

Much interest is being focussed on the Tuvatu Prospect, some 20 km inland from Nadi International Airport. Epithermal mineralisation is centered on monzonitic intrusives of shoshonitic composition. Earlier in the year Emperor Mines LTD exercised their option to acquire the tenement from Geopacific Ltd. Mining prefeasibility has recently been submitted to Government.

Groundwater

Towards the end of last year a French Government-funded aid project, assessment of groundwater resources in the Labasa region, was established. The project was aimed at alleviating water supply problems through the provision of good-yielding groundwater boreholes in a region that annually experiences water shortages. All associated geophysical and geological surveys have been completed. Drilling of the 27 potential targets identified has been on going since the beginning of the year. Work under the project is jointly carried out by

MRD (Fiji) and A2EP of Noumea. To-date some 24 boreholes have been completed.

Assessment and development of groundwater on the smaller outer islands have continued, funded jointly by MRD and the Ministry of Works (Public Works Department).

Mining

It is a pleasure to report there are now two operating gold mines in Fiji, the Emperor Mine for the past 60 odd years being the sole operating mine. The Mt. Kasi mining operation on Vanua Levu was commissioned in April 1996. Pacific Islands Gold NL was granted Special Mining Lease (SML) 57 to mine the prospect through its local subsidiary, Mt. Kasi Mine Limited. Mining at Kasi is concentrated on free-dig ore but is planned to move into harder rock and eventually underground.

Unseasonal rainfall and teething problems continued to plague the mine over the period under review but to date some 28879 oz of gold, and 2302 oz of silver have been won from 428618 tonnes of ore. Extensive exploration activity is underway over the mining lease and adjacent prospects.

The Emperor Mines Limited of Vatukoula in 1995/96, produced 125563 ounces of gold. This was won from 5949191 tonnes of ore, at an average grade of 7.59 g/t. Gold production for the 1995/96 period is some 15.8 %, below that of the 1994/95 period. In the first quarter of 1997, the mine produced 145351 tonnes, with 144151 milled, @87% recovery, with an average grade of 7.48 g/t.

Although hedging has protected the two ventures from the record low gold prices, continued low gold prices are viewed with concern.

Earthquake Disaster Mitigation

A Probabilistic earthquake hazard assessment of the Fiji region has recently been completed. A multi-disciplinary project, *The Suva Earthquake Risk Management Project (SERMP)*, is presently underway aimed at assessing the earthquake risk to Suva with an ultimate aim to assist in the formulation of an earthquake mitigation plan.

The progress and findings of the project were recently presented at a two day seminar which was attended by personnel from various government departments and private sector as well as representatives of southwest Pacific island

nations. The Seminar was followed by a one-day tabletop exercise for a scenario earthquake, which emulated the 1953 earthquake. A One-day actual field exercise was also held for the response agencies to get a feel of what might really happen.

These and related projects have assisted the MRD in developing relevant competencies in carrying out various geotechnical studies and assessments of ground conditions of use in assessing earthquake-risk vulnerability.

Marine Geology

SOPAC and MRD carried out three joint projects during the 1996/97 work year. Two projects involved the search for placer gold deposits off Momi Bay in Viti Levu and Yanawai Bay in Vanua Levu. The third project involves a coastal vulnerability study of Natadola Bay.

In December 1996 the French government funded a satellite bathymetric survey of the Fiji EEZ. The project was undertaken by Sea Floor Imaging based in Noumea. Data from various satellites were acquired and processed to produce a model of sea bottom topography of the entire Fiji EEZ. The maps represent an important improvement of the knowledge base of the Fiji waters.

SOPAC completed a major project for the Department of Environment on the *Vulnerability of Suva Region to Sea Level Rise*. The project was financed under the US Climate Change Program. As part of the same program MRD undertook a survey of coastal protection structures in Fiji.

Human Resource (Capacity) Development

As part of attempts to increase the efficiency and effectiveness of MRD in advancing the Minerals Sector a three-year Institutional Strengthening Project as initiated in June of 1997 funded by AusAID. The project comprised an organizational specialist as team leader supported by a series of short term specialists in Library management, environment, GIS development, human resources management, finance specialist and laboratory technology. The reorganisation blends with and complements overall Government attempts towards Public Sector Reform

As part of attempts to replace lost specialist skills Fiji Government has presently some 10

students abroad undertaking undergraduate studies in geology. Seven of these are expected to return at the end of the 1997 academic year.

GUAM

In addressing the floor, the alternate representative for Guam, Dr Gary Denton thanked the SOPAC Secretariat for their kind invitation to attend the 26th Annual Session.

He made reference to the fact that Guam has been a member country of SOPAC since 1982 and has benefited considerably from this association in so far as attendance of the Annual Sessions, various training workshops and the sharing of geoscience information.

The point was raised, however, that geoscience projects proposed by Guam cannot be funded directly by SOPAC due to restrictions imposed by donor countries providing assistance to US territories. Such constraints, therefore, result more from Guam's political status as a territory of the US rather than from the lack of financial resources to fund projects.

Dr Denton called for a reconsideration of this current arrangement in view of the fact that Guam's membership contribution is the same as many other member states enjoying the full benefits of their association with SOPAC.

He also drew attention to his own research unit, WERI, within the University of Guam, and the range of faculty disciplines and expertise pertinent to the mission of SOPAC (e.g. engineering, geology, geohydrology, meteorology, GIS technology, ground water modelling and water quality).

He suggested that cooperative research projects and/or training programs between WERI and SOPAC would be possible if a funding mechanism could be established for Guam by SOPAC. It was also suggested that SOPAC consider the University of Guam when deciding upon a host institution for recipients of its Fellowship and Scholarship awards. In this regard, reference was made to literature identifying active research projects currently underway at WERI faculty, copies of the unit's recent newsletters and flyers describing the recently established environmental science masters degree program.

In concluding, Dr Denton thanked the outgoing Director, Philipp Muller for his notable services to SOPAC and wished him well in his retirement.

KIRIBATI

Mr Chairman, I have not prepared a statement to present as I would like to reserve my delegation's comments on each specific item as we progressively cover them on the agenda. However, I would like to take this opportunity to congratulate you Mr Chairman on your appointment and to express my confidence in your leadership to guide and take us through this important meeting and through the next twelve months ahead. I should also wish, through you Mr Chairman, to convey my delegation's sincere appreciation and gratitude to the government and people of Fiji for having accepted to host this 26th Annual Session of SOPAC and for making our stay here in Nadi an enjoyable one.

Mr Chairman, I do not intend to take more of the meeting's time but allow me, on behalf of my Government and the people of the Republic of Kiribati, to express a very special "Thank you" to the outgoing Director – Mr Philipp Muller. We have come to know Philipp as a regional ambassador and as a great friend who has accepted and devoted his time and service to the member countries of SOPAC for the past six years. To you, Philipp the Government and people of the Republic of Kiribati commend you most highly for your outstanding and invaluable contribution and assistance, and to wish you well and every success in whatever plans you have for the future.

With these few remarks, ladies and gentlemen, Kam bati n rabwa.

MARSHALL ISLANDS

This 26th Annual Session of the South Pacific Applied Geoscience Commission is very significant as the leadership of SOPAC will be decided at this session. The Republic of Marshall Islands is very much aware of the significance of this issue as it affects the future direction of SOPAC and the ongoing programmes of critical importance to us.

At this stage, Mr Chairman, on behalf of the Government and People of the Republic of the Marshall Islands, I would like to pay tribute to Mr Philipp Muller for his able leadership over the last six years and his support of the programmes very dear to our hearts. In Mr Muller, the Marshall Islands had someone who understood and supported our need to establish, coordinate and harmonise efforts for the sound development of geoscience resources. Kommol tata Philipp, and we are confident that with the

competent and efficient team that you have developed at SOPAC, that your successor will be able to continue with the established programmes and possibly initiate new projects that will specifically address the issue of concern to smaller island countries like ourselves.

Among others, the Marshall Islands will continue to look to SOPAC for technical assistance in coastal management issues that are related to the threat imposed by climate change. We need SOPAC's invaluable assistance to monitor this phenomenon.

In the past year, RMI and SOPAC in conjunction with UNDP have been focusing on the coastal management project. The cooperation between these two Agencies on this project has been gratifying. Coastal resource management has now become a community effort with schools being encouraged to participate. With the cooperation of the schools we have projects already in place, intended to upgrade awareness of coastal erosion issues.

SOPAC activities in the Marshall continues to receive support at the highest level. During the past year, Marshall Islands has played an active participating role in the SOPAC Subcommittee and the Interim Standing Committee and feels satisfied with the outcomes. We recognise that decisions have been taken by the Council out of session on some of the recommendations of the SSC as a result of circulation from the Chair over the Christmas-New Year period. Marshall Islands is ready now to assist the Secretariat with the implementation of these recommendations and taking part in deliberations on the remaining recommendations.

Additionally, we would like to express our deepest appreciation to the Secretariat for support during the year, we have benefited especially through field survey activities by Secretariat staff on Majuro Atoll. These relate particularly to coastal zone management and associated training. Some twenty man weeks of Secretariat support was received and we would like to particularly recognise the assistance of the Coastal Geologist, funded by the Peoples' Republic of China. We look forward also to further field surveys not only on Majuro but also extending to other atolls in due course.

Mr Chairman, I have outlined the above projects very briefly to illustrate the importance of SOPAC's work to the Marshall Islands. Other issues of great importance to us is the mineral deposits that may exist in our sea beds and would therefore encourage further deep sea mineral exploration programmes. For this reason, we would like to acknowledge the receipt

of the reports from MMAJ on the deep sea minerals exploration survey carried out with the Hakurei Maru 2 as part of the Third Phase of the SOPAC/Japan Cooperative Study on Deep Sea Minerals.

We recognise that this work is only a beginning and we would like to extend an invitation to Japan through MMAJ to carry out further work on it within our EEZ. In particular, Marshall Islands is anxious to see a fourth, Five Year Phase of the joint SOPAC/Japan Deep Sea Minerals Programme.

We would also like to acknowledge the Koreans through KORDI on their most recent work and on-going interest in cooperative research in marine mineral deposits and that we encourage them to coordinate research plans through the Secretariat to avoid potential overlaps with the SOPAC/Japan studies on Deep Sea Minerals in our EEZ.

Finally, the Marshall Islands recognises the rapid advances that are occurring in the region in information technology, water and ocean related activities. We look forward to increasing support from the Secretariat in these most important Work Program areas.

NEW CALEDONIA

Since its admission at the 20th Annual Session in 1991 in Port Vila, New Caledonia, associate member of SOPAC has tried to assist the Secretariat in hosting two workshops in 1993 and 1994, and in participating actively in the Offshore tasks of the Work Program. In order to neither overload the Secretariat nor diminish the resources of the full member countries, New Caledonia has established an Associate Membership Work Program within the framework of an "exchange of expertise".

With regard to the Offshore activities, we remind the Council that SOPAC member countries stress the need for continued funding for seabed mapping. As New Caledonia is concerned with the lack of the Offshore Coordinator position within the Secretariat, we would like to renew our assistance to SOPAC for future cruises and work related to Offshore activities.

With regard to marine resources assessment, New Caledonia through research organisations such as IFREMER and ORSTOM, and with the expertise available within its territorial departments, has developed its own resources assessment program, the ZoNèCo program. New Cal-

edonia is keen on cooperating in the field of marine resources assessment with member countries of SOPAC.

More recently, two proposed collaborative surveys in the New Caledonia region have been discussed between New Caledonia, France and Australia. The main goal of the two surveys will be to acquire multibeam bathymetric and deep seismic data to enhance French and Australian claims for Continental Shelf beyond the respective 200 nautical mile zones.

With regard to mineral resources and according to recent studies, the potential for finding commercial reserves of hydrocarbons in New Caledonia can be considered reasonably good. A multichannel seismic survey was carried out in 1995 and a well is planned to be drilled in January 1998 at an average estimated cost of US\$1,200,000.

A pluriannual program to assess the risk of landslides, soil erosion and slope failure is under final agreement between the Territory and the Bureau de Recherches Géologiques et Minières (BRGM). The good knowledge of superficial formations is critical in land-use and environmental development agriculture, and urban development.

Also, a new initiative is in preparation with the French Fund for Global Environment (Fonds Français pour l'Environnement Mondial) to develop, within the Pacific Island states interested, co-operation with French organisations across a wide variety of fields, including the hazard and risk assessment areas.

With regard to the Human Resources Development Program of SOPAC, a conference on Marine Benthic Habitats and Their Living Resources is scheduled for 10 to 16 November, 1997 in Nouméa. The primary goals of the conference are: 1) to bring together geologists and biologists studying the relationship between marine geology and living marine resources, including marine biodiversity and fisheries, 2) to provide a synthesis of the in-situ technology available to study and monitor the benthic submarine environment; 3) technology transfer to Pacific Island nations.

We are expecting that most of you will be attending this conference.

Finally and on behalf of my Government, I would like to congratulate the Director of SOPAC for the great job he has done for the last six years.

NEW ZEALAND

May I firstly congratulate you Mr Chairman for your appointment and wish you luck in your role as Chairman over the next few days and this coming year.

My Government would also like to thank the Government of Fiji for hosting this 26th Session of SOPAC's Governing Council.

In the past 12 months since we last met in Rarotonga much has happened to SOPAC. As a result of the issues raised at the last Governing Council meeting the Secretariat and SOPAC members have spent considerable time considering ways to help secure the future of the organisation. In some ways its been a demanding year but at the same time the work done by the Standing Committees has, we think, helped mature the organisation.

The Standing Committees identified fundamental issues which include:

- question of ownership of the organisation – the different roles that we play as owners, clients and stakeholders; the responsibilities that come with those roles, and the responsibility for the financial stability of the organisation.
- a commitment to securing a core geo-science service to the region – this is reflected in the optimal organisational structure which aims in the long run to provide expertise in each of the core areas of SOPAC's Work Program and that these areas be funded through the regular budget;
- some innovative ideas to cut costs emerged from the Standing Committee discussions – eg reducing the costs of the Governing Council session; sharing the costs of in-country surveys with clients; cost sharing on participation in the Governing Council session. Some of these ideas might usefully be translated to other regional organisations as well.

As you may know New Zealand has been actively participating in the Standing Committee meetings. My Government views these developments as very positive and hopes that they set the organisation on a solid footing for the immediate future.

I would like to acknowledge the efforts of the Secretariat over the past year in meeting the demands of the Standing Committees. Most of the time the discussions were cordial and con-

structive – occasionally tense. But throughout the process the Secretariat has spent enormous time and effort helping the Committees address these issues. We know that this has cut into valuable time available to the Secretariat to implement parts of the Work Program. We know that this in turn has had a direct impact on various projects at the national level. We hope that the efforts over the past year will be beneficial – that we can learn from them; implement as many of the recommendations as possible and move on.

Despite the distractions over the past year SOPAC has managed to continue some good work in the region. We are particularly pleased with the work done in the coastal area, with mapping, training and the work of the IT unit. We were also interested in SOPAC's paper on its role in implementing provisions of UNCLOS which are relevant to SOPAC's Work Program – i.e. in the area of continental shelf delimitation. In the coming year we hope to be able to support work in the area of water and sanitation.

We will speak in more detail on the Work Program as we go through the agenda.

However, no opening statement would be complete at this time without a sincere word of thanks to Philipp Muller who as you know departs SOPAC at the end of this year. My Government would like to take this opportunity to acknowledge the commitment and unquestionable dedication you have shown to the region throughout your career and most recently through SOPAC. Philipp has left his mark on this region and on many of us around this table. You'll be missed but we know where to find you!

A word of acknowledgement should also go to Alf Simpson – who one way or another will be moving on from his current position as Deputy Director at the end of this year. Alf has filled many gaps in the Secretariat and has been a great source of expertise to the region. His appointment to the UN International Seabed Authority is a further acknowledgement of that expertise.

Finally, we would like to acknowledge the services of various members of the Secretariat who have either left or are about to leave at the end of this year. In particular, we acknowledge the dedicated effort of Phil Woodward, Cartographer and Ed Burke, Water whose contracts are coming to an end.

NIUE

May I convey the Niue Government's best wishes and congratulations for all the accomplishments that SOPAC has achieved in the last 25 years. Niue only became party to this organisation in the last 3 years and it will make up for lost time in the next 25 years.

My Government is very much aware of the lack of attention it has accorded its geoscience sector, to date. But as you heard Mr Barrie, in the STAR Session, he has done some prospecting work in Niue for over 20 years. Niue will as well rely on SOPAC for assistance in the minerals area.

It is perhaps ironic that this year's conference theme of geoscience and tourism is well suited to Niue's current tourism marketing theme – 'Niue – The Rock of Polynesia'! It is indeed the biggest coral island in the world. The impact of environmental forces on that rock would make interesting science information including its 'hot-spot' tracing. Such geoscience language may make into appropriate tourism markets expressions.

The Niue Government reaffirms its support of the energy program and the disaster related program transfer to SOPAC. Having said that, it will be necessary then to review the geohazards and the energy programs to make sure that the new and the old graft into each other well.

My delegation wish also to acknowledge the hard work of the SOPAC management and that of the ISC on management.

Last but not least, may I wish Mr Muller all the best in his retirement.

PAPUA NEW GUINEA

As National Representative of Papua New Guinea to SOPAC, I wish to say how glad I am to be able to finally make it to SOPAC's Annual Session after three failed attempts over the last three years.

My absence at the last three years Annual Sessions was not a reflection of Papua New Guinea's diminishing support for SOPAC. In fact, last year Papua New Guinea was ably and effectively represented by the Papua New Guinea High Commissioner to Fiji, H.E. Mr Babani Maraga, at Rarotonga, Cook Islands. I therefore would like to take this opportunity to thank

the High Commissioner for his valuable contribution at the 1996 Annual Session and also for representing Papua New Guinea at subsequent Special Sub-Committee meetings in Suva.

Papua New Guinea has been strongly supporting SOPAC and will continue to strongly support it and its work programs in the future. In this respect, Papua New Guinea would like to offer more, either financially or in-kind, to SOPAC in the future when we are in a position to do so. This offer is in recognition of the importance of the work of SOPAC, particularly in the smaller island member countries.

SOPAC is viewed by Papua New Guinea as the geological survey of the South Pacific and recognising its role in the South Pacific as very important to the member countries.

Papua New Guinea has benefited from SOPAC, particularly in the area of training or human resource development. Although we have intentionally not demanded more benefit, in terms of projects from SOPAC, we have continued to give it our full support.

Papua New Guinea is in a unique geographical position in that we are regarded as part of S.E. Asia as well as part of the South Pacific, as such we are privileged to be a member of SOPAC's sister organisation in Southeast Asia, CCOP. We therefore do receive benefits also from CCOP, again, particularly in the area of human resources development.

Finally, I would like to convey Papua New Guinea's gratitude to Philipp Muller for his contribution to the South Pacific over the last six years in his capacity as Director of SOPAC.

Training

Training of our technical personnel is considered vital and we intend to continue to support and benefit in this respect from SOPAC. A number of our officers have participated in courses hosted by the Secretariat and we believe strongly that the Training Coordinator position should be maintained at whatever cost.

Sape Uwano our technical Officer has completed the second part of the Earth Science Course from April to June 1997. He has indicated that he had gained knowledge normally dedicated to geologists which he believes will help him in his work place and he wishes to enrol for the third part of the Earth Science.

Petroleum Exploration and Production

Late last year, two Petroleum Development Licences (PDL) and a Pipeline Licence (PL) were issued relating to Gobe/S.E. Gobe Petroleum Development Project. Six Petroleum Prospecting Licences (PPLs) were granted and five were surrendered during the year. Two exploration companies resumed exploration in the North New Guinea Basin.

Kutubu oilfields produced a total of 499,915 barrels of oil averaging 71,416 barrels of oil per day, a decrease of 6,614 barrels after the first week of September 1997. A total of 682,043 barrels of oil was exported from Kutubu at the end of August 1997.

The three separate licences, PDLs 3 and 4 and PL 5 were finally issued on December 24, 1996 following a long delay. Two PDLs were issued due to oil fields straddling two licence areas. This is the first project to be developed under unitisation agreement involving ten companies.

First oil from the Gobe field is expected in the first quarter of 1998 at an estimated initial production rate of 50,000 BOPD. Present estimates for the Gobe/S.E. Gobe fields is around 110 MBO. These fields will be connected to the existing Kutubu pipeline to the present Kumul 1 terminal.

The Moran field straddles three licences PPL 138, PDL 2 and PPL 161, and is about 10 km north of the existing Agogo Production facility that service the Kutubu oilfields. Moran Field can be developed in shorter time and is expected to become PNG's second oilfield development

Moran 2 ST (side track) was completed at a final depth of 3912.4 m and Moran 3X reached total depth of 2397.5 m and was plugged. A side track hole reached 2934.6 m

Hides gas field produced a total of 778 barrels of condensate averaging 111 barrels per day. The values for neptha, diesel and residue production as of mid September were 580,221 and 111 barrels respectively with total gas produced at 37 million standard cubic feet.

The completion of K100 million Stage 4B expansion of Porgera mine has increased the demand for electricity and so the number of operating gas turbines has been increased to eight (8).

Gas Policy Review Task Force is finalising their final recommendation to the National Government. The legislative changes were required to introduce retention licences for non commer-

cial gas discoveries, reduction of Petroleum income tax for gas and some duty exemptions.

A preliminary feasibility study on the proposed LNG pipeline from the Hides Gosfield is being carried out. This when completed will traverse from the Southern Highlands to Wewak in the north and is being investigated for the Asian market.

Mineral Production

The climate changes (El Niño) worldwide has severely affected the production figures of two of PNG's main revenue earners, OK Tedi Copper Mine and Porgera Gold Mine. The dry spell being experienced throughout the country not only resulted in shortage of process water and reduction in water levels but also resulted in wide spread drought which has been reported to have claimed 80 lives.

OK Tedi produced about 38% of the gold and silver from January to June 1997. The mine, which is primarily a Copper Mine, has halted production due to low water levels in the Fly River. Copper concentrate has been stockpiled at the river port of Kiunga. The increased trend of river aggradation and associated overbank flooding combined with long dry spell has caused trees stress and die back. A dredger has been contracted to remove sediments built up from soft mine waste to put in to the Ok Tedi River. The dredger uses a combination of dredge and a pipeline system which would use the dredged material to build a containment structure and tailings would be transported through the pipeline to the retention site.

Porgera alone produced 47% of the country's gold at the end of August 1997. The mining operations at the site has scaled down due to low water level in the dam. The insufficient water in the dam has been the result of the long dry spell being experienced in 1997 and many of the workers have been laid off temporarily.

The Initial Public Offering of shares in the Highlands Pacific Limited was held during May this year. The stock was oversubscribed and an additional share capital was issued. The company was formed to hold the non-Porgera exploration assets of the Highlands Gold Limited, taken over by Placer Dome Inc. The capital raised will in part be used for exploration and development of its onshore projects such as the Ramu nickel/cobalt and the Frieda/Nena copper gold projects.

Lihir poured its first gold in May 1997 from the oxide ore and to date has contributed about 1% to the nation's economy. The construction remains on track for commissioning of the sulphide ore concentrate in the third quarter, with total construction 92% complete.

Mining Minister Mr Ian Ling – Stuckey visited the Wau Goldfields in September 1997. The three developers are combining their resources to construct one processing plant for Hamata, Kerimenge and Hidden Valley projects. The Minister warned the developers not to raise the expectations of the local people.

Geological Survey Activities

The Geological Survey has benefited greatly from SOPAC, in the past and will continue to support the Training Coordinator's position. During my time as the Chief Government Geologist we have cooperated to survey a number of small wharf sites, many of which have now been constructed.

Our Regional Mapping Group is currently out in the field in West New Britain. The 1:250,000 Markham Sheet is in its final stages of completion and the present field work is to field check geology and tectonics in the adjacent map sheets.

The Geotechnical & Hydrogeology Sections are involved with CCOP-PNG Geohazards Case Study and have their first field visit with Dr Ad van der Spek from the Netherlands. There is some delay in transfer of funds for this case study. The case study is based around Lae which SOPAC have also selected for their hazardous cities around the Pacific study. It may be economical if SOPAC can contribute in part for the bathymetry of Lae harbour.

The expertise of the Hydrogeology section is being sought to assist in assessing the effects of the drought and "emergency groundwater sources" of water.

The Section has produced a report on the mechanisms of the El Niño in PNG, and has proposed formation of a task force to collate data and provide advice to concerned government and private bodies. Industries are likely to be affected in long-term water shortages, in particular Mining Sector, ELCOM and water supply authorities, should immediately put in place conservation and mitigation measures based on a worse-case scenario rather than to sit back and wait for improvements.

The Hydrogeology Section has recently carried out water resource and irrigation assessments of a number of sites in the Markham Valley which may form part of the El Niño study for that area.

The Department of Mining and Petroleum has been split by the new Government into two Departments, namely the Department of Mineral Resources and Department of Petroleum and Energy. There is some overlap in their functions and many officers are still housed in the same old building. It is hoped that the Geological Survey Division takes over the old Petroleum buildings as they are field oriented and the Petroleum and Energy Department move into the new building in the Port Moresby (downtown) area.

PNG Geology, Exploration and Mining Conference will be held in Madang from 9-10 October 1997. Many of the Mineral Resources Department staff as well as overseas participants will be participating at this GEM 97 Conference. This is an ideal opportunity for the organisations to individually interact with government and business representatives in PNG's mining and petroleum industries.

The Chairman, Ladies and Gentleman, may I take this opportunity to convey my thanks to the Secretariat for organising the 26th Annual SOPAC Session here in the beautiful city of Nadi, Fiji. I must thank also the host country for their continual support to SOPAC. PNG will continue to support the valuable work of SOPAC in the region.

SOLOMON ISLANDS

Thank you for the opportunity to make a few comments at the opening of the 26th SOPAC Annual Session on behalf of the Government of Solomon Islands. This year, SOPAC is 25 years old, I extend our congratulations to SOPAC's existence and sustenance during the last quarter of a century. Much has been achieved in the understanding of the geology and geophysics of the offshore areas of the South Pacific region, which are of very much importance.

First of all, I would like to convey Solomon Islands national representative to SOPAC, Mr. John Naitoro, Permanent Secretary, Ministry of Energy, Mines and Mineral Resources apologies for not being able to make it to this session. He would have liked to be present but due to unforeseen circumstances he cannot.

On behalf of Solomon Islands Government, I would like to take this opportunity to congratulate the Chair (Fiji) on your appointment for the 26th Annual Session. I thank the outgoing Chair, Cook Islands for the services you rendered to SOPAC during the last year period. Through you, the new chair for SOPAC, I would like to express my thanks to the Government of Fiji, and the SOPAC Secretariat for the hard work in making arrangements for this meeting, which so far has been welcoming.

Solomon Islands has benefited from the activities of SOPAC during the last 2 and a half decades in that a vast amount of offshore geological and geophysical information has been obtained under its auspices. Information collected and advice that has been provided by SOPAC has shown results. These have been reaped and useful for Solomon Islands.

The last year period, Solomon Islands noted a decline in SOPAC services in Solomon Islands. This was unfortunately appreciated and noted as a result of the changes in SOPAC's funding formula. The demand placed on the secretariat, especially the Directorate office of SOPAC in the follow-up to Council decision of the Rarotonga meeting with respect to the SOPAC review exercise was noted and understood to be a contributing factor to the decline. We hope the next year period we will see some improvements in SOPAC activities for Solomon Islands.

Solomon Islands would like to take this opportunity to thank the Chairmen of the established Sub-Committee and Interim Standing Committee on SOPAC's future role and direction for their time and effort and excellent expertise to address the difficult issues faced by SOPAC. This word of thanks also extends to the Secretariat for their efforts to interpreting the recommendations of the two committees to come up with the new corporate structure of SOPAC now pending to be discussed at this meeting. We hope this structure is reflective of the current constraints and situation.

Solomon Islands considers SOPAC an important independent geoscience resource regional organisation and would not like to see it dismantled or amalgamated into another regional organisation. Despite the fact that our annual contribution to the organisation has not been always up to date, it does not mean our support and relationship with SOPAC is not important and enjoyed. We value our association with SOPAC and view SOPAC's programs as complementary and in support of our national minerals and environmental geoscience programs.

May I report to the Council, we have a new Government in Solomon Islands and this Government wished to reaffirm its continued support to SOPAC as a regional watch dog over appropriation of the natural geoscience resources for commercial development by international enterprises. Furthermore Solomon Islands would like to see that scientific data base regarding the natural geoscience resources within the region be established within the one or more of the regional countries.

Solomon Islands during the period received advice from SOPAC in the preparation of the first Mining Lease document ever to be issued in Solomon Islands for the Gold Ridge Mining Project. In the *hydrocarbon unit*, continued storage of our petroleum data within AGSO was noted. In the *environmental geoscience program*, the initiation of the Earthquake Microzoning Project for Pacific Capital Cities was noted. Under the *Human Resources Development program* 4 students completed stage 2 of the Earth Science and Marine Geology Course, a Solomon Island student completed a degree in geology at the Oxford Brookes University successfully and four SOPAC fellowship scholarships were received by Solomon Islands within the last year period. With the above completed tasks, our thank you is registered for SOPAC.

Solomon Islands saw the commencement of the Mining Industry early this year in 1997 when it issued the First Mining Lease for the Gold Ridge Project. This inception has attracted an influx of more mineral exploration companies to the country. The situation now therefore has exerted a demand for Government services which we cannot provide with our limited resources as well as the drain of national professionals to the industry has a negative impact to government services. This therefore necessitates SOPAC's assistance and is warranted to solve the situation.

Furthermore I would like to register Solomon Islands acknowledgement and profound appreciation to all donor countries and organisations to SOPAC during the last year period. These include, Australia, New Zealand, Canada, Japan, France, Norway, Republic of China, United Kingdom, USA, Fiji, EEC and the UN family and special thanks is hereby registered to CFTC for their assistance through SOPAC and for their bilateral assistance to the Solomon Islands with the Gold Ridge Project negotiations and their continued advice to date on the Gold Ridge Project.

At this juncture I would like to thank Mr. Muller the outgoing Director of SOPAC for his services

during the last six years. Solomon Islands holds Mr Muller in the highest regard in nurturing the development of SOPAC in the wake of great critical revision of SOPAC's roles and functions. The Solomon Islands Government wish Mr. Muller great success in his future engagements.

In conclusion I would like to thank you all for your attention and I wish us all a successful meeting and a happy 25th Anniversary of SOPAC.

TONGA

Mr Chairman, on behalf of the delegation representing the people of the Kingdom of Tonga to the 26th Session of the South Pacific Applied Geoscience Commission I regard this opportunity as singular honour and great pleasure to congratulate you on being elected as the Chairman to lead and control the meeting of kinsfolks who have been isolated and scattered around the Pacific Ocean. I am convinced that with your wisdom and experience our agenda, although tight and somewhat contentious, will be covered thoroughly within the short time allocated for this meeting.

Mr Chairman, on this important occasion, I would also like to express our sincere thanks to you and the Government of the Republic of Fiji for the gracious and profuse hospitality that we have received since we arrived in this beautiful country. Few days ago we have experienced the typical Fijian hospitality and I'm sure this will make our stay here an enjoyable and memorable experience.

Equally important Mr Chairman, is an obvious change in the make-up of our delegation. The well known grand old Mr Sione Latu'ila Tongilava, whom for almost three decades led our delegation to this forum and considered as one of the founding members of this regional organisation, is now retired from service. Although not in the best of health, he has nevertheless asked that greetings and best wishes be conveyed to this meeting, through you Mr Chairman. I am sure this gathering will miss the wit and the philosophical whims that Mr Sione Latu'ila Tongilava had shared with most of the delegates over the years.

Last year, the integrity of the Secretariat was challenged and SOPAC is now under unrelenting pressure from those who are pushing us to sell our culture for money. To do so without due regard to the heritage, culture and prevailing economic conditions of these insular and isolated nations would, however, detract con-

siderably from the potential benefits of modern developments. To be forthright and blunt, may I urge my colleagues around the floor to make our views on these contentious issues known at this forum and allow the Secretariat to go ahead in delivering services to our collective aspirations.

During the past year Mr Chairman, in Tonga we witnessed further developments in on-going projects and I wish to put on record our heartfelt gratitude for all those concerned.

The earthquake microzoning project jointly implemented by the Geophysical Institute of Israel, SOPAC and the Ministry of Lands, Survey and Natural Resources is progressing well. We highly valued the training aspect of this project and we look forward to a more practical use of the data generated by the project. In addition, the Ministry of Lands, Survey and Natural Resources is currently working closely with the International Institute for Seismology and Earthquake Engineering of the Government of Japan on establishing broadband seismic observation stations in Tonga. Construction of the stations are underway and one staff member of the ministry is currently undergoing graduate training in Japan as part of the project.

Recently, SOPAC in partnership with the Ministry of Lands, Survey and Natural Resources completed a survey of sand aggregate around the country. We look forward to obtaining the results of this survey in the near future.

The Ha'apai Groundwater Pollution Study which was generously funded by UNESCO and jointly implemented by UNESCO, SOPAC and the Tonga Government concluded its second stage recently. The results of the study to date were presented at the Pacific Science Congress which was held at the University of the South Pacific (USP) recently.

Further beneficial collaborations have also been made between SOPAC and the Tonga Water Board on water-related issues and these are acknowledged with sincerity.

Mr Chairman to be honest, SOPAC may be efficient but not effective to Tonga. SOPAC provided what we want but not what we need.

As required by Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS), signatories to UNCLOS are given a timeframe of 10 years to make claims on the boundaries of their continental shelves. As a signatory, Tonga cannot respond to this need both in terms of expertise and relevant technology and given

this, SOPAC is urged to speed up its regional project in this area which has been on the table for few years now.

This project is regarded as a matter of high priority especially given the fact that UNCLOS came into effect in 1994 and signatories have about 7 years remaining to demarcate their continental shelves.

Promotion of Tonga's hydrocarbon potential is really something that has been put forward in the SOPAC Work Program for a number of years. To date, this is the only area that appears promising for Tonga as far as mineral resources are concerned, hence, our insistence once again for assistance from SOPAC especially in terms of promotion of Tonga's hydrocarbon potentials to foreign oil companies.

'Atata Island is situated in Tongatapu on the northwestern coast of Tongatapu. The island is home to one of the major resorts in Tonga and has an indigenous community with a population of 100 people.

Quite recently, serious coastal erosion occurred on the island arousing concerns both to the government and the villagers. No one is really sure of the cause but there is an urgent need to determine this and further make recommendations as to solutions and further precautionary measures.

TUVALU

It is my pleasure and indeed an honour, on behalf of my delegation, to present to you the Tuvalu statement. To begin, I would like to take this opportunity, to share with previous speakers to congratulate you Mr Chairman for taking on the chairmanship role for the next 12 months, I can assure you that my delegation has the confidence in you to lead the organisation in this very difficult and challenging times, and we would certainly be most happy to assist and to help in any way possible.

I would like also to thank the Outgoing Chairman for the hard work and commitment he had dedicated for the past year.

In conjunction, I wish also to take this opportunity to sincerely thank the Director, Mr Philipp Muller for his whole-hearted commitment and dedication to SOPAC during the past six years, and I understand that this would be his last meeting and so on behalf of my delegation, and through you Mr Chairman, we would like to wish him well in his future endeavour.

To recap on the past year's programme, Tuvalu has definitely benefited from the work of SOPAC and in particular, technical assistance provided by visiting experts, as well as the various reports that we have received on the coastal erosion and management study of some of the islands, the water and sanitation report, computer up-grading and training mainly to our Lands and Survey's division and the Fisheries department and so forth. In addition, I am pleased to mention that a member of my delegation here has successfully completed a Bachelor Degree at USP, through SOPAC's long-term training. Therefore, for these achievements, I wish to thank all those staff that have directly and those that had contributed to the work, not forgetting of course, the generous assistance offered by donor agencies.

Tuvalu is fortunate to participate in the Interim Standing Committee of SOPAC, and I must admit that my government fully considered that the recommendations put forth are crucial issues and fundamental for the survival of the organisation and so it is necessary that these issues are thoroughly considered seriously by this meeting. I consider it appropriate therefore to thank the ISC Chairman Mr Rao, the respectful committee members, as well as the Director and staff of SOPAC for the enormous work and effort that went into the committee's deliberations.

Tuvalu appreciates and supports the proposed Optimum Program structure recommended by the Interim Standing Committee, in which the programmes and activities have to be in consistent with the capacity and the resources available to the organisation. The need to prioritise the wide range of activities arising from member countries' needs is essential, in order to give the Secretariat clearer guidelines and to set a more realistic and achievable work programme.

On the issue of membership contribution, although Tuvalu appreciates and recognizes that at some stage, we members should have to shoulder the costs of the services provided by SOPAC, I must admit here that Tuvalu would have difficulties to cater for the proposed 32.3% increase, and so we would be prepared to seek and discuss other options. However, as a member of this organisation, we would honour whatever it is decided by this meeting.

In view of the activities and projects, Tuvalu would be pleased if the following listed projects could be considered in the Work Program:-

- water and sanitation program;

- support to member countries on the Law of the Sea related issues;
- support to member countries in GIS development;
- support to member countries in information system development;
- support to member countries in intranet/Internet development;
- retrieval of offshore data;
- development of GIS utilities;
- production and organisation of coastal data;
- in-country MapInfo Workshop; and
- coastal erosion and management of some of the outer islands in Tuvalu (Nanumea, Nukulaelae and Nui atolls).

Mr Chairman, on the issue of adopting new programs and in particular the Energy, Ocean and Disaster reduction programme, and in view of the fact that some involve directives from our Forum leaders; Tuvalu appreciates the initiative and sees merit in such decisions, however the only concern is the impact on the resources. Should external funding be available at this crucial stage, Tuvalu would support taking these programs on-board. This, on the other hand, could also be viewed as an opportunity to widen the marketability of SOPAC work.

Referring to the Financial Statement for the year ending 31st December 1996, and in particular the Auditor's statement, I wish to commend highly the management and the staff in their great efforts in saving costs by reducing expenditure, without unduly hindering the implementation of the Work Program. I am further pleased with their efforts to follow proper accounting procedures, comply with rules and regulations, as well as maintain proper records of their assets. It certainly demonstrates their dedication and commitment and so deserves our recognition and support.

In view of the uncertainty and the fact that SOPAC existence is somehow being questioned, I must admit that Tuvalu lacks a geoscience capacity and so would continue to depend a great deal on the technical support of SOPAC, at this stage and surely for many more years to come.

Mr Chairman, I do not intend to prolong my statement any longer, since there is a more appropriate time later when we go through each

of the agenda item. However, it would be remiss on my part, not to thank the various donor agencies and the scientific organisations that have generously contributed and continued to provide assistance to SOPAC.

Finally, but not the least, I wish on behalf of my delegation to thank our host the Government of Fiji and people for their warm reception and generous hospitality.

VANUATU

Thank you Mr Chairman for giving us an opportunity to make a few remarks during this opening session of the 26th Annual Session of SOPAC. It is a pleasure to be here in Nadi for this Annual Session and I do thank the Fiji Government for making the necessary arrangements for our deliberations this year.

Vanuatu wishes to reiterate its strong support for SOPAC and acknowledge the timely assistance provided by the Secretariat. Our thanks go also to the many donors, governments and agencies whose assistance have enabled the implementation of SOPAC projects and also our national geoscience projects. Irrespective of the difficult times, our partnership program with SOPAC has been most rewarding. Firstly the assistance to the formulation of the mineral tax, the landowner/public relation and the mineral database components of the mineral exploration initiative has been very positive. The work done to satisfy the various components of the Geo-cities project has also been very positive and I would like to thank ORSTOM for their contributions to the Port Vila Chapter. Human resource development remains one of our priorities and we are very grateful to SOPAC for its assistance in this very important sector.

Of greater satisfaction to us on this 25th anniversary of SOPAC, is the granting today of Vanuatu's first ever Petroleum Prospecting Licence. This milestone represents two decades of scientific investigations and evaluations by eminent scientists present here today. Our heartfelt thanks goes to the many scientists who contributed to our petroleum search. While the contributors are many, I would like to express our most sincere gratitude to the members of TAG for their contribution to our petroleum search. Our sincere gratitude also goes to the donors who provided funding to the SOPAC Hydrocarbon Program and in particular to AusAID for assistance received in effectively promoting our petroleum potential.

While we believe that SOPAC will continue to serve the varied needs of its members, the future of our organisation is not all that rosy. The steps taken during the past year in mapping out a future for SOPAC is good and we would wish to place on record, our gratitude to the members of the SSC and the ISC for their contributions to this effort. This effort will greatly enhance SOPAC's management structure and should improve its delivery of services. We believe that this effort should proceed further to look at ways and means whereby member countries would be more appreciative of SOPAC. While there is a basic need for SOPAC in the region, we are concerned that there is

generally not a high appreciation of the organisation by its member countries. This general lack of appreciation needs to be worked on to ensure the maintenance of SOPAC into the future.

I will conclude by adding that the task that we embarked on at the last Annual Session is not over. It is in fact only the beginning. Vanuatu is committed to the future well being of SOPAC and we would continue to contribute in whatever way we can to the organisation. To conclude, I would wish to join the other delegations in wishing SOPAC another successful 25 years.

APPENDIX 6

STATEMENTS BY OTHERS

SUPPORTING COUNTRIES

Canada

Thank you for the opportunity to participate and contribute to this important 26th Annual Session. I am here representing the Geological Survey of Canada (GSC), not the Canadian funding agencies.

Firstly I would like to congratulate SOPAC on another very successful year in very difficult times and particularly the flexibility to develop and deliver new programs to meet emerging needs of member countries.

In 1994, the Geological Survey of Canada and SOPAC signed a Memorandum of Understanding. Under this umbrella the GSC has seconded two coastal geologists to the SOPAC Technical Secretariat for the last two years. These secondments have been very successful and mutually beneficial to both organisations. Unfortunately funding for this position under CSPOD I has expired. However, we wish to continue to build on the GSC and SOPAC. This week, I look forward to discussions with member representatives and the Technical Secretariat staff to determine a new way forward for future collaboration between our two organisations.

France

I am delighted to attend this 26th SOPAC Session celebrating 25 years of services in the region. France appreciates very much the work of SOPAC and recognises the relevance of its programs. These programs are very useful for countries of the Pacific region especially within the context of global warming, sea-level rise and the many other current issues.

We think that these programs benefit the Pacific Island countries as they answer very specific needs, in terms of coastal management, water supply and development of mineral resources on and offshore.

This is the reason why it is important for the region to have an organisation such as SOPAC.

Against that background, France wishes to continue its assistance and support to SOPAC par-

ticularly by the provision of a computer geologist expert contributing to the maintenance of the SOPAC information technology system.

With regard to the programs and activities themselves, France is prepared to finance clearly identified projects.

We are also delighted that SOPAC has established very close links with institutes of research, IFREMER and ORSTOM in French Polynesia and New Caledonia. We hope that this cooperation will allow the scientific potential of the region to be explored and developed.

As far as ongoing projects, I would like to mention the start of an important project, involving SOPAC, BRAM and MRD related to the seismic zonation of Suva central city and simulation of Tsunami risks in Suva harbour.

France is also a major sponsor of workshops and events such as the conference on Marine Benthic Habitats which will be held in Noumea in November.

Questions on funding and on the operation of SOPAC were brought up last year. It seems that this debate has greatly subsided thanks to the work done by the subcommittees and the Secretariat which has helped SOPAC to pursue its task.

As far as the future is concerned we are confident that SOPAC will continue to refocus its objectives to avoid overlapping with other regional or international organisations.

I would like to conclude to thank the Secretariat of SOPAC for the work which has been done this year and the organisation of this meeting.

Finally I want to pay tribute to Philipp Muller for his very valuable contribution to the SOPAC work during the six years of his mandate.

I wish him the best for the future.

Japan

The Japanese delegation consists of the Ministry of International Trade and Industry, and the Metal Mining Agency of Japan. The Japan

Marine Science and Technology Centre (JAMSTEC) also attends the Session as other research organisations.

It is my great pleasure to attend this Annual Session as a Leader of Japanese delegation.

I would like to express our sincere appreciation to the Secretariat of SOPAC and SOPAC member countries, with whose support, we are carrying out cruises in the SOPAC region so smoothly.

The Japanese Government and its institutions, Ministry of International Trade and Industry (MITI), Science and Technology Agency (STA), Geological Survey of Japan (GSJ) and National Institute of Resources and Environment (NIRE), and semi-governmental organisations, Japan International Cooperation Agency (JICA), Metal Mining Agency of Japan (MMAJ), and New Energy and Industrial Technology Development Organisation (NEDO), as well as the Japan Marine Science and Technology Centre (JAMSTEC) have several important programs as in-kind support for the SOPAC countries.

JICA and MMAJ have been operating a current program to prospect deep-sea minerals resources in the waters of SOPAC countries since 1985, using the R/V Hakurei-Marunohar 2 with a package of training program onboard and onshore. We are now in the third year of the third five-year program according to the request of related countries.

In addition, in response to a request of the Republic of Fiji, JICA and MMAJ also have been operating the field survey of mineral exploration in Vanua Levu for a period of three years since 1995. Both projects are conducted by MITI.

STA has been conducting through its affiliated organisation: JAMSTEC a research cruise program: NEW STARMER since 1994 to study marine geoscience in the southwest Pacific in collaboration with IFREMER as a successor program entitled STARMER (1987-1992). A research cruise with R/V Yokosuka was implemented in the Lau Basin in January-February this year.

Research program "Northwest Pacific Carbon Cycle Study (NOPACCS)", (1990-1996) by NEDO, in collaboration with GSJ and NIRE, covered the temperate zone in order to estimate the influence of the upwelling of Pacific Deep Water and Antarctic Bottom Water on the carbon cycle in the western South Pacific.

Other organisations also would have possibility to consider cooperative work with SOPAC various fields.

The Japanese Government has been seconding one expert to the SOPAC Technical Secretariat in Fiji since 1987. His work mainly involves offshore minerals program, namely construction of data base on resources, the related data management, cruise co-ordination and various works in the field of offshore programs.

Further, I would like to announce that JAMSTEC intends to deploy a surface buoy network in the SOPAC Region from March 1998 for continuous oceanographic and meteorological observation as was explained at the preceded STAR session. We believe that results from the network would contribute to the SOPAC communities in improving weather and ocean forecasts. JAMSTEC as the implementing organisation would highly appreciate the close collaboration of SOPAC countries in the proposed buoy operation.

This is the honour of both the Secretariat of SOPAC and SOPAC member countries, and I think that this will contribute toward the steady development of South Pacific Countries.

Korea

I am very pleased to be here on this twenty-sixth SOPAC Annual Session as a representative of the Korean government.

As we may already know, our ocean is earth's last frontier and will pay an essential part in each ocean State's economic and social status. To be part of this important business of the future, each nation is investing great effort into developing new ocean technology and developing ocean resources which might help his or her State to become a leader in the coming ocean century. Envisioning to be a leader in the new century in ocean research and technology among developed nations, the Republic of Korea, firmly established on the expanded national resources and science technologies, is endowing her great strives toward achieving such endeavor.

As part of such national undertaking, Korea has been faithfully and continually executing necessary exploration and exploitation of deep seabed mining in the area of Clarion-Clipperton since registered in 1994 as a pioneer investor through United Nations.

In particular, last year, Korea created a new government agency: the Ministry of Maritime Affairs and Fisheries or MOMAF, integrating many marine-related departments which have been dispersed throughout many governmental agencies under one leading agency. MOMAF is preparing to become a firm foundation for Korea, for example, for ocean industry development.

Last August, as a result of such effort, a very meaningful and valuable maiden exploration cruise was conducted in the internal waters of the Republic of the Marshall Islands' EEZ sponsored and led by the Korea Ocean Research and Development Institute.

The objectives of this cruise are to study the formation and development of deep seabed minerals such as cobalt-rich crusts in the submarine seamounts. We had valuable preliminary data on bathymetry of several seamounts and resource distribution in the survey cruise. A comprehensive report including all the ship-board and laboratory data and interpretations will be supplied to the Republic of the Marshall Islands.

The government of Korea is very optimistic and positive about the roles of SOPAC in the South Pacific region. And starting with the maiden exploration cruise, Korea is ready and willing to put her best efforts into conducting scientific researches in the various areas of the SOPAC region by Korean Ocean Research and Development (KORDI), Korea Institute of Geology, Mining and Materials (KIGRAM), and Korea Mining Promotion Corporation (KMPC). Full mutual cooperation from the SOPAC member countries will be the foundation of carrying out such endeavor.

In addition, Korea anticipates and expects that through these scientific researches, exchanges and transfers of ocean science technology as well as ocean resources data information from the SOPAC region will be shared and utilized in benefit of SOPAC society. Thus, Korea hopes not only to strengthen mutually beneficial relationship between SOPAC member countries and Korea, but also to contribute, with her best intentions, to the development of SOPAC nations.

Lastly, I hope and believe this twenty-sixth SOPAC Annual Session will be one of the most successful Session, and hope this session will invigorate and reinforce bonds among SOPAC members with a common goal and hope of becoming successful ocean nations in the coming new millennium.

People's Republic of China

We feel honoured to be invited to SOPAC's 26th Annual Session. On behalf of the Government of the People's Republic of China and Head of the Chinese delegation, I would like to extend our warm congratulations to the inauguration of the session.

The Chinese Government always attaches great importance to the economic and technological cooperation with South Pacific countries. In recent years, the friendship, economic relations and trade between China and developing countries among SOPAC members has been developed very rapidly. By now the Chinese Government has provided aid and technical assistance to 10 South Pacific countries and 3 international organisations and has funded through multilateral aid programs more than 100 projects in the South Pacific region and technical training to over 110 people from this region. These prove helpful to the economic development of those countries who benefit from above.

Multilateral cooperation is an efficient way to promote the common development of economy and technology among developing countries. This idea is well supported by SOPAC history since its founding. We are pleased to see that SOPAC has done a very good job in the exploration and exploitation of natural resources, coastline survey and ocean environment protection in South Pacific region. The PRC Government will continue to initiate and participate in the cooperation in this field and cooperate with the island countries in the region. For this reason, the PRC Government has agreed to the extension of expert services of the existing Coastal Geologist with SOPAC Secretariat for a further year after he finishes his services in September 1997. I am sure our expert will serve SOPAC with every effort in his new term and make further contribution to SOPAC member countries in coastal management and protection.

Finally, I would like to take this opportunity to thank Mr Philipp Muller for his contribution to the good cooperation between our Government and SOPAC Secretariat in the past few years and wish the Governing Council Session a great success.

United States of America

I appreciate this opportunity to address your meeting. The United States has been a long time

supporter of SOPAC and would like to congratulate your organisation for 25 years of service to the region.

US State Department of State has received assistance from the SOPAC Secretariat regarding access to the region for US research vessels. Nine US research cruises were conducted in the region during the last year, and SOPAC assisted in obtaining clearance for at least one of the cruises. The United States is grateful for this assistance. Many of these cruises are specifically important to SOPAC, as underway data is being collected along all transits of the region for provision to the Secretariat. This is in addition to the provision of all data to each SOPAC country which provided clearance, and which had the opportunity to participate in the research. Four more cruises have already been identified in the region during the next year.

Several of these cruises are sponsored by the US National Oceanic and Atmospheric Administration (NOAA) for the purpose of conducting the Tropical Atmosphere Ocean (TAO) and Triangle Trans-Ocean Buoy Network (TRITON) programs. In this regard, I know SOPAC is sympathetic to the need for access to the region for maintenance of these TAO/TRITON arrays for which routine servicing is a critical element, sometimes on very short notice for the purpose of emergency repairs. NOAA is presently requesting the Department of State to seek multiple access clearances for the period of one year from several SOPAC member countries: Kiribati, Federated States of Micronesia, Tuvalu and the Solomon Islands. The US would be grateful if SOPAC could arrange with its members from these areas to assist in granting these "blanket-type" clearances to NOAA to allow periodic access for NOAA vessels to maintain the arrays and, on occasion, to conduct repairs with as little as two weeks notice. During routine cruises regional scientists are welcomed by NOAA to participate.

As you may be aware, these TAO/TRITON arrays are part of the Global Ocean Observing System (GOOS) program. The US is very pleased with SOPAC's support of GOOS, as evidenced by the Memorandum of Understanding recently signed by SOPAC with the Intergovernmental Oceanographic Commission. The US believes SOPAC participation in GOOS will clearly result in benefits to the region.

Although there has been little direct US funding to SOPAC in recent years, the US continues to support regional activities such as the seismic stations in the SOPAC region operated by the US Geological Survey and the NOAA

TAO/TRITON cruises.

Various US funding agencies support other oceanographic research cruises in the region and fund US participation at the SOPAC annual meeting. Also, the US National Science Foundation recently committed US\$56,000 to support the SOPAC STAR project on Benthic Habitats. It is expected that this support to the region will continue.

SUPPORTING AGENCIES

British Geological Survey (BGS)

The British Geological Survey has a small but active commitment to the region. At the end of 1997 the minerals database project for Vanuatu, carried out in partnership with SOPAC was completed. It is planned to carry out a similar project in like fashion for Vanuatu in 1997/8. BGS is also helping PNG through DFID funding to set up a coastal zone minerals database. BGS also has a World Bank-funded project in PNG, assisting the Department of Mining and Petroleum in institutional strengthening. Advice to SOPAC continued throughout the year in the form of discussion, documents and project proposals related to disaster reduction and coastal zone management issues.

IFREMER

IFREMER has been present in the region of SOPAC for more than 10 years and has a very close relationship with SOPAC.

IFREMER will continue to give active support to SOPAC and will still be involved in different operations in the SOPAC region.

IFREMER is one of the organisations and sponsors of the Marine Benthic Habitat Conference which will be held in Noumea between 10 and 16 November.

In 1998 IFREMER with other New Caledonian and French Institutions should be involved in a joint Australian-French-New Caledonian project for the Deep Seismic Survey with Rig-Seismic of the Tasman Sea and the Ridges and Basins located between Australia and New Hebrides Trench. The aims of this survey are the precise definition of the French and Australian EEZ limits and also the evaluation of Hydrocarbon potentials.

In 1998 IFREMER is also co-responsible for the HYFIFLUX II cruise onboard the German RV

Sonne in the North Fiji Basin. The objectives of the cruise will be the biological, geochemical and geological sampling of hydrothermal sites of the NFB ridge .

I am pleased to inform you that in the North Fiji Basin the RV L'Atalante and submersible Nautille will be in the SOPAC region in 1999. Several cruises are already planned.

In the case of the joint Japanese-French New STARMER project we plan to carry out a diving cruise in Manus Basin.

In the frame of the Australian-French New Caledonia project, we will survey the southern part of New Caledonia's EEZ and the area located east of Norfolk Islands for Australia.

IFREMER is still one of the major partners of the ZoNeCo Program for the evaluation of living and non-living resources of New Caledonia EEZ.

In 1998, 3 fishing cruises are planned in the Western parts of the New Caledonian EEZ.

The ZoNeCo 5 bathymetric geophysical cruise on the Lord Howe Rise and the Chesterfield blot spot lineament.

We will try to obtain funding from France and take the opportunity of the presence of L'Atalante in the SW Pacific, to organise with some of the SOPAC countries, swath bathymetric surveys in frame of the UNCLOS for the extension of Continental Shelves.

Thanks to Philipp Muller for the work he has done during the past 6 years for the SOPAC region.

Intergovernmental Oceanographic Commission (IOC)

On behalf of the Intergovernmental Oceanographic Commission, IOC, of UNESCO I express our pleasure at being invited to this 26th session of SOPAC. We welcome the opportunity to further our cooperation with SOPAC, and other organisations, countries and participants represented here.

At the meeting last year IOC and SOPAC agreed to pursue increased cooperation in addressing marine science in the South Pacific. From our perspective this has been successful. The Deputy Director of SOPAC, Alf Simpson, attended the IOC Assembly in July representing SOPAC. He addressed the full Assembly giving an overview of the concerns of the SOPAC re-

gion. I do not exaggerate when I say that his remarks were extremely well received. Numerous representatives commented favourably to me about the insightful remarks by Alf and the importance of having a SOPAC presence at our meetings.

At the Assembly, Alf joined our Executive Secretary, Dr Gunnar Kullenberg, in signing a Memorandum of Understanding that calls for the cooperation of our organisations in the development of GOOS in the South Pacific region. We have agreed to jointly sponsor a GOOS Capacity Building Workshop in Fiji during February 1998. The French government has already offered support for the workshop but we need support of other countries and donors. We envision that GOOS development will require the involvement of other organisations in the region. As such, we have exchanged letters with SPREP, and they have expressed interest in joining us to develop GOOS. We hope that other organisations and institutes such as the University of the South Pacific and the Forum Fishing Agency will see the benefit of joining us in this new enterprise.

The IOC has also been active in working with the partners organizing the Habitat Conference for November. We have raised a substantial amount of funds that will be used to ensure the participation of island nationals to the conference. This workshop will be a building block in the development of GOOS and will hopefully identify the aspects of habitats that lend themselves to long-term monitoring and provision of useful products and services to governments.

I would like to remind participants that 1998, is the United Nations designated International Year of the Ocean. This is an opportunity for raising the public awareness of our respective roles and interests relative to ocean matters. I encourage this meeting to take this seriously and to ensure that before we leave at the end of the week there is identified year of the Ocean events. Certainly our GOOS Workshop in February should be so designated.

Finally, Mr Chairman, the IOC extends it thanks and best wishes to Mr Philipp Muller.

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

Korea Institute of Geology, Mining & Materials (KIGAM)

In addition to the statement of the Korean rep-

representative, KIGAM wishes to express much gratitude for the hospitality and assistance of the Kingdom of Tonga and SOPAC Secretariat especially in providing facilities during the aggregate resources survey of Vava'u, Tonga waters last August.

Now in 1997, KIGAM-SOPAC cooperation is in the new development. We had a signing ceremony of KIGAM-SOPAC MOU for the mutual cooperation on June 11 this year, and also supported SOPAC to dispatch one marine geologist for the survey and assessment of the sand and aggregate resources at Vava'u, Tonga, as a follow-up activity in this region.

As would be mentioned in the Director's annual report, KIGAM is now considering to second the geologist to the SOPAC Secretariat in the field of either sand and aggregate resource unit or geohazard program unit through the Korea International Co-operation Agency (KOICA) next year. And we will review the hydrocarbon program of which kind of supporting activity is quite needed for SOPAC Petroleum Data Bank at AGSO, if the fund is available next year.

It is of great worth to assist the SOPAC Work Program for strengthening relationships and increasing geoscientific capability in the South Pacific regions.

UNESCO

On behalf of the UNESCO Office Apia, and for myself, please accept our apologies that we are unable to be at the 1997 Annual Session. We are pleased to learn that Bill Erb of UNESCO's Intergovernmental Oceanographic Commission will be there to present that part of UNESCO's work, while Tony Falkland of Australia has of course a longstanding involvement with the International Hydrological Program.

Our absence this time does not mean any less support for SOPAC. We have appreciated working with you over the past year in the areas of water resources and natural disaster reduction, notably in the workshops on Volcanic hazards in Port Vila in February 1997 and on Water Resources in Suva in July. I am sure this will be covered in your program reviews. We expect co-operation with SOPAC in these two areas to continue in our 1998-1999 program. There are also new opportunities to build global links under UNESCO's project on Environment and Development in Coastal Regions and Small Islands (CSI), for example to link world-wide experience on managing coastal erosion. We are

still exploring how best to expand CSI activities in this region.

UNESCO is organising a special day on 1 November 1997 in Paris at the time of the UNESCO General Conference entitled "Focus on the Pacific". This will be a chance for Member State representatives to meet with UNESCO senior management and to set directions for the future of UNESCO programs in the Pacific across all UNESCO's fields. There will be particular emphasis on sustainable development needs. We hope that UNESCO will be able to invite our major regional partners like SOPAC to attend.

SPOCC AGENCIES

Forum Secretariat

The Forum Secretariat appreciates this opportunity to make a brief statement.

There have been a number of developments in the Forum since the last meeting of this Council of possible relevance to your deliberations:

After the Majuro Forum decided that economic issues needed to be tackled at a regional level, Forum Economic Ministers have met and issued an Action Plan which now has Forum endorsement.

The Action Plan emphasises the critical importance of private sector development, accountability of Governments, open trade and investment and responding positively to globalisation challenges.

The Economic Ministers have agreed to look next year at the key related issues of enhancing the efficiency of service delivery and responding to social impacts of economic restructuring.

The recent Forum in Rarotonga also received the Annual Report of SOPAC.

The Forum Officials Committee has also agreed that the Forum Regional Energy program be continued in the form recommended in the NZ Review Report and be relocated to SOPAC. The exact terms of the FOC decision are annexed.

What does all this mean for SOPAC?

Firstly, it is clear that the region's leaders are serious about economic reform and are requiring all of us to play a role in assisting private sector development. An implication of this is

that regional organisations need to look for ways of encouraging private sector development. This includes keeping our programs under continuous review to ensure we are not doing the kind of things that could be done as well or better by business people of the region.

Similarly, all regional organisations need to follow the example of many Forum countries in tightening their belts and trying to do their work at least possible cost. This goes beyond minimising costs to members. It is also necessary for us to minimise costs to donors, so as to release donor funds for the most productive possible use, which may be with national rather than regional programs.

Thirdly, we look to SOPAC as a good parent to the Forum regional energy program, and for the transition to be arranged as quickly as possible. There are two professional staff involved who need to make urgent arrangements for alternative employment if the transfer cannot be effected soon. In fairness to them, and to allow continuing smooth delivery of program services, we respectfully ask Council to authorise the fastest possible transfer of this program to SOPAC. This will also need the full cooperation of donors, Australia, NZ and EU. If donor funds cannot be secured, the program will have to close unless members are willing to underwrite the costs. A key to securing donor funds is to have a secure home and for donors to be assured of the value of the program to members.

Fourthly, we look forward to SOPAC's continuing constructive interest in the South Pacific Regional Organisations Coordinating Committee (SPOCC). This Committee has a full plate of key coordination activities to work through, including major coordination reviews of the marine sector, agriculture sector, information sector and health sector. We will greatly miss Philipp Muller's personal contribution, which has always been a great strength to SPOCC.

On behalf of the Secretary General, we thank Philipp sincerely for his contribution to SPOCC since its inception.

The Forum Secretariat has appreciated its close links with SOPAC, also due in no small measure to your Director's determination that we all work well together. We will make every effort to continue this collaboration in 1998.

Thank you Mr Chairman for this opportunity to address the Council.

Annex

The Committee:

- recognising the value of a regional energy programme to sustainable development in FICs, agreed that the program should be continued in the form recommended in the New Zealand review report, subject to any "fine tuning" required in the finalisation of the Work Program and Budget of the new host organisation;
- agreed that the program should be relocated to SOPAC as early as possible in 1998, subject to SOPAC Council's confirmation of its willingness to accept the program;
- agreed that the Secretariat should negotiate with donors, activities associated with the program (e.g. EU-funded Pacific Regional Energy Program) to transfer responsibility for those activities to SOPAC at the earliest possible time.

South Pacific Regional Environment Programme (SPREP)

Distinguished guests, ladies and gentlemen, I am honoured that Mr Philipp Muller, Director of SOPAC, the South Pacific Applied Geoscience Commission, has invited me to be here with you this morning to represent the South Pacific Regional Environment Programme (SPREP) as an observer at this Opening of the Twenty Sixth Annual Session of the SOPAC Governing Council.

Firstly, I wish to convey to you the apologies of Mr Tamarii Tutangata, Director of SPREP who is unable to be with you today. However, Mr Tutangata has asked me to convey to all delegations his very best wishes for a very fruitful and successful meeting and happy 25th Anniversary.

As regional organisations, SOPAC and SPREP need to receive strong direction and support from all member countries, supporting governments, organisations and institutions working in the South Pacific region to protect and improve its environment and to ensure sustainable development for present and future generations. Let me assure you that we at SPREP regard this meeting as a important step towards meeting those goals. We will watch with interest the directions and outcome of this meeting with a view to continued collaboration, support and partnership in the implementation of our respective work plans, as appropriate.

Secondly, on behalf of all the SPREP staff, I would like again join other delegates to wish Mr Philipp Muller all the very best for the future when he leaves SOPAC at the conclusion of his contract. We all express our earnest thanks and appreciation for all you have done in fostering regional co-operative ventures through SPOCC and in your role as Director of FFA and SOPAC.

Thank you very much Mr Chairman for the permission to make this intervention.

University of the South Pacific (USP)

The University has worked in close collaboration with the South Pacific Applied Geoscience Commission (SOPAC) for some 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 with this 26th Annual Session – its year of Jubilee – 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 1997. The Bachelor of Arts in Marine Affairs also includes an Earth Science component. A comprehensive summary of the University's programme and course offerings in tertiary geoscience studies was provided in its 1996 statement to the 25th SOPAC Council Session held in Rarotonga. For 1998, the University has secured the appointment of an additional lecturer in Earth Science, thus recognising this rapidly-expanding section within the School of Pure and Applied Sciences. In the latter part of last year, and for most of 1997, the additional appointment of Mr Talanoa Kitekei'aho as part-time staff for Earth Science teaching, also made it possible for the University to offer some teaching assistance towards the Earth Science and Marine Geology Certificate programme, in return for SOPAC's valuable contribution to the teaching of the third year Applied Geology course. For several years, SOPAC has provided lecturing input into several of the University's programmes: 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.

As directed by the 25th Annual Session of SOPAC, discussions have been progressing throughout the year with respect to the future direction of the Certificate in Earth Science and Marine Geology; the current programme has just completed the second year of its cycle and 1998 will see successful candidates graduate with the USP award. In response to SOPAC's specific request, as presented by the working committee, to the University to allow one more cycle of the Certificate programme under the current arrangement, the Vice-Chancellor has agreed to extend the granting of the award until the completion of the next cycle which would be in the year 2001.

The University itself would strongly encourage a future development (after 2001) which would enable students who complete the programme to be afforded the opportunity to use the Certificate as a broad base for future degree studies in much the same way as its own current certificate and diploma programmes permit. This would require the re-structuring of the present ESMG certificate so as to afford students the opportunity of pursuing degree-level courses with credits granted for the work previously completed. It must be mentioned that, to-date, the SOPAC/USP working committee is also favouring this direction, and proposes that it be permitted to continue its deliberations on the necessary adjustments and progress that would be required prior to this approach being accepted. However, should the SOPAC Council, at any stage, decide to continue offering the Earth Science and Marine Geology Certificate in its present form beyond the next cycle (i.e. beyond 2001), the University would not be agreeable to granting the award, but would readily make available to the SOPAC Certificate programme any facilities and support services on a negotiated basis. The University hopes that a decision to resolve the issue will be speedily made and undertake to continue its support of the working committee established to finalise its future status.

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, finally, has valued its association with SOPAC's departing Director, and conveys its appreciation for his work in the Region and wishes Mr Muller a prosperous future.

APPENDIX 7

SUMMARY REPORT OF STAR

The STAR Meeting held in conjunction with the 26th Annual Session of the SOPAC Governing Council was convened on September 29 and 30, prior to the official opening of the Session. This reflected new arrangements that included an oral report to Governing Council by the Chair of STAR, Keith Crook (see attachment), and provision for the STAR Working Groups to report in writing, with recommendations, to the TAG Session later in the week.

During the STAR meeting, 41 scientific papers were presented orally, by poster, or by abstract (SOPAC Miscellaneous Report 263). The six sessions of oral presentations were chaired by Keith Crook, Saimone Helu (STAR Vice Chair), Jim Colwell, Robin Moaina, Dick Pickrill and Bhaskar Rao. Two themes new to STAR were represented among the papers presented: Water Resources (which included papers by SOPAC Secretariat scientists); and Time-Series Data and Interpretation, covering oceanographic, meteorological and other data collected systematically, on a high-frequency recurrent basis at specific sites over periods of several years at least. Other themes represented were: Coastal and Nearshore Processes and Resources; Mineral Deposits; Tectonics; and Geohazards, which included a paper by SOPAC Secretariat scientists.

Unprioritised highlights drawn from these scientific presentations are noted below:

- The work by John Collen and colleagues on sediment budgets in coral islands and its potential for establishing replenishment rates and indicators of the environmental health of carbonate sediment-producing ecosystems.
- Mark Sinclair's demonstration of the utility of LADS-II (Laser Airborne Depth Sounder) for bathymetric mapping of large areas of shallow water (0.5 – 70 m) rapidly, cost-effectively, and at an acceptable level of precision.
- Ahser Edward's description of the physical effects of unregulated shoreline dredging in Pohnpei, Federated States of Micronesia, and the protracted and complex response of marine and land ecosystems to the disturbance.
- Demonstration by Andy Butcher of ways in which SOPAC's National Capacity Development Program uses multimedia techniques in distance education, based on a CD ROM or SOPAC's web site, and a digitised version of SOPAC's popular publication "Coasts of Pacific Islands".
- The cluster of papers on water resources – the first at a STAR Meeting - by Giovanni Ricci, David Scott and Ed Burke of SOPAC and Ian White and Tony Falkland, that clearly demonstrates the complexities that arise in the assessment, modelling, monitoring and management of water in low and high Pacific Islands.
- Presentations by Yoshifumi Kuroda and Tim Wright describing the capabilities of the existing TAO and the about-to-be-deployed TRITON networks of deep ocean anchored buoys that record and transmit by satellite a substantial set of real time meteorological and physical oceanographic data; their very substantial socio-economic significance; the crucial importance of unimpeded access to maintain these buoys; the inevitable but unwelcome function of the buoys as fish attractors; and the consequent urgent need to educate fishermen and regulate fishing so as to prevent damage to the buoys and consequent data-loss.
- The review by Mark Merrifield and Shaun Johnston of sea-level rise, emphasising the difference between assessments based on short time series which give large and variable values, and those based on data collected over several decades. The latter provide a well-attested average rise of 1.8 cm/decade globally, much smaller and better constrained than were the estimates made in the 1980's. Local vertical movements due to tectonic uplift or settling of islands must also be taken into account. This highlights the importance of acquiring long-term (>20 years) tide-gauge data to verify satellite data.
- Bill Erb's overviews stressing the importance and relevance to the SOPAC region of the IOC-WMO-UNEP coordinated Global Ocean Observing System (GOOS); and the unique opportunities arising from the declaration

by the UN of 1998 as the Year of the Ocean.

- Papers describing classical geological approaches to volcanic hazard assessment by Vince Neall & Shane Cronin (for Taveuni, Fiji) and by Mike Petterson & colleagues (for Savo, Solomon Islands) that clearly demonstrate this essential component in hazard management.
- The associated cluster of papers by Ken Grainger (AGSO), Graham Shorten & Robert Smith (SOPAC), and Atu Kaloumaira (SPDRP) demonstrating that, to be effective, responses to geohazards must go beyond the scientific assessment stage so as to involve the communities likely to be impacted and their managers and planners, so that response planning and risk mitigation are implemented before a disaster occurs. The AGSO Cities Project, SOPAC's Pacific Cities project and the South Pacific Disaster Reduction Program exemplify, in diverse ways, this new holistic approach to geohazards and its applicability to the SOPAC region.
- John Barrie's demonstration, using geological and geochemical data from Niue, of a new model for ore genesis in limestone-capped volcanic seamounts. This model, if verified by surveys elsewhere in the SOPAC region, would substantially change the mineral resource potential of the coral island PICs.
- The outline description by Keith Crook and colleagues of newly discovered hydrothermal activity and volcanic massive sulfide deposits at Susu Knolls in the eastern Manus Basin, Papua New Guinea. This basin can now be considered as the modern analog of a mineral field or mining district.
- Papers on tectonics by Mike Petterson & colleagues on the exposure and deformation of the Ontong Java Plateau margin on Malaita, Solomon Islands; Patrick Coleman, on terraces, vertical uplift and jostling of fault blocks and their origins; and Paul Wessel and Loren Kroenke, on a new method for locating active and extinct hot spots. These contributions exemplify the continuing enhancement of the fundamental science base of concepts, data and techniques applicable to the SOPAC region.
- Several posters were displayed that presented valuable information. Particular attention was directed to those summarising the non-living and living marine resources of the New Caledonia EEZ, including summary bathymetric maps; and the mapping of surficial deposits in urban Noumea for

landslide and erosion hazard assessment.

During the 26th Annual Session, the following STAR Working Groups met. Their reports are included below:

- Coastal and Nearshore Resources and Processes (co-Chairs: John Collen, Tevita Vuibau)
- Geohazards (co-Chairs: Paul Taylor, Gajendra Prasad)
- Tectonics (co-Chairs: Loren Kroenke, Robin Moaina)
- Water (co-Chairs: Tony Falkland, Ausetalia Titimaea) – NEW working group
- Habitats (co-Chairs: Gary Green, Jean-Marie Auzende)
- Ocean Basin Mineral Resources & Technology (which subsumed the Seafloor Mapping working group) co-Chairs: Tevita Vuibau, Gary Greene (for Mike Cruickshank who could not attend)
- Information Exchange (co-Chairs Les Allinson, Gary Denton)
- Time Series Ad-Hoc Working Group – NEW working group

In addition the following working groups, with co-Chairs as indicated, did not meet. If warranted, they may resume work together with other working groups, not later than three months before the next Annual Session, or earlier should circumstances require:

- Law of the Sea (Lindsay Parson, Grant Boyes)
- Ocean Drilling (Gary Green, Rowena Duckworth)
- Hydrocarbons (Neville Exon, Donn Tolia)
- Geodesy and Precise Navigation (Mike Bevis, Barma Nand)

COASTAL AND NEARSHORE RESOURCES AND PROCESSES

John Collen (co-Chair)
Tevita Vuibau (co-Chair)
James Aston
Gabriel Ayin
Viliame Baleivanualala
Isabel Calvert
Tom Cocke
Jim Colwell
Ahser Edward
William Erb

Marie Ferland
Bill Garstang
Kriton Glenn
Gary Greene
Shaun Johnston
Savae Latu
Jackson Lum
Takeshi Ogitsu
Gajendra Prasad
Dick Pickrill
Graham Shorten
Alf Simpson
Mark Sinclair
Robert Smith
Dave Tappin
Tu Upoko
Chunting Xue
Yuki Yoshida

The Coastal and Nearshore Resources and Processes Working Group considered a range of issues, from basic science through monitoring and data acquisition to the development of resources. Delegates commented very favourably on SOPAC's past coastal studies and particularly on the value of the accumulated databases. Delegates noted that pressure on the environments and resources of the coastal and nearshore zone are likely to continue to increase and were generally concerned that measures be put in place to deal with these.

The Coastal Working Group recognised that, despite much excellent baseline research on coastal and nearshore problems which in some cases extended back many years, many fundamental scientific questions pertaining to coastal processes and resources remain to be answered. For example, details of sediment budgets are poorly known and need to be quantified, as these are basic to understanding sediment dynamics, assessing sustainable resource yields and monitoring variations due to the effects of environmental change and the impacts of resource utilisation. Particular subjects identified for study include the ecology, distribution and carbonate productivity of various groups of organisms and the effects of environmental change on all of these, the formation of sediment, the directions and processes of sediment transport, and the modifications of different materials after accumulation. Fundamental to much of this is the protection and monitoring of coral reefs.

The Working Group recognised that much of this research can be undertaken within specialised research institutions. The Working Group therefore **recommended** that SOPAC actively encourage such research in interested research institutions and work to develop networks of researchers and research programs.

As part of this, the Working Group **recommended** that SOPAC seek funding to support programs aiming to quantify sediment budgets. It **further recommended** that SOPAC establish a fund of seeding money to help researchers set up programs to be primarily supported elsewhere.

The ocean water masses are very important to processes and productivity in the coastal and nearshore zone, and physical oceanographic studies are thus significant. The Working Group considered that SOPAC should continue to be involved with oceanographic research programs in the region and to maintain access to the data acquired by these.

The Coastal Working Group recognised that the continuing need for aggregate supplies in many islands has often led to the depletion of resources and hence to coastal erosion. Some alternative offshore sources have been identified, and some of these are now being utilised. In this context, the Working Group **recommended** that SOPAC urgently continue exploration for new offshore aggregate resources, especially in areas where the demand is likely to be high. The Working Group **also recommended** that SOPAC, as a matter of priority, facilitate a program of study to understand more fully how these resources were formed and have evolved, and any impact that may result from their exploitation.

The Working Group discussed the widespread concern over coastal erosion, much arising from human activities. It commended SOPAC on its past monitoring activities, existing database and network of coastal monitoring sites, and recognised the need to continue to monitor changes in the coastal and nearshore environment, particularly shoreline change, that result both from local development and from global environmental change. The ideal situation, integrated coastal zone management, requires that the physical position, composition and dynamics of the zone are known, and the Working Group therefore **recommended** that SOPAC expand the resources put into acquiring this information. Beach surveys and coastal monitoring studies should be continued as training exercises and expanded, given their long-term value, cost-efficiency and role in training in-country personnel. Wherever possible in conjunction with other studies, the beach profile studies should be extended offshore in order to help quantify total sediment budgets.

The Working Group was concerned that continuity of the records be maintained and in this context **strongly recommended** that the base sites for past surveys be surveyed into position

globally so that they are not lost. The coastal monitoring network should be expanded to atolls where there is no record as yet and monitoring programs should be pro-active, so that any resulting decisions are based on good, long-term records.

To maximise the use of human resources and to prepare for analysis of problems that will arise in the future, SOPAC should make as much use as possible of remote sensing data. The Working Group noted that new remote sensing technologies suitable for evaluating shallow water areas are continually emerging, such as the Laser Airborne Depth Sounder (LADS), video mapping and new techniques of satellite imagery, and these should be evaluated where possible. The Working Group **recommended** that each member country should aim to acquire imagery of their coastlines and suggests that SOPAC should guide member countries in this.

Although studies by SOPAC and other organisations have identified many resources in the coastal and nearshore zone, the utilisation of these in an appropriate manner may be hindered by lack of expertise. The Working Group **recommended** that SOPAC investigate what additional assistance is required by member nations, with a view to providing advice on appropriate resource development.

The Working Group recognised that many of the programs already in place or anticipated for implementation by SOPAC fall within the scope of the Global Ocean Observing System (GOOS) program. These include beach profile monitoring, coral reef monitoring, lagoon circulation modelling, ground water surveys, biological productivity and sand aggregate measurements. SOPAC capability and expertise in data management, instrumentation, monitoring and related capacity building activities suggest that SOPAC should accelerate its involvement in GOOS. The Working Group **recommended** that SOPAC should consider its role on an urgent basis, specifically its participation in the coastal module of GOOS and in the preparation of a proposal to potential donors to support this activity. The Working Group **recommended** that SOPAC co-ordinate its participation in GOOS with sister SPOCC organisations in the region, particularly SPREP, FFA and USP.

Finally, if the next Annual Session is held in FSM, the Working Group suggests that an appropriate theme for technical sessions, workshops and field trips would be "Coastal Problems in FSM".

GEOHAZARDS

Paul Taylor - Australia (co-Chair)
Gajendra Prasad - Fiji (co-Chair)
Vince Neall - New Zealand (Rapporteur)
Joe Buleka - Papua New Guinea
Dave Tappin - United Kingdom
Mike Petterson - United Kingdom
Robert Smith - SOPAC
Ken Granger - Australia
Graham Shorten - SOPAC
Christopher Ioan - Vanuatu
Saimone Helu - Tonga
Uilou Samani - Tonga
Kent Anderson - United States
Arvin Singh - Fiji
Shane Cronin - New Zealand

Details of the Australian/Pacific Cities Projects were provided to the group. A good cooperative spirit has been developed between the two projects, but concrete progress in cooperative ventures has been limited due to the absence of adequate resources. Notwithstanding, the Pacific Cities Project has been proceeding through a variety of sub-projects in a number of Pacific Island Countries (PIC) utilising opportunistic funding from a number of sources. The PIC cities involved include Honiara, Suva, Nuku'alofa and Port Vila. It was also indicated that Papua New Guinea and Fiji may also be included in the project. Details of an IDNDR project, RADIUS, relating to seismic hazards in cities including Lae, Papua New Guinea and two Australian cities (possibly Cairns and Adelaide) were put forward.

It was suggested that SOPAC-coordinated work should be restricted to hazards assessment and that individual countries should take responsibility for mitigation measures. It was also suggested that risk analysis as well as geohazard assessments were needed. The group emphasised that an all-encompassing approach including hazard assessment, risk analysis, disaster management and education and awareness was necessary to achieve the goals, ie the dissemination of scientific information through local authorities to the general public. The role of the disaster management group within SOPAC should be clarified later in the session.

It was also noted that a regional database of all geohazards needed to be established and maintained in a format which could be easily accessed by disaster managers and planners within the individual PICs. The database would need to include information on the hazards and their effects as well as an indication or the capability to assess the vulnerability of the target

populations. Examples that were already included in the Australian Cities Project database included Cairns, Australia with a population of 110,000, and 30,000 buildings; and Newcastle where an earthquake caused an estimated loss of \$AUS4billion. Other examples were also highlighted including 10,000 deaths per year occurring from storm surge world-wide.

The Workshop on Volcanic Hazards and Emergency Management in the South Pacific, held in Port Vila in February 1997 was reviewed. It was noted that some 20 recommendations concerning volcano surveillance, volcanic hazard and risk management, emergency management procedures and education and awareness were put forward by the workshop. These recommendations were to go before TAG as document TAG/26/2.2 Paper 1. It was noted that action following the workshop included:

- the completion of SOPAC Miscellaneous Report 245 (record of proceedings),
- the preparation of a SOPAC Technical Bulletin which will include the papers presented at the workshop,
- completed work on the hazards at Savo volcano, Solomon Islands (STAR papers),
- work in progress on Taveuni, Fiji (STAR paper) and in Tonga, and
- work planned for Savai'i, Western Samoa (SOPAC 1998 draft Work Program)

The Working Group:

1. **endorsed** the cooperation initiated between the Australian Cities and Pacific Cities Projects and recommends that SOPAC give priority to the Pacific Cities Project.
2. **recommended** that a regional database to include all geohazards research and activities be established and maintained which is easily accessible by disaster managers and urban planners within the region.
3. **endorsed** the recommendations put forward by the Volcanic Hazards Workshop, particularly those relating to future work needed at the "high risk" volcanoes of the region and that a second workshop be convened to look at the Savo volcano.
4. **strongly urged** that the SOPAC National Representatives communicate and coordinate with the National Disaster Management Offices in their respective countries concerning both the Pacific Cities Project and the recommendations of the Workshop on Volcanic Hazards and Emergency Management.

5. recommended that a concerted effort be undertaken to target sources for funding further sub-projects of the Pacific Cities Project and for a future field-based workshop on Savo volcano.

TECTONICS

Loren Kroenke (co-Chair),
 Robin Moaina (co-Chair)
 Jean-Marie Auzende
 Patrick J Coleman
 Gary Green
 Benjamin Hautefeuille
 Yves Lafoy
 Mike Petterson
 Uilou Samani
 Paul Taylor

The Tectonics Working Group was convened during the 1997 SOPAC Meeting in Nadi, Fiji. Robin Moaina was elected co-Chairman. The Group reviewed progress on previous recommendations and work in progress and made recommendations regarding new geological/geophysical investigations that were believed relevant to resource assessment, geohazards, territorial claims, and resource management.

The Working Group was informed that a basement drilling transect of the Ontong Java Plateau (OJP) has been proposed with the primary objectives of determining: 1) the age and duration of emplacement of the plateau; 2) range and diversity of magmatism; 3) environment of eruption and post-emplacement vertical tectonic history of the plateau; 4) Effects of rift-related tectonism; and 5) paleogeography of the Plateau (paleolatitude of the OJP at the time(s) of emplacement). Nine sites (including a possible reference site off the plateau) are planned for a two-leg transect to address these objectives. Although it is proposed to focus on basement objectives at all of these sites, considerable information would also be accrued bearing on the tectonism associated with plateau formation and subsequent deformation, the relationship of plateau emplacement to major paleoclimatic and biospheric changes, and also on Late Mesozoic-Cenozoic paleoceanography.

The Working Group noted that the importance of basement drilling of the Ontong Java Plateau (OJP) has been widely recognised by the international earth science community. The proposed 2-leg basement drilling program on the OJP was ranked No. 1 in the 1996 global ranking of active proposals by the JOIDES Lithosphere Panel (LITHP), was put into the highest-priority category by the new Interiors

Science Steering and Evaluation Panel (I-SSEP), ranked among the top eleven proposals by SCICOM in August 1997, and forwarded to OPCOM for scheduling. As OPCOM noted however, drilling cannot proceed unless sufficient site survey information is obtained.

The Group was advised of a planned geophysical survey of the OJP, Hakuho-Maru cruise KH98-1 being led by A. Taira (Ocean Research Institute [ORI], U. of Tokyo) provides an excellent opportunity to collect requisite site survey data. This is a 3-leg field program, fully funded by the Japanese government, which is scheduled to take place between January 16 and March 16 1998. Legs 1 and 2 of the cruise will obtain swath bathymetry, gravity data, high-resolution seismic reflection, multi-channel reflection (MCS), using a 96-channel streamer, and ocean bottom seismometer (OBS) refraction data across the OJP. A. Taira's primary objectives are to study the crustal structure, sedimentary and igneous stratigraphy, and deformation structures of the OJP. These objectives both complement drilling and fulfill site survey objectives. The OJP drilling proponents have been collaborating with A. Taira in designing Legs 1 and 2 of the ORI program such that sufficient site survey data can be obtained at 5-7 of the proposed drill sites.

The group was also advised that an OJP site-survey proposal was submitted to the US NSF to (1) conduct a geophysical survey, including the first systematic survey of the poorly known eastern portion of the plateau, the "eastern salient" to investigate its relationship to the main or "high" plateau and rifting that appears to have split the salient in mid-Cretaceous time, soon after the second major documented period of volcanism on the plateau; (2) complement basement drilling with dredging of the large seamounts atop the OJP, as specifically recommended by LITHP (the seamounts will not be drilled); and (3) carry out the requisite site-surveys of the proposed drill sites that will not be surveyed during the ORI cruise, in order that drilling can proceed. This additional survey support will not only fulfill site survey requirements but will also obtain geophysical and geochemical data necessary to address fundamental aspects of the origin and evolution of the OJP that drilling will not address. The components of the field program are geophysical (magnetic, high-resolution seismic reflection, multibeam bathymetry, and gravity) surveying and dredging.

The Working Group was informed of continuation of IFREMÉR (French) work in back-arc basins. A HYFIFLUX cruise is planned to take place at the end of 1998 in the framework of

German-French cooperation. The target is the North Fiji Basin. Submersible exploration of the Manus basin will continue in 1999 in the framework of the French-Japanese New STARMER project, through organisation of a diving cruise with the French Submersible NAUTILUS onboard L'Atalante. In addition, complementary bathymetric and geophysical surveys should be planned for 1999 in the western part of Solomon Sea, and the northern part of Coral Sea in order to investigate the subduction effects along the New Britain Trench and around the Papua New Guinea mainland. The ZoNèCo 5 Cruise aboard the L'Atalante in 1999 will be devoted to the study of the structure of the southern part of the Lord Howe Rise and the Chesterfield Hot Spot.

The Working Group was also informed that two joint surveys in the New Caledonia region recently have been discussed between France, New Caledonia and Australia. Deep seismic profiles between Australia and the New Hebrides Trench and along the Lord Howe Rise which will probably be carried out in March-April 1998 in order to investigate the geological and tectonic history of the Tasman Sea and the ridges and basins between Australia and New Caledonia. Another goal will be assessment of Hydrocarbon potential.

The Working Group noted that present-day southwest Pacific appears to be a cluster of rifted continental fragments. The detachment of New Caledonia, the Norfolk Ridge, and New Zealand from the Gondwana rim may have also involved both the 'Eua Ridge, now located in Tonga, and the Vanikolo Basin, now located in northern Vanuatu. To better understand the geological framework of this region and evaluate its hydrocarbon potential, it is necessary to investigate the structural style of the ridges and basins off eastern Australia using deep, multi-channel seismic (MCS) techniques.

Australia and New Zealand have already initiated deep MCS surveys on the Norfolk Ridge between Norfolk Island and New Zealand. Onshore results from a MCS survey carried out in 1995 on the GOUARO anticline located 180 km north of Noumea, New Caledonia are very promising and a test well (1600 m deep) is planned to be drilled in January 1998 which should enable a comprehensive evaluation of the basal flysch sand and fractured Paleocene chert reservoirs. Offshore, the deep MCS (240 channel) profiles between Australia and the New Hebrides Trench and along the Lord Howe Rise, which will probably be carried out in March-April 1998, will investigate both the structural style and the hydrocarbon potential of that area.

The Working Group **strongly recommended** that the surveys planned for the French-New Caledonia-Australian project be extended into the South Fiji Basin to the Tonga-Lau ridges, in order to complete the assessment of the hydrocarbon potential of this region and determine provenance of some of the more distal terrains believed to be rifted continental fragments.

WATER

Tony Falkland (co-Chair)
 Ausetalia Titimaea (co-Chair)
 Ed Burke (Rapporteur)
 Fr John Bonato
 Joe Buleka
 Saimone Helu
 Christopher Ioan
 Robin Moaina
 Uilou Samani
 Isaia Taape
 Sisilia Talagi
 Filipo Taulima
 Donn Tolia
 Ian White
 David Scott
 Harald Scholzel
 Giovanni Ricci
 Andy Butcher

The Water Working Group is a new STAR working group. The group elected, as co-Chairs, Ausetalia Titimaea (Samoa) and Tony Falkland (Australia).

The Working Group emphasised the fundamental importance of freshwater resources and adequate sanitation to the social and environmental wellbeing of the Pacific island nations of the region. The Working Group recognised the most important and strategic role of SOPAC as a regional co-ordinator of appropriate projects and activities in the water and sanitation sector. Further, the Working Group recognised the need and supported the continuation of SOPAC's role in this important sector.

The Working Group recognised the contributions to the water and sanitation sector of other regional organisations (e.g. SPREP, SPC) and international organisations (e.g. UNESCO-IHP, WHO, WMO, UNDP, UNEP). It also recognised valuable contributions by many bi-lateral aid donors to the sector. It further recognised the need for continued and enhanced co-ordination of efforts between agencies in order to prevent duplication and to maximise the benefits of the limited resources available to support

important water and sanitation sector projects and activities.

The Working Group recognised that a number of important regional and inter-regional meetings had been held in the past 15 years which addressed the water and sanitation sector needs of the region. In particular, it reviewed the findings of a number of recent regional meetings concerning water and sanitation issues in the Pacific, including:

- Water Planning Workshop (Honiara, UNESCO/SOPAC/UNDDSMS, June 1994)
- UNESCO-IHP Working Group Meetings (Suva, April 1996 & July 1997)

The Working Group acknowledged and endorsed a number of important projects, involving research, training and community education, which had been identified at previous meetings, as follows:

- Catchment and communities
- Groundwater recharge and modelling
- Groundwater pollution
- Groundwater and surface pollution
- Appropriate groundwater extraction systems
- Rainwater catchment study
- Integrated island water resources study

Recommendations

The Working Group made the following recommendations concerning strategic and Work Program issues:

1. SOPAC continue to provide adequate resources to its newly formed Water Resources Unit to enable it to implement its Work Program for the benefit of the member nations in the water and sanitation sector.
2. the Water Resources Unit of SOPAC adopt or include the following goals and strategies:

Goal:

To help member countries in the South Pacific to

- assess, develop, manage and conserve their water resources

- develop appropriate sanitation programs.

Strategies:

- Help identify regional needs
 - Encourage regional projects
 - Develop resource and personnel databases
 - Develop appropriate information transfer strategies
 - Develop training programs for water resources assessment, development, management and conservation and sanitation planning and management
 - Facilitate research on water and sanitation directed at national and regional needs
 - Provide ready access to research results
3. SOPAC and member countries enhance their efforts to encourage and attract donor funding for the work program of the Water Resources Unit.
 4. SOPAC and member countries encourage donors to fund the proposed Water Resources Unit's project to promote, encourage and foster appropriate demand management and conservation practices in member countries, recognising that increasing pressure is being placed on freshwater resources and that currently developed water resources are often inadequately utilised due to system losses and sometimes wastage.
 5. The Water Resources Unit include in its work program a project to encourage and assist member countries in developing water resources and sanitation legislation to address and promote appropriate water resources development, management, conservation and protection.
 6. The Water Resources Unit explore, assess and report to SOPAC and the Water Working Group on the provision of temporary employment (6-12 months) for water and sanitation staff from member countries to work on appropriate projects at SOPAC, as a means of enhancing efforts for capacity building and human resource development amongst member countries.
 7. SOPAC and the Water Resources Unit maintain and enhance co-ordination with regional and international organisations, donors and member countries regarding water and sanitation sector activities to avoid duplication of limited resources.
 8. The Water Resources Unit publish and distribute a quarterly newsletter for member countries and interested agencies which co-ordinate information on water related activities within the region and relevant activities outside the region.
 9. The Water Resources Unit develop a regional database to store, retrieve and disseminate water resources and other related information for the benefit of member countries and researchers assisting the region.
 10. The Water Resources Unit assist with the development and application of national databases for the long-term storage of water resources and other related information.
 11. The Water Resources Unit co-ordinate a waterwell driller training and a pump maintenance scheduling and training project in order to strengthen the capacity of many member countries' groundwater agencies to effectively undertake their own drilling and pump maintenance so as to satisfy the need to adequately and sustainably develop their groundwater resources.
 12. The Water Resources Unit assist and, where possible, participate in water investigation projects which have been identified as regionally important, such as the following projects:
 - Catchment and communities
 - Groundwater recharge and modelling
 - Groundwater pollution
 - Groundwater and surface pollution
 - Appropriate groundwater extraction systems
 - Rainwater catchment study
 - Integrated island water resources study
 13. The Water Resources Unit distill and disseminate the results of research projects of importance to member countries in a form appropriate to their needs. A current example is the need to prepare a guideline on groundwater modelling appropriate to the needs and capacity of member countries.

HABITAT

Jean-Marie Auzende (co-Chair)
H. Gary Greene (co-Chair)
Dick Pickrill
Bill Erb
Yves Lafoy
Ahser Edward
Uilou Samani
Marie Ferland
John Collen
Jim Colwell
Tevita Vuibau
Moses Nelson
Sandy Colvine
Gary Denton
Dave Tappin
Alf Simpson
Phil Woodward
Chunting Xue
Franck Martin
Russell Howorth

The Habitat Working Group convened a meeting Tuesday afternoon, 30 September 1997, with 20 participants in attendance. Discussion centered around the upcoming SOPAC conference on "Marine Benthic Habitats and their Living Resources: Monitoring, Management and Application to Pacific Island Countries" to be held in Noumea, New Caledonia 10-16 November 1997. It was reported that over 60 abstracts had been received and nearly 200 registrants had applied to attend the conference. This was considered to be an excellent response, particularly in light of the short time-line and showed the extreme interest in habitats. The program will be finalised within two weeks time and the formal program printed. Six sessions will be convened and consist of the following, including suggested Chairs and number of presentations to be given:

Session 1. Shallow Techniques, 7 papers, Suggested Co-Chairs: Chauvet, Leach, Greene.

Session 2. Shallow Lagoons, Bays and Reefs, 17 papers, Suggested Co-Chairs: Poiner, Collen, McDermitt.

Session 3. Shelves and Slopes, 15 papers, Suggested Co-Chairs: Able, Pickrill, Cailliet.

Session 4. Seamounts and Ridges; Trenches and Canyons, 7 papers, Suggested Co-Chairs: Grandperrin, F. Parrish, Exon, Auzende.

Session 5. Technology, Interpretations, Analytical Techniques and Models, 10 papers, Suggested Co-Chairs: Pitcher, Burnhold, Kvitek.

Session 6. Harmful Organisms in the South Pacific, 4 papers, Suggested Chair: Enevoldsen

Total: 60 papers

In addition, **over 10 posters** would be on display at the conference.

It was reported that an abstract volume would be printed for handout at the conference.

A report of the proceedings of the conference and workshops would be produced under the direction of Keith Crook and possibly published as a SOPAC Technical Bulletin. In addition, about 20 papers will be solicited for publication in the French journal of Aquatic Living Resources. All sponsors will be recognised at the opening of the conference.

The Working Group placed significant emphasis on the participation of SOPAC island nationals to the conference and workshop. Concern was expressed about the importance of the interdisciplinary approach of the conference and the need to have both geologist and biologist, as well as representatives of regional biological and fisheries agencies, in attendance. Based on these discussions the Working Group made the following recommendations:

Noting the regional concern about the sustainability of living resources and the multidisciplinary need to evaluate fisheries and other living resources habitats, the Working Group **recommended** that SOPAC continue to encourage the participation of SOPAC Member Country nationals familiar with geology, physical oceanography and fisheries biology, as well as fisheries managers, to attend the Habitat Conference in November. The Working Group further **recommended** that the Member Countries' representatives and managers to the conference come to New Caledonia with specific problems that they would like to see addressed at the workshops of the conference.

Noting the ability, and desire, of geoscientists to apply geophysical and geological techniques to the characterization of fisheries and other benthic organisms' habitats, and the need to protect the sustainability of living resources of the SOPAC region, the Working Group **recommended** that SOPAC encourage Member Countries to initiate cross-fertilization of geological, biological and physical and chemical oceanographic disciplines within their countries.

Recognising the importance of informing regional fisheries and other biological organisa-

tions within the SOPAC region of the value of utilising geological and geophysical techniques in characterising living resources habitats, the Working Group **recommended** that SOPAC ask member and donor countries to encourage organisations such as SPREP, FFA, USP and other agencies to send representatives to, and to participate in, the Habitat conference in November.

Noting the desire to move rapidly ahead in formulating work plans to investigate regional living-resource habitats, the Working Group **recommended** that in cooperation with the SOPAC Secretariat a Working Group meeting be convened in Noumea, at the end of the Habitat Conference, to evaluate the results of the conference specific to SOPAC needs and recommend further action.

Recognising the diversity of the Habitat Conference sessions, the Working Group **recommended** that a committee be organised to evaluate and report upon the cross-cutting nature of the conference. The Working Group **further recommended** that in cooperation with the SOPAC Secretariat a group be formed to publicise the results of the conference.

OCEAN BASIN MINERAL RESOURCES & TECHNOLOGY

Gary Greene (co-Chair), MLML
Tevita Vui Bau (co-Chair), Fiji
John Barrie, AVIAN Mining
Kriton Glenn, Australia
Tu Upoko, Cook Islands
Viliame Baleivanualala, Fiji
Savae Latu, Tonga
Isabel Calvert, New Zealand
Bue Gastang, Marshall Islands
Marie Ferland, USP
Bhaskar Rao, Fiji
Sung-Rock Lee, KIGAM
Jim Colwell, AGSO
Robin Moaina, PNG
Donn Tolia, Solomon Islands
Loren Kroenke, UH-SOEST
Keith Crook, UH-SOEST
Takeshi Ogitsu, SOPAC
Alf Simpson, SOPAC
Franck Martin, SOPAC
Phi Woodward, SOPAC

The Offshore Working Group convened a meeting Monday evening, 29 September 1997, with 21 participants in attendance. SOPAC's historical offshore involvement was reviewed and a comparison of land-based and ocean-based interests were discussed. It was pointed out that

most deep offshore minerals and energy investigations have been accomplished primarily through developed nations' assistance programs with SOPAC Secretariat acting in a coordinating capacity. Today, SOPAC's focus is primarily on onshore mineral assessment and evaluation with SOPAC responding to demands from Member Countries to do more baseline and environmental studies and provide advice on mining, petroleum potential and recent technological advances.

The Working Group noted that the Japanese 5-year SOPAC offshore regional minerals investigation was in its third year and that perhaps a review of this program should be done to ensure a comprehensive response to regional concerns. Also noted was the growing interest in offshore sulfides in PNG, potential mining of sulfides by the Japanese in Okinawa Trench, the possibility of sulfide mining in the Eastern Manus Basin and interest in mining manganese nodules in the Cook Islands. It was reported that in 1998 IFREMER (French) in cooperation with Germany will undertake the HYFIFLUX cruise in the North Fiji Basin to investigate back arc basin processes and mineralisation. In addition, a submersible exploration of the Manus Basin will continue in 1999 using the French submersible NAUTILE as part of the joint French-Japanese STARMER project. In regard to deep seafloor mapping, the French will continue mapping in the PNG EEZ, in the Coral Sea and in the Solomon Sea, as well as in the region between Australia and New Caledonia. Based on these discussions the Working Group made the following recommendations:

Noting the world wide interest in deep sea minerals, such as manganese nodules and cobalt-rich crusts, and noting the considerable amount of offshore data recently collected in the SOPAC region, the Working Group **recommended** that, with the concurrence of Member Countries, a synthesis of offshore mineral data in the hands of SOPAC and an analysis of regional mineral potential be undertaken. Further noting that MMTTC has volunteered to coordinate a review of minerals and technology in the SOPAC region, the Working Group **recommended** that SOPAC take advantage of this offer and with SOPAC staff involvement proceed to synthesize and assess SOPAC regional mineral potential. The Working Group **recommended** that the synthesis and assessment be done in the context of regional geology so that mineral forming processes can be better understood.

Noting the recent Japanese project to evaluate benthic biological impacts associated with sea

bed mining, the Working Group **recommended** that SOPAC encourage continuation of environmental impact studies associated with sea bed minerals extraction.

Recognising that for sea bed mineral exploitation to occur in the SOPAC region SOPAC Member Countries need to have in place mineral mining policies, the Working Group **recommended** that SOPAC encourage, and where possible assist, Member Countries to establish sea bed mining legislation.

Noting the need for technical assistance of SOPAC Member Countries to make decisions about applications for the granting of Authority to Prospect (ATP), the Working Group **recommended** that SOPAC organise a list of appropriate technical advisors with considerable diverse experience in minerals exploration that could respond to the call for technical assistance of the Member Countries.

INFORMATION EXCHANGE

Gary R W Denton (co-Chair)
Leslie Allinson (co-Chair)
Tu Tanianau
Gabriel Ayin
Asher Edward
Tinian Reiher
Tebao T Awerika
Bue Gastang
Sisilia G Talagi
Ausetalia Titimaea
Fanoanoaga Patolo
Chris Ioane
Franck Martin
Benjamin Hautefeuille

Problem

Pacific Island countries need readily available and affordable access to global information as well as developing their national information capacity.

This is critical for business development through participation in the global knowledge economy, raising skill levels through distance education and improved resource management and environmental monitoring through participation in information forums where the common transport is the Internet.

In particular, research institutions like GOOS, IOC, JAMSTEC, SOEST advise Pacific Island Countries to visit their web sites as a form of information provision and retrieval.

Many Pacific Island countries have no access to these opportunities as Internet services are unaffordable or unavailable.

Background

SOPAC implemented a national Internet group (Fiji Internet/intranet Group) model which is both sustainable and transferable to other PICs and is investigating both existing and new satellite options for providing international Internet access to the national groups.

Costs will be falling and SOPAC, mindful of budget constraints throughout the region, is closely monitoring these costs and weighing price, performance, and reliability factors to ensure any project implemented has a goal of sustainability.

SOPAC has sought and received endorsement from SPOCC to continue to explore avenues for funding a project to provide Internet access to PICs where these services are unavailable or not affordable.

As a final point, it should be noted that telecommunications industries, in particular international, have unduly influenced government policy makers where it is those same policy makers who should have directed the telcos into providing affordable services, as in the power generation and distribution industry.

Solution

Transfer the Fiji Internet/Intranet Group Technology to PICs using existing international telecommunications or independent satellite options.

Related Documents

TAG/26/3.2 Paper 1: Knowledge-based Industries and Information Technology

Internet Services for PIC Regional Implementation Initiatives

SOPAC Miscellaneous Reports

242 Pacific Sustainable Development Network Program Phase 2.

Recommendations

1. Internet e-mail should be available immediately.
2. Full Internet should be implemented in the medium term.
3. Internet services provided should be reliable and affordable where lack of reliability excludes PEACESAT as a service provider.
4. Individual countries should decide the selection of services.
5. SOPAC should identify a donor for implementing Internet connectivity for member countries where services are unavailable or not affordable and should continue negotiations with UNDP as a possible donor and, should investigate using existing telecommunications carriers or alternative satellite services.
6. SOPAC should investigate options for upgrading existing Internet services in member countries where those services are inadequate or not affordable.

TIME SERIES AD-HOC WORKING GROUP

Dr Yoshifumi Kuroda – JAMSTEC
Mr Timothy B. Wright – Pacific Marine Environmental Laboratory (PMEL)
Mr William Erb – IOC/UNESCO

TAO/TRITON Array

The Tropical Atmosphere Ocean (TAO) Array is a system of deep sea oceanographic buoys deployed in the Equatorial Pacific between 8°N and 8°S stretching from the Galapagos Islands to Papua New Guinea. There are 70 buoys (though 3 sites have been temporarily abandoned due to damage and subsequent data loss) Twenty-five of the buoys from 180°, 165°E, 156°E, 147°E, 137°E are in the SOPAC member countries EEZ. We must request clearance every year to service these buoys though the system has now been declared operational and is expected to be maintained for at least the next ten years and longer. JAMSTEC is developing a surface moored buoy network named TRITON (TRIangle Trans-Ocean buoy Network).

Deployment of TRITON buoys will commence in March 1998. The TRITON buoys will be located at 8N 156E, 5N 156E, 2N 156E and 0, 156E next to the ATLAS buoys at these locations. After intercomparison of the data, the TRITON buoys will replace the ATLAS buoys in the Western Pacific. In addition to the surface buoys, subsurface ADCP current meter buoys will be continually deployed along the Equator.

The buoys measure salinity, atmospheric pressure, wind direction and speed, air temperature and humidity, and temperature of the ocean from the sea surface to 10 depths down to 750 meters. Some of the buoys also measure currents, conductivity, rainfall, solar radiation and dissolved CO₂. Data and position are relayed in near real-time by ARGOS satellite to scientists around the world via the GTS and the Internet every day. The buoys are anchored to the bottom with a four-ton anchor. A steel cable connects the buoys to a mooring line to the bottom.

An important first step to understanding of the ENSO mechanism is to undertake a study of the process of the growth and dissipation of the warm pool in the western Pacific, an area where the water temperature is the world's highest, acting as an engine driving the atmosphere. It is also necessary to study the variability in low-latitude western boundary currents such as the New Guinea Coastal and the Mindanao Currents. The water circulation in the western Pacific may be influenced by salinity change induced by subsurface currents associated with seasonal and ENSO cycles. Surface heat and water fluxes are also very important to study the maintenance mechanism of the warm pool.

Researchers use the data to learn how to predict future changes in the world's climate. The buoys were first deployed to learn how to predict the El Niño (ENSO) phenomenon. The data is also useful to detect ocean fronts and changes in fish migration patterns in the tropics. In addition, the data is made available to weather forecasters around the world. In the tropics, there are very few locations or ships that regularly report the weather. Measurements of the observed weather conditions are an essential ingredient in weather predictions. Several nations (Nauru and Kiribati) have used wind and ocean current data from the buoys to help locate missing or overdue boats.

The buoys act as Fish Attraction Devices (FADS) and consequently there is evidence of fishing activity around the buoys. Mooring lines and the remainder of nets fouled on the cable are

frequently found. Often, the anemometers are removed and the buoys towers have been completely removed from the mooring. There have been instances where we have recovered moorings that have been set adrift and found that the cable was severed, probably to recover fishing equipment. Since the buoys are only serviced twice a year, the data loss and subsequent break in the time series data, not to mention the loss of equipment is serious. The TAO project has had to abandon 3 sites in the Western Pacific temporarily until a solution is found. Most of the data loss and mooring damage occurred on the Eastern and Western edges of the Array. It is of the highest importance to maintain the time series by resolving the conflict between fishing activities and maintenance of the buoy array in this region.

Recommendations

1. Participants of the SOPAC annual meeting recognised that the TAO/TRITON Array will give fundamentally important oceanographic and atmospheric data for daily weather forecasts, coastal management, tourism, marine safety and fishery resource management. The real time data is of great benefit to South Pacific countries.
2. SOPAC should encourage member countries to grant blanket clearances to the TAO/TRITON project for scientific cruises to service the buoys, and conduct oceanographic and meteorological measurements in their EEZ. A blanket clearance is required to service and repair the buoys on short notice in case of damage to the sensors. The buoys are located in the EEZ of Kiribati, Tokelau, Tuvalu, Nauru, Federated States of Micronesia, Solomon Islands, Papua, New Guinea and Palau. In particular, since deployment of TRITON buoys will commence in the EEZ of the Federated States of Micronesia in March 1998, cooperation from the Federated States of Micronesia is urgent and vital for the successful maintenance of the TRITON buoys.
3. Education of fishing fleets operating in SOPAC countries is strongly encouraged. The TAO/TRITON Project has developed a brochure in 5 languages, (Japanese, Chinese, Korean, English and Spanish) to inform fisherman about the Array. Also, participation of fishing observers and oceanography or fisheries students in TAO cruises aboard the NOAA Ship KA'I MIMOANA and JAMSTEC R/V KAIYO and R/V MIRAI is

encouraged, especially during 1998, the International Year of the Oceans.

4. SOPAC should assist the TAO/TRITON project in developing legislation or regulations to discourage fishing vessels from damaging or interfering with the operation of the buoys and to protect this valuable regional information resource.

ATTACHMENT

Report by the STAR Chairman (Prof. Keith Crook) to Governing Council

Mr Chairman, Ladies and Gentlemen – In his opening speech the Minister referred to SOPAC as one of the “tools we sharpen, oil and keep in good condition”. In fact, SOPAC is a set of tools, one of which is STAR; and over the past year STAR has been sharpened, as evidenced by the new arrangements, of which I am particularly appreciative:

- The opportunity afforded to me, as STAR Chair, pro term, to address the SOPAC Governing Council; and
- The provision for the STAR Working Groups to report their recommendations to TAG later in this Annual Session.

I want, first, to say something about STAR – what it is and why it exists. I do so because I detected some puzzlement about this at the last Annual Session among non-technical members of national and donor agency delegations. What on earth is a mob of scientists doing, giving and listening to scientific papers and having scientific discussions, at the SOPAC Annual Session, which is, after all, the annual meeting of the governing body of a regional inter-governmental organisation attended by national delegations and the SOPAC Secretariat.

STAR was founded 12 years ago as a group to provide continuity of scientific advice to SOPAC between the international workshops that were, in those days, held every few years and were very important for determining the scope and directions of SOPAC's Work Program – which was not nearly as broad as it is now.

In the years since then SOPAC has evolved; and so has STAR. It is now the Science Technology and Resources network of SOPAC, interfacing the organisation with the international research community, through extensive use of the Internet. There is a very large number of scientists scattered world-wide who have re-

search interests in the SOPAC region; interests that are relevant to SOPAC's Work Program and to SOPAC's Pacific Island member countries. It is that scientific community that STAR seeks to reach, and to engage in meeting the needs of SOPAC and the region. STAR does this by calling each year for scientific and technical papers on topics relevant to SOPAC's Work Program to be given at a STAR Meeting held in conjunction with the SOPAC Annual Session. For each meeting, a few topics, selected in conjunction with the SOPAC Secretariat, are particularly highlighted. Papers on time-series data was one of the new topics highlighted for this year's STAR meeting.

Why do scientists come to the STAR meetings?

- To give and listen to technical papers – a traditional activity of scientists;
- To discuss science with colleagues informally;
- To establish and extend contacts in the region so as to assist their research projects; and
- To contribute their expertise to SOPAC – for the invitations to STAR meeting explicitly lays this responsibility on intending participants.

Who pays for the scientists to attend? I mention this because that, too, seemed to be a source of some confusion at the last Annual Session. Let me be quite explicit. It's not SOPAC that pays. The scientists pay for themselves, or the organisations that they work for pay for them to attend, because of the benefits that their attendance confers on their scientific work and the work of their organisations.

Let me give you a personal example of how this works, in practice. For more than 30 years I and my students have been working in Morobe Province, PNG of which Lae is the capital. I have published papers on the geology of Lae, and have a new one 75% completed. I'd heard last year of SOPAC's Pacific Cities project but I had no idea until I arrived here this week that Lae was scheduled for inclusion on that project. Furthermore I have an application pending, with colleagues from James Cook University to use the Australian "R/V Franklin" in 1999 for an in-shore marine geoscience survey of the Huon Peninsular coast from Lae and eastwards to Bukaua. And I've learned since arriving here in Nadi that PNG is seeking funding from a donor agency for a related study around Lae, and that one of the scientific assessors for that agency is at this meeting.

So, I've just this morning participated in an informal discussion with scientists from PNG, SOPAC, Australia and Canada. The SOPAC scientist will serve as a clearing house as we swap information and go on to discuss how to coordinate our plans so as to maximise the scientific return from the resources available to each of us. That kind of synergy is why scientists keep coming back to STAR and SOPAC meetings; and it's by no means the first time that I've experienced it. It also justifies the expenditure to attend STAR meetings.

I want to say a bit more about "who pays". Lately we have heard a lot about 'cost/benefit', 'leverage', 'bottom lines' and all the other terms beloved to those who determine institutional budgets. The cash value of everything is assessed. Well, I've never heard anyone assess the equivalent cash value of the technical advice made available to SOPAC at each Annual Session. So I did a rough back-of-the-envelope calculation of what it would cost, at commercial rates, to assemble and transport to Nadi, the outside expertise that is assembled here today. It came out to somewhere between \$150,000 to \$0.25 million each year; and remember that a panel of experts contracted in at commercial rates would likely take a week to do what STAR and TAG scientists do in three days, because they would lack familiarity with the way SOPAC works. So, when the costs of SOPAC are next being discussed, remember to mention those very substantial in-kind benefits that SOPAC attracts to the region each year.

Well, what does STAR do at its meetings? First the scientific papers: 41 have been presented this year. I want to highlight here just a very few of them. Others are covered in the Summary Report of STAR.

- First the work by John Collen's group on sediment production on reef flats, and its potential for telling us whether aggregate mined from lagoons is a renewable resource or not and, if it is, whether the extraction rate is sustainable; and further, the emerging evidence that such studies can provide indicators of the environmental health of the ecosystems that produce the sediment.
- Mark Sinclair's demonstration of the utility of LADS-II (Laser Airborne Depth Sounder) for bathymetric mapping of large areas of shallow water (0.5 – 70m) rapidly, cost-effectively, and at an acceptable level of precision.
- The papers on time-series data – a new field for STAR – that clearly demonstrate the vital importance of such data for predicting

the onset of El Niños, as well as for routine forecasting.

- A review of global data on sea-level rise, estimated at 1.8 cm/decade. That's not so large, when you think of it as 1.8 m per 1000 years. Reef growth can keep pace, and the sediment generated by reef flats can feed the beaches so they keep up. But if the reef flats are polluted, the beaches are being mined and seawalls are causing shoreline erosion, trouble could lie ahead. Also, you need to know what is happening to base level on your island – both sides of it, if it's a big one – because most islands are sinking or rising because of tectonic forces, independently of sealevel rise.
- The cluster of papers on water resources – the first at a STAR Meeting – by Giovanni Ricci, David Scott and Ed Burke of SOPAC and Ian White and Tony Falkland, that clearly demonstrates the complexities that arise in the assessment, modelling, monitoring and management of water in low and high Pacific Islands.
- A classic volcano hazard assessment of Savo, Solomon Islands, showing that it is capable of generating Montserrat-style nuée ardent glowing ash flows.
- The associated cluster of papers by Kim Granger (AGSO), Graham Shorten & Bob Smith (SOPAC), and Atu Kaloumaira (SPDRP) demonstrating that, to be effective, responses to geohazards must go beyond the scientific assessment stage so as to involve the communities likely to be impacted and their managers and planners, so that response planning and risk mitigation are implemented before a disaster occurs. The AGSO Cities Project, SOPAC's Pacific Cities project and the South Pacific Disaster Reduction Program exemplify, in diverse ways, this new holistic approach to geohazards and its applicability to the SOPAC region.

The second thing that STAR does is conduct Working Groups which now make recommendations to TAG, on topics relevant to SOPAC's Work Program. If you'd asked me at breakfast, I would have told you that STAR has 11 working groups. But I discovered today that it now has 12! We'd forgotten about time-series data, so some of the scientists involved got together as an ad hoc Working Group and prepared a report with recommendations to TAG. That's a good example of how STAR Works – we'll formally establish that Working Group next year. So, effectively STAR has 12 Working Groups, of which 8 have met during this meeting.

Because of limited time, I'm only going to mention two of the Working Groups here, and they're not the one that held the longest meetings. I've chosen them for other reasons, as you'll soon see. The reports of all the Working Groups form part of the STAR Summary Report.

I want first to mention the Habitats Working Group established two years ago, which did most of its work before and at the last Annual Session, and since then. As a result, a "Conference on Marine Benthic Habitats and their Living Resources: Monitoring, Management and Application to Pacific Island Countries" will be held in Noumea, New Caledonia from November 10-16, six weeks hence. The conference is sponsored by SOPAC and IOC, and co-sponsored by France, New Caledonia, IFREMER, ORSTOM, the South Pacific Commission and the European Union.

I've highlighted this conference for two reasons. First, because I want to say this to all island nation representatives: Please make sure that your country sends a geologist and a marine biologist to the conference, as well as someone from your fisheries agency which, I trust, is already well aware of the meeting. Why? Because this conference is about the intersection of marine geology and geophysics – which defines the physical aspects of a marine habitat – and marine biology, which defines its assemblage of organisms; and on this dual basis the location, and health of a fishery is determined.

My second reason for mentioning the Habitats Conference relates back to my earlier comments about the value to SOPAC and the region of the in-kind commitments channeled through STAR. The study of marine habitats is an entirely new field for SOPAC, arising from the intersection between marine geology and geophysics and marine biology. The Habitats Conference is, in effect, a large innovations workshop which is being run for the benefit of SOPAC and the region. Here, as in earlier years, SOPAC is getting its cutting-edge innovations workshops arranged and conducted for it at minimal cost to SOPAC and its island member countries. And that is a 'significant' in-kind contribution that must be factored into any cost-benefit analysis of SOPAC's role and functions.

The second Working Group that I want to highlight is the ad-hoc Working Group on Time-Series data that I mentioned earlier. I do so because I want SOPAC's Island Country member delegations to take very careful note of this working group's recommendations. They are of the utmost importance to the region and they will require urgent administrative and legisla-

tive or regulatory responses from your governments.

I want to point to a general implication that arises from what I have been saying. SOPAC is the South Pacific Applied Geoscience Commission, but 'Geoscience' doesn't contribute to its acronym. Now that is appropriate, given SOPAC's origin as a marine geological and geophysical prospecting agency. When SOPAC was reconstituted as a regional inter-governmental organisation, it acquired its present name, including the rather more general term 'Geoscience'.

What we're now seeing, from this year's STAR meeting is that 'geoscience' is not just about

geology (e.g. minerals) and geophysics (e.g. earthquakes). Rather it is about the broad sweep of sciences that study the earth. It includes, as well, physical oceanography, meteorology, marine biology and ecology, and aspects of earth-related social sciences such as urban geography.

So, Mr Chairman, in summary I can report that STAR, one of the tools available to SOPAC and the Pacific Island Countries, is sharpened, well oiled and in good condition; and stands willing and ready to serve the needs of SOPAC, its members, and the region.

Thank You.

APPENDIX 8

SUMMARY REPORT OF THE TECHNICAL ADVISORY GROUP

1. The Chair of TAG, David Tappin welcomed everyone, both old and new faces, to the 26th meeting of TAG and thanked the meeting for the confidence they had shown in appointing him to chair this TAG meeting. He made special reference to Mr Sione Tongilava who was currently undergoing medical treatment in the United States. TAG agreed with the Chair that a message of greetings and support be sent to Mr Tongilava*.

2. The Chair recognised the new structure of the SOPAC Work Program and the work that had been carried out over the past year by the SSC and ISC. He warmly appreciated these efforts and expressed the opinion that the new structure, including the Optimal Work Program, was a major advance in SOPAC's organisation. He added that in the past the proposed Work Program discussed at the Annual Session was referred to as the "wish list" and that the TAG role had been to assist the Governing Council in reviewing this Work Program. However, this year Governing Council had asked TAG specifically to focus on assisting the countries in prioritising their work requests. This is in recognition of the financial constraints existing at the present time.

3. The Chair expressed his concern that non-member TAG advisors would be compromised in promoting any priority for one member country that would conflict with another. In this context he stressed that TAG was "advisory" and that Governing Council held executive responsibility. He viewed the SOPAC Annual Session structure as 3 tiered and comprising: (i) STAR offering scientific advice to TAG, (ii) TAG considering the applied aspect of the Work Program and (iii) TAG making recommendation to Governing Council. He proposed that TAG's discussion be based upon the Annotated Agenda provided and the Director's Annual Report. In view of the new changes in the organisation of the Annual Session he advised TAG that the structure of the TAG sessions were not yet formalised and that the TAG meeting format would have to be treated as somewhat flexible. He asked for forbearance in this matter.

4. The Deputy Director suggested that TAG concentrate on the future Work Program, as the past work is being covered in various ways such as the Director's Report, 1996 Summary report, STAR presentations and posters, Technical Reports and through the availability of Technical Secretariat staff to discuss the past work with member country representatives. He stressed that member countries needed to express their opinions about Work Program priorities.

5. The Cook Islands representative said that the Director had indicated that the 1996-97 Work Program would be considered by TAG.

6. In summarising the Work Program, the Director noted KIGAM's contributions to aggregates in Tonga and KORDI's work in the Marshall Islands. He indicated that the Cook Islands was looking for advice and guidance in the development of manganese nodules and pointed out that Papua New Guinea had received two licence applications for offshore mineral prospecting. He also noted that the hydrocarbons program was identified as priority by the Melanesian countries, and made special reference to Peter Butler, Hydrocarbon Data Manager, whose SOPAC activities are funded by Australia. He also made reference to the new Pacific Cities Geohazards project initiative, and the mapping of four islands in Tuvalu with support from People's Republic of China. He also mentioned the lagoon circulation studies that made use of the new MIKE21 software supplied by the Government of Denmark. Despite the loss of French funding for a coastal mapping geologist, SOPAC had produced four major maps. He thanked New Zealand for funding Mike Lodge for SOPAC's Law of the Sea report. He expressed surprise that funding was not available for Water and Sanitation program despite its importance to the region. A great deal has been achieved during the year despite the low level of funding for the Water and Sanitation program. The benefit of the HRD program was reflected in the graduation of two University students during the year. He thanked CFTC for funding the position of the new Training Co-ordinator. He informed TAG that the Regional Disaster Management Program and the Energy Program was under consideration by SOPAC for inclusion in its pro-

*Sione Latu'ila Tongilava passed away late October while undergoing medical treatment in the US.

grams. He noted the number of SOPAC publications produced; proving the success and efficiency of the Information Technology and Publication Units. Outside organisations had begun to utilise the SOPAC services to publish their reports.

7. The Chair expressed his appreciation to the Fiji government for hosting the official function on Wednesday night. The Secretariat provided a summary of the proposed 1998 Work Program and TAG was asked to comment. TAG then considered the 1998 Work Program.

RESOURCE DEVELOPMENT PROGRAM

Mineral Resources Unit

8. A summary was provided by Chair and Deputy Director of the proposed SOPAC program and the relevant parts of the STAR Working Group reports. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Ocean Basin Mineral Resources and Technology which are appropriate to this program.

9. The representative of the Cook Islands requested a change in the wording of the annotated agenda referring to the issue of manganese nodules licensing saying that, although there had been a series of meetings with a Norwegian-based consortium, no agreement had it been concluded. The MOU signed between the two parties did not contain any commitments or timetable.

10. He added that the Cook Islands needs have changed, and he requested that the Secretariat assist in developing a strategic plan for manganese nodule development. This was now a high priority program for the Cook Island Government.

11. The representative of PNG announced that his Government had received two licence applications for offshore hydrothermal minerals exploration. He requested advice from the Secretariat on the development of an offshore exploration and mining policy. TAG **noted** the exciting new development in Papua New Guinea and that for the first time, licences were being issued for the development of offshore hydrothermal metal deposits.

12. The representative of Solomon Islands expressed his appreciation for the advice given to his country for the preparation of the Mining Lease document for the Gold Ridge mining

project and added that his country placed a high priority on the Mineral Resources program. He requested the following projects be placed on the Work Program:

- Assistance in development of a geological and mineral resources geo-database
- Assistance in mining tenement information preparation
- Assistance in mineral development policy
- Assistance in the tendering for the Humbe prospect

13. The representative of Kiribati asked for continued Secretariat support in the development of phosphate and gypsum resources.

14. The representative of Samoa asked how his country might be included in the IFREMER-Fiji-Tonga EEZ mapping proposal.

15. The Secretariat informed TAG that Fiji and Tonga were currently carrying out bilateral funding negotiations with France for assistance in the mapping of their adjoining EEZs, and that there was the potential for Samoa to do the same.

16. In reference to Resource Development Program, the representative of Cook Islands suggested that TAG prioritise the Work Program in order to assist the Governing Council in their decisions.

17. The representative of Canada emphasized the importance of baseline studies prior to any mine development.

18. TAG **encouraged and recommended** that all Member countries carry out baseline environmental surveys prior to commencement of any new mining activity.

Onland Mineral Evaluation Assessment

19. The representative of Vanuatu acknowledged the assistance of the Secretariat in the production of the booklets on mining issues and on the metal mobile ion survey. He requested the Secretariat to assist in the second phase of this survey that is a high priority for Vanuatu.

20. Noting the high priority placed by many member countries on the Onland Minerals program, TAG **recommended** that the Secretariat continue work in this area and also consider related environmental issues such as baseline studies, monitoring and legislation.

Mineral Policy Development and Legislation

21. The Chair pointed out that this was a new field of involvement for the Secretariat and a result of the Governing Council recommendation from of last year.

22. The Secretariat acknowledged the assistance of the British ODI in providing a new resource economist to assist with development of mineral policy and legislation, and pointed out that the position and costs would be shared equally with Fiji.

23. The Chair pointed out the potential for mineralisation in atolls as demonstrated in the STAR presentation of Dr John Barrie. His model for ore genesis in limestone-capped volcanic seamounts, if verified by surveys elsewhere in the SOPAC region, would substantially change the mineral resource potential of coral islands.

Aggregates

24. TAG accepted the recommendations contained in the report of the STAR Working Group on Coastal and Nearshore Resources and Processes, that are appropriate to the Resources Program. It accepted that the discovery and use of new aggregate resources was a high priority for many of the SOPAC member countries.

25. The representative of Tonga expressed his concern that, despite the number of surveys for offshore sand, there has as yet been no exploitation of the resources discovered. The Chair informed the group that this was an important concern and that he wished to discuss this issue outside of TAG with a view to assisting Tonga in utilising the new resource.

26. The representative of Tuvalu thanked the Secretariat for aggregate studies in Funafuti, and requested that similar work be extended to Vaitupu.

27. The representative of New Caledonia referred to their work program and, with due regard to the Secretariat's limited resources, indicated that he would like to discuss its implementation with the Director at a later time.

28. The representative of SPREP stated that SPREP and SOPAC have enjoyed good collaboration over the past year, and anticipated that this would continue and be developed in the future.

29. TAG **acknowledged** the assistance of KIGAM in providing an aggregate geologist for a survey in Tonga.

Deep Sea Co-operative Minerals Program

30. The representative of Cook Islands encouraged Japan to retain its interest in the offshore minerals program and strongly urged Japan to consider continuation of its research cruises in the region. TAG **recognised** and **expressed appreciation** of the long term commitment shown by Japan in Deep Sea Minerals.

31. The representative of the Marshall Islands acknowledged the value of the work that Japan and Korea had carried out in their EEZ and the training provided by them. He requested the Secretariat to encourage the development of further programs with Japan and Korea, and to ensure that overlap was avoided between surveys.

32. The representative of Tuvalu asked the Secretariat for details on follow-up to the SOPACMAPS program, that had led to the identification of hydrocarbons potential in southern Tuvalu waters. The Secretariat informed Tuvalu that proposals had been formulated to advance this work element but that up until now funding for these had not been identified. TAG **accepted** that this was still recognised as a high priority for the region.

33. The representative of FSM acknowledged the work of MMAJ, Japan, and noted that this is now coming to an end. He requested that MMAJ consider an extension for the future.

34. TAG **recommended** that MMAJ, Japan be encouraged to continue working in the region and to consider a further, five-year phase of scientific investigations in the region. TAG noted with pleasure the proposal from MMTC to review all existing offshore mineral data and compile this into a report.

35. The representative of Samoa requested an upgrade of an earlier bathymetric map in the EEZ of Samoa. This was noted by Techsec.

36. TAG **noted** that Ulrich Von Stackelberg, Head of the Marine Geology-Marine Geochemistry Department of BGR, retired from his duties at BGR at the end of July after 36 years of service. Noting Von Stackelberg's past

contributions and support of SOPAC, TAG **recommended** that a letter of thanks and good wishes be sent, expressing SOPAC's appreciation for all his assistance.

Hydrocarbons

37. The hydrocarbon work element is still a high priority for many member countries, although this is not reflected in the resources at present available to the Secretariat because of a lack of a donor. The representative of Australia described the value to the region of the work undertaken by Peter Butler in the petroleum data bank at AGSO in Canberra. TAG also expressed thanks to Patrick Coleman for his assistance in updating the petroleum displays and **recommended** that SOPAC seek ways of maximising the use of the display material at conferences such as APPEA and AAPG.

38. TAG **expressed appreciation** to Australia for assistance in the storage of hydrocarbon-related tapes at AGSO and therefore would like to urge Australia to continue offering this assistance in the future.

39. The representative of Tonga agreed with the comments of Australia and noted with interest the hydrocarbon exploration program in New Caledonia. He asked New Caledonia if Tonga could be informed of the results. Tonga still regarded the promotion its hydrocarbon work element as being the highest priority.

40. The Secretariat added that an ideal opportunity to disburse this information might be to Island country members attending the coming Habitats conference in Noumea. The representative of New Caledonia agreed to this suggestion.

41. The representative of Solomon Islands also thanked AGSO through SOPAC for maintaining the petroleum database and flagged the possibility of two imminent petroleum licence applications for areas in Solomon Islands. He requested assistance from the Secretariat in the preparation of tenement blocks and finalise the Petroleum Regulations and possibly a model agreement.

42. TAG **noted** the recent interest shown by several companies in purchasing petroleum data relating to Solomon Islands and Vanuatu.

43. TAG **noted** that both Tonga and Vanuatu had received applications for exploration licenses and also noted the visit of KIGAM to the

Petroleum Data Bank in Australia. It regarded this as a notable advance for hydrocarbon exploration in the region and the success of the SOPAC country hydrocarbon program.

Water Resources Unit

44. The Chair advised TAG that in his opinion this was a highest priority for the member countries. For the first time a STAR Working Group had met and had made a positive input on organising the goals and objectives of the SOPAC Work Program. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Water Resources.

45. The Working Group emphasized the fundamental importance of freshwater resource and adequate sanitation and recognised the strategic role of SOPAC as a regional coordinator in the sector.

46. The Working Group endorsed all the tasks in the 1998 Draft Program. In addition they requested a strengthening of the information dissemination role and proposed a new initiative in relation to legislation.

47. TAG **recommended** the endorsement of the recommendation of the STAR working Group on Water Resources.

48. TAG **recommended** the endorsement of the 1998 Draft Program.

49. The representatives of Tuvalu, Tonga and Kiribati noted the staffing situation at the Secretariat for 1998 and urged a search for further funds, especially in view of the critical importance of water to the region.

50. The representative of Cook Islands requested the mandate of the Water Resources Unit be expanded to include water for purposes other than for drinking.

51. The representative of Samoa asked if the project from Manono could be extended to Savai'i with the inclusion of a modelling component in the project.

52. TAG was informed that SPREP and SOPAC have agreed to exchange the content of their work programs to highlight possible areas of duplication and identify collaborative opportunities.

53. TAG **noted** that in particular there was scope for SPREP to use SOPAC expertise in the following areas:

- SPREP/IMO Strategy and Work Program for the Protection of the Marine Environment in the South Pacific Region.
- Pacific Regional Waste Education and Awareness Program.
- AusAID Pacific Regional and Multicountry Waste Management Development Project.
- Global Program of Action for the Protection of the Environment from Land Based Activities.

Energy Unit

54. The Chair invited Dick Goldberg of the Forum Secretariat to give a brief overview of the Energy Unit. Details are provided in TAG/26/1.3 Paper 1.

55. TAG noted the recent FOC decision and the Executive Summary of the NZ review of the energy program. TAG also noted (i) the review's finding (para 8 of the executive Summary) that the energy program has made a useful contribution to the regional energy sector and (ii) the review's recommendation that it be sustained.

56. With respect to the further investigations recommended in the NZ review report (para 9 of Executive Summary), TAG noted that:

- training needs assessment has already been undertaken by FSED and taken into account in framing the proposed 1998 program (although further training needs assessment could be undertaken in 1998);
- detailed costing was undertaken in preparing the 1998 proposed Work Program; and
- the energy program would comply with the reporting requirements of its host institution; more attention could be given to evaluation procedures, but this applies to many continuing programs.

ENVIRONMENTAL SCIENCE PROGRAM

Coastal Unit

57. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Coastal and Nearshore Resources and Processes, which are appropriate to this program. TAG noted the close asso-

ciation between the Coastal Unit and the Nearshore Minerals.

58. The representative of Samoa requested that the Secretariat include projects related to Savai under 3.1 Coastal Management and 3.2 Marine Geophysical Surveys.

59. The representative of Cook Islands proposed that the Secretariat consider a regional coastal bathymetric mapping project. This was noted.

60. The representative of Niue suggested a project along the same lines, but developed sub-regionally, stage-by-stage. She also suggested the use of remote imagery as a tool for mapping coastal areas and seamounts.

61. The representative of FSM acknowledged the assistance of France, along with a private Company from New Caledonia. The assistance is part of a project that encompasses under several units of the SOPAC Work Program.

62. TAG **recommended** that the Secretariat assess the advantages of a comprehensive regional coastline mapping project as opposed to the present approach of individual country mapping projects.

63. The representative of SPREP pointed out that SPREP's program complements some of SOPAC's Project objectives containing the Coastal Unit. SPREP has 3 major projects where there are collaborative opportunities:

- Develop capacity for best practices management of coastal systems and living resources;
- Pacific Islands Climate Change Assistance Program (PICCAP); and
- coastal protection.

64. The representative of Marshall Islands noted that his country was not mentioned in this part of the SOPAC Work Program and requested that it be included.

65. The representative of Kiribati noted with appreciation the assistance of the Secretariat in the Coastal Program and pointed out that this was a high priority for the country.

66. The representative of Solomon Islands requested that the baseline hydraulic and water quality studies of Thousand Ships Bay, Santa Isabel, be included as a task under this program. This is necessary in anticipation of possible nickel mine development in the area before the year 2000.

67. The representative of Vanuatu informed TAG that the Vanuatu Government is currently

developing a co-operative proposal with SOPAC to carry out coastal studies related to the Vanuatu Urban Infrastructure Project.

68. The BGS representative informed TAG of a coastal minerals databasing project they were implementing in Papua New Guinea.

69. TAG **commended** SOPAC for its initiative in acquiring a kinematic GPS, this technology will greatly enhance mapping capability within a number of units.

70. TAG **acknowledged** the contribution of People's Republic of China for the extension of their coastal geologist contract for a further year, and CFTC for their contribution of a new coastal geologist.

71. TAG **acknowledged** the donation of MIKE21 software, training, support and licences worth over US\$265,000 and undertook to write to the Danish Government to thank them for this generous contribution.

Hazards Assessment Unit

72. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Geohazards.

73. The representative of Tonga expressed appreciation for the work undertaken under the Pacific Cities Project.

74. TAG **noted** the efforts that have been put in place since the last Annual Session to coordinate the Pacific Cities and the Australian Cities projects and the excellent opportunities that exist if close collaboration between AGSO and SOPAC continues.

75. TAG **recommended** that funding agencies be encouraged to provide additional funding to support the interchange of personnel between the two projects and the formulation of similar standards, with a view to the completion of hazard zonation, database collation, and disaster scenario modelling related to the vulnerability to geological hazards of communities in seven major Pacific cities.

76. TAG **recognised** that improved co-operation and communication between SOPAC National Representatives and National Disaster Management Co-ordinators in each country was now necessary. This is to ensure that the SOPAC Hazards Assessment Unit was acting in concert with other efforts towards disaster

mitigation, particularly those of the South Pacific Disaster Reduction Program currently under the management of UNDHA-SPPO.

77. The representative of Samoa queried the basis for choosing the original four cities, and expressed a desire to include Apia under the Pacific Cities project.

78. The representative of Solomon Islands suggested that the Pacific Cities project be extended to include an offshore geophysical survey of Honiara harbour.

79. The representative of Fiji noted that MRD is working closely with the Secretariat in this program area. He noted that the new MIKE21 software, training and support will enable modelling of disaster scenarios for hazards such as pollution, erosion, tsunami and storm surge.

80. TAG **recommended**, in view of the size and importance of this investment, and the limited capacity of SOPAC and member countries to fully employ this software, that donors urgently consider providing support funds for consultancies, or directly contributing the services of consultants with expertise in MIKE21 software, to ensure its extensive and timely use in disaster scenario modelling.

81. In addition TAG **recommended** that donors urgently consider supporting SOPAC and member country marine investigation programs that will be required to provide meaningful input into MIKE21 analysis.

82. The representative of PNG, cognizant of the fact that Lae is being considered for inclusion in the next round of Pacific Cities, informed the meeting that CCOP in Bangkok had a similar project planned for Lae. He hoped that funds could be released from CCOP to assist in this project.

83. The representative of Canada informed the meeting that the Netherlands had contributed US\$1.5M to three coastal studies in the CCOP program and noted the benefits that could result impacting upon the SOPAC program, especially in the transfer of technology.

84. The representative of SPREP endorsed the Pacific Cities project, confirming that the outputs will provide invaluable input to a range of SPREP projects. He informed TAG that SPREP is also able to provide some assistance to the project in the form of data, information and reports. For the Apia-based project, SPREP may be able to provide assistance by facilitating visits and field trips.

85. The representative of Vanuatu acknowledged both ORSTOM and SOPAC contributions to the project and looked forward to further co-operation on the up-coming Luganville project.

86. The Chair noted that the Commonwealth Secretariat provided the post of the Coastal Engineering Geologist to manage the activities of the Hazard Assessment Unit. TAG recorded some concern, however, that CFTC support is likely to end at about the time of the Annual Session next year.

Ocean Unit

87. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Ocean Basin Mineral Resources and Technology. The Deputy Director and Chair emphasised the importance of the deep oceans in the future development of the region. These were many issues to be considered and, as yet, these had not been fully addressed. As a result of the recent ratification of UNCLOS and the telescoping of the timescale that the PICs have to define their boundaries. At present in SOPAC there are insufficient resources to fully assist the PICs in this work element.

88. The representative of IOC detailed the Global Ocean Observing System (GOOS) program. TAG was informed that the objective of GOOS is to use long-term, multidisciplinary operational monitoring of coastal areas, seas and oceans as the basis for creating and disseminating reliable assessments and predictions of the present and future state of these environments.

89. TAG also noted SOPAC'S decision to undertake development of GOOS in the region with cooperation from SPREP, other regional organizations and international organizations such as the IOC, WMO and UNEP.

90. TAG accepted and endorsed the importance of acquiring information necessary to assess the readiness of the region to begin implementation of activities supportive of GOOS, as well as those on-going activities in the region that involve long-term monitoring and data collection which meet the GOOS criteria.

91. Also noting, that assessment of the capacity in the region is an essential first step in areas such as the availability of trained personnel, institutes capable of supporting GOOS, existing data and communication networks, ex-

isting data collection networks, identification of user communities (i.e. fishing companies, ferry operators, mining companies, etc.).

92. Recalling that SOPAC will co-sponsor the Marine Habitat and Living Resources Conference in November 1997 and the GOOS Capacity Building Workshop in February 1998 and the need for background information for these meetings.

93. As such TAG **recommended** the following:

- SOPAC should urgently undertake the collection of information that will serve as background for the upcoming activities (inventories, assessments, evaluations) while recognizing that such information may be preliminary but nevertheless useful;
- SOPAC should designate a secretariat staff member as the GOOS contact who would be given the responsibility for implementing GOOS activities at the Secretariat;
- SOPAC should identify GOOS as a Program activity; and
- SOPAC should establish a dialogue with potential GOOS partners to encourage support and cooperation throughout the region.

94. Samoa recommended that TAG seek advice from Japan (TRITON project) as to whether data from drifting buoys in mid-latitudes be made available in real-time either through the Aeromantical Fixed Telecommunications (AFTN), Global Telecommunication System (GTS) or otherwise.

95. Samoa recommended that TAG retrieve all data from participant countries in the TOGA/WOCE Cruises for storage in the SOPAC database.

96. The representative of USP noted, although no funding is secured for the task, that SOPAC is the logical regional organisation that should be responsible for bringing together the expertise necessary for the implementation of this program. USP also informed TAG that it has in-house expertise in this area.

97. TAG **recommended** that SOPAC be the regional organisation responsible for technical aspects of Law of the Sea matters.

98. TAG **noted** that SPREP was hiring a consultant to develop the Strategic Action Program for International Waters of the Pacific (SAP). SOPAC provided input as a member of SPOCC. The SAP is being prepared for publication by

SPREP and should be ready by the end of November. Targeted actions such as linked Integrated Coastal and Watershed Management and Oceanic Fisheries Management will require the input of SOPAC to facilitate the management of international waters as a whole.

99. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Habitat.

100. The representative of FSM indicated they were willing to assist JAMSTEC in any way possible with the maintenance of buoys.

101. The representative of Cook Islands endorsed the work of the ocean unit and requested clarification as to why there were no costs allocated. If these were activities being implemented then they should be costed. He also pointed out some confusion and overlap existing in SOPAC's documentation in this area.

102. The representative of Samoa informed TAG that there had been work done in the area of sea-floor boundary delimitation, where FFA in particular had been working for some 6 years.

103. The representative of Canada advised the Secretariat that SOPAC should prioritise its Work Program in this area, warning against dilution of its role or true business.

104. The representative of Australia supported the views of Canada that the Secretariat should focus its efforts on geoscience.

105. The Secretariat pointed out that SOPAC now has observer status on the International Seabed Authority, and the Deputy Director is a participant on the Legal and Technical Commission.

106. The representative of New Zealand referred to Mike Lodge's report (TAG/26/2.3 Paper 1) and addressed the recommendations with regard to SOPAC's role. The question was asked as to whether sea-bed mining was indeed a reality in the near future.

107. The Secretariat gave a summary of points of interest on the current state of sea-bed mining.

108. The representative from Tuvalu asked if the shallow water areas unmapped during the SOPACMAPS program are to be filled in the future as they're crucial for Fisheries Management Programs. In addition Tuvalu requires additional data from deep ocean to assist the country in the identification of mineral deposits located within its EEZ.

109. The representative of IFREMER cautioned that although some of the SOPACMAPS data has been analysed, the reports produced so far are limited in number and superficial in content. There still remains much work to fully utilise this data set.

NATIONAL CAPACITY DEVELOPMENT PROGRAM

Human Resources Development Unit

110. The representative from USP reported that USP and SOPAC have agreed to allow ESMG Certificate program to continue in its current format for one further cycle, which would conclude in the year 2001.

111. The Secretariat provided a commentary on the program and a review of the program is covered in the Director's Report.

112. TAG **recognised** the success of the HRD Unit in the past year, pointing out that 2 Scholarship students had graduated, and 26 Fellowships filled.

113. The representative of Samoa requested that one of the Samoan students, who failed to attend the second year ESMG course, be assured a place on the new intake in addition to the Samoan student already named. The Secretariat agreed to this.

114. The representative of Tonga showed his appreciation for training in the HRD Unit and queried the status of Assistant Training Coordinator post.

115. The Secretariat indicated there was no funding for the post although it was still on the books.

116. The representative of Solomon Islands registered his appreciation of the Training Program, and sought SOPAC's assistance for:

- in-country training in the application of MapInfo, Access and PowerPoint techniques;
- technical report writing course;
- jurisprudence (mineral) course;
- mines Inspectorate training; and
- cartographic and technical drafting training

117. The representative of Vanuatu acknowledged the assistance provided to SOPAC for

short term attachments by ODA and NZ Government.

118. The representative of Tuvalu expressed personal appreciation to SOPAC and to Canada for enabling him to graduate from USP.

119. The representative of USP conveyed to the meeting and offer of assistance by the University to support the Distance Education Training Program of SOPAC.

Information Technology Unit

120. TAG **accepted and supported** the recommendations contained in the report of the STAR Working Group on Information Exchange.

121. The Secretariat presented an overview of the achievements and activities of the Unit and provided each Member Country with a CD, titled SOPACDATA 97, containing new and updated MapInfo datasets that are relevant to the region.

122. The representative of Canada asked TAG to record the outstanding success of the program.

123. The representative of Tonga recommended SOPAC develop GIS data exchange standards for the region and the representative of IOC asked that SOPAC consider using world-wide standards when it does so.

124. The representative of the Cook Islands noted that an in-country GIS/Mapinfo project for the Cook Islands was mentioned in the overview, but was not included in the 1998 Work Program. He requested that it be recorded.

125. The Chair indicated that there was no funding secured for the remote sensing specialist position, and the representative of Tonga questioned whether this position or the Assistant Training Co-ordinator post should be filled.

126. The Secretariat stressed the importance of the remote sensing post.

127. The Chair endorsed the program and congratulated the appropriate Secretariat staff.

Publications and Library Unit

128. The Secretariat presented an overview of the work undertaken by the Unit.

129. The representative of Tonga suggested there would be a significant cost saving if publications were sent to the Secretariat for production rather than to commercial companies.

130. The Secretariat informed the meeting that the Marshall Islands and Vanuatu had already adopted this approach.

131. The representative of Cook Islands requested SOPAC to undertake to print the manganese nodule brochure by Stuart Kingan.

132. TAG commended the Secretariat for efforts at cost recovery to make up budget shortfalls. TAG **recommended** the Secretariat that full cost recovery practices are being used, to insure the SOPAC Work Program does not subsidise external clients. TAG is able to advise in this area.

133. The Chair asked TAG members to volunteer to be technical editors for SOPAC publications and any member interested to leave their names with Techsec before departing the meeting.

134. The representative of Vanuatu requested assistance for printing the Mineral Occurrence Map in Vanuatu.

OTHER MATTERS

135. The representative of IOC presented the status of the International Year of the Ocean (IYO).

136. Recognising that 1998 is the International Year of the Ocean as decided by the United Nations and that UNESCO/Intergovernmental Oceanographic Commission (IOC) is tasked with coordinating the activities and that SOPAC has been designated as the coordinating agency for the South Pacific, and noting that preparations must urgently be made if activities are to occur on time, TAG **recommended** that:

- SOPAC designate a coordinator for the International Year of the Ocean (IYO) who can assist in the region and also input the IOC - IYO home page;
- SOPAC to take a pro-active role in encouraging countries, organisations and other groups to identify and undertake activities supportive of IYO; and
- SOPAC to organise events and activities in the region that will fulfil the objectives IYO

and subsequently increase the profile of SOPAC in the region.

137. The Secretariat informed the meeting that, for their part in the IYO, they will:

- liaise with SPOCC to look at possible regional involvement;
- have the GOOS workshop in February 1998 designated as an IYO activity
- regional Marine Mineral Resources Synthesis activity will be carried by MMTC;
- liaise to make sure as many marine cruises as possible are designated as IYO activities;
- provide assistance to member countries in formulating IYO projects; and
- presentation of IYO awards as a possible incentive.

138. TAG **reviewed and endorsed** its report and invited Council to consider it noting in particular the recommendations.

139. TAG, noting the limited amount of time devoted to TAG involvement during recent SOPAC Annual Sessions, and the continuing desire of Council to receive timely and pertinent technical information from the experts that participate in TAG, TAG **strongly recommended** that at future SOPAC Annual Session adequate time be provided for TAG discussions, that should be scheduled so as to enable member countries to give appropriate consideration to TAG recommendations.

140. TAG, noting the budget constraints that SOPAC operated under with respect to facili-

tating Secretariat services during Annual Sessions and noting the willingness of many TAG representatives to assist SOPAC in Secretariat tasks, such as rapporteuring and editing, TAG **recommended** that selected TAG members be called upon to assist SOPAC in its reporting and documenting duties associated with future SOPAC Annual Sessions.

CLOSING

141. The Chair thanked the Director, Deputy Director, member country representatives, staff of the Secretariat, TAG advisors, observers from many agencies and institutions for their very valuable time and effort at the 1997 Annual Session, and the Government of Fiji for hosting this session of TAG. He hoped that the TAG deliberations and recommendations will in the future assist the member countries in the development of their work programs particularly providing advice that the countries can use in prioritisation. TAG wished the Governing Council a successful meeting. TAG also, in recognition of the contribution made to SOPAC and all its program and activities by the retiring Director, Philipp Muller, wished Philipp a happy and successful retirement. The Director responded, expressing his appreciation of the contribution made to SOPAC by the Technical Advisors and affirmed that their contribution in the future is critical to Geoscience in the region. TAG thanked the rapporteurs for their assistance and efforts. Finally, the Chair declared the session of TAG closed. A vote of Thanks was proposed to the Chair on running an excellent meeting.

APPENDIX 9

LIST OF FUTURE CRUISES

(as at mid October 1997)

Hakurei Maru 2, Guam 17/7/97 – Pohnpei 20/8/97; Pohnpei 23/8/97 – Guam 26/9/97. Japan/SOPAC Cooperative Study Project – bathymetric survey of FSM's EEZ.

Onnuri, Majuro 23/8/97 – Pohnpei 6/9/97. Study of manganese crusts. Chief Scientist: J.W. Moon (KORDI).

Kaiyo, Guam 27/7/97 – Chuuk 11/8/97; Chuuk 13/8/97 – Palau 27/8/97; Palau 29/8/97. Study of climate variability and predictability (CLIVAR). Chief Scientist: Kentaro Ando.

Franklin, Brisbane 9/10/97 – Townsville 3/11/97. PACMANUS IV – Hydrothermal activity, Manus Basin. Chief Scientists: Dr Ray Binns (CSIRO) & Prof. Steve Scott.

Natsushima, Saipan 26/10/97 – Saipan 24/11/97; Saipan 25/11/97 – Guam 9/11/97; Guam 11/11/97. SHINKAI 2000/Natsushima Mariana Arc Cruise. Chief Scientist: Jiro Naka.

Kaiyo, Guam 7/12/97 – Majuro 26/12/97.

Ocean LIDAR – Bio Optical Research. Chief Scientist: Takeshi Kawano. Majuro 31/12/97 – Malakal 3/2/98. Tropical Ocean Climate Study (TOCS). Chief Scientist: Kentaro Ando.

Mirai, FSM 18/3/98 – Sydney 22/3/97. Tropical Ocean Climate Study (TOCS). Chief Scientist: Yshifumi Kroda.

Hakuho Maru, 16/1/98 – 16/3/98, Japan, Cairns, Pohnpei. 3 legs. Ontong Java Plateau. Chief Scientist: A. Taira (University of Tokyo).

Kairei, Yokosuka 6/1/98 – Yokosuka 27/1/98. TRANSPHILIPP '98 Cruise. Chief Scientist: Kantaro Fujioka.

Sonne, HYFIFLUX II Program in Fiji Waters August 98 – October 98. Chief Scientist: Peter Halbach.

Joides Resolution, 4 June 98 – 30 July 98, ODP Leg 180 Woodlark Basin. Co-Chief B. Taylor. 4 August 98 – 29 September 98 – ODP Leg 181 Southwest Pacific Gateway.

APPENDIX 10

1998 WORK PROGRAM

RESOURCE DEVELOPMENT PROGRAM

Mineral Resources Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Sustainable development and utilisation of mineral and aggregate resources in member countries.

Purpose:

Develop resource policy, and advise on the management and development of onshore and offshore mineral and aggregate resources.

Outputs:

- Mineral policy and environmental management plans.
- Regional onshore and offshore mineral databases.
- Mineral and aggregate resource assessments.
- Trained member country individuals.

Activities:

- Draft mineral policy framework and environmental management plans for the mineral sector.
- Develop regional mineral databases.
- Assess and evaluate mineral and aggregate resources.
- Advise on issues of mineral development.
- Conduct in-country seminars.

2. Staffing

Positions	Donor	Status
Marine Geologist	Canada	Secured (to June 1998)
Marine Geologist	Australia	Secured
Offshore Geologist	Japan	Secured
Resource Economist	UK/ODI	Secured
Senior Geological Technician	Australia	Secured
Petroleum Data Manager (Part-time)	Australia	Secured
Resource Economist	Australia	Unsecured

3. Key Tasks 1998

3.1 Advisory Assistance for Mineral Development

Several of the 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 the assistance with advice and specialist training in the following activities.

Fiji: (FJ98.26) Aeromagnetic survey-development technical input to a promotional brochure.

A multi-million dollar aeromagnetic survey, funded by Australia is expected to generate huge interest in mineral exploration in Fiji. In order to maximise the impact and the publicity of the data, Fiji Government plans to produce a promotional brochure and has asked for SOPAC's assistance. The information derived from the aeromagnetic study will also assist various departments of government and the wider community in developing strategies for national resource development and environmental management. SOPAC assistance for technical input has been requested.

Solomon Islands: (SI98.XX) Mineral Development Policy.

To assist in the development of a mineral resources policy for the Solomon Islands. The weak mineral industry in the past did not justify the establishment of a national mineral resources development policy. But with the recent development of Gold Ridge Mine and the

granting of numerous exploration licences, the need for a mineral policy has become essential.

Kiribati: (KI97.01) Assessment and market study of gypsum and phosphate on an ongoing basis.

Kiribati has known occurrences of gypsum and phosphate. 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. Recently, there has been renewed interest in the mining of phosphate in Kiribati and SOPAC has been requested to offer advisory assistance in this area.

Cook Islands: (CK97.01) Assessment of manganese nodules potential.

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.

3.2 Evaluation of Placer Gold Potential and Environmental Assessment

The South Pacific Islands contain several of the world's largest epithermal gold and gold porphyry systems in the world, many of which occur near or on the coast. Undoubtedly, erosion has removed large quantities of gold to rivers and nearshore environments, therefore, it is not unreasonable to postulate that large gold placers associated with these onshore deposits might occur as typical beach and offshore placers in the region. If discovered, placer gold mining has the most promise for early return for the dollar, especially for the island nations.

Fiji: (FJ98.17) To oversee and supervise an onland geophysical survey at Tavua to define drill targets for placer gold.

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 this. A geophysical survey is planned which will assist in the definition of drill targets.

Fiji: (FJ98.28) Baseline data collection for environmental assessment at the Yanawai River

Recently there has been concern by landowners on the effect of mining at Mt Kasi on the

Yanawai River and coastal environment. Reported fish kills in the river are alleged to have been the result of pollution from the mine. To date there is little baseline information to support these allegations. SOPAC will carry out a survey to determine water quality, current circulation patterns, bathymetry, and sub-bottom structure.

3.3 Onland Mineral Evaluation and Assessment

The larger SOPAC member countries, Papua New Guinea, Solomon Islands, Vanuatu and Fiji contain several of the world's largest epithermal and porphyry systems. Although, some deposits are well known, there are numerous lesser known occurrences that have equal or better potential. Collection of base information through preliminary investigations and data compilation are essential to promote lesser known deposits so as to attract potential investors.

Solomon Islands: (SB98.24) Assistance in Mining Tenement information preparation

Provision of mineral exploration prospecting information to potential investors has been slow and tiring. Co-ordination and administration of mineral tenement information becomes difficult with the current manual system. A computerised system is preferred. The task objective is to assist in establishing an organised mining tenement and information system for quick processing and provision of information to possible mineral investors and to the public.

Solomon Islands: (SB98.23) Assistance in Geological & Mineral Resources Geodata Base

A great number of geological and mineral exploration reports, maps etc, have been produced by governmental & research organisation and exploration companies during the past years. These reports are uncatalogued and disorganised, and currently are very difficult to retrieve and locate in appreciable time. For easy access and to ensure facilitation of geodata retrieval, an organised, computerised, geodata base system needs to be established.

Vanuatu: (VA97.12) Geophysical survey on Eastern Santo

With supervisory and training assistance from SOPAC, the Department of Geology, Mines and Water Resources recently completed a mobile metal ion geochemical survey over an aeromagnetic anomaly on Eastern Santo. The results of the survey identified three target areas that warrant follow-up work. A ground magnetometer survey was recommended prior

to any expensive program such as drilling. The Vanuatu government has again requested supervisory and training assistance from SOPAC for such a survey.

Regional: (RP98.24) Minerals Regional Database
Continue to seek the integration of all existing information on the geology and known mineral occurrences to include in the minerals database. It is anticipated that discussions with UNCTAD will be held with a view to organising training courses on policy issues including negotiations with the private sector.

3.4 Mineral Policy Development and Legislation

ONLAND

Fiji: (FJ98.25) Economic and environmental assessment of aspects of the Tuvatu Gold Prospect.

The Tuvatu Gold Prospect is expected to be the next major mine in Fiji. Early indications are that Tuvatu will be an underground mine producing over 100,000 oz of gold per annum. The exploration company has embarked on a ambitious F\$10 million exploration program to get the project to a bankable feasibility stage by March of 1998. SOPAC will provide assistance with aspects of the economic and environmental impact assessments.

Solomon Islands: (SB 97.13) Gold Ridge Mine

A mining lease for mine development was granted to Ross Mining in March of 1997. The A\$70 million dollar mine is expected to produce 100,000 oz of gold annually and have a mine life of ten years. SOPAC has been requested to provide ongoing assistance during mine lease negotiations and development.

Niue: (NU98.13) Mineral potential and policy development assistance

Recently there have been indications that some raised atolls may have mineral potential such as gold and copper beneath the limestone cover. In Niue, a prospecting license was issued to a mining company to prospect for minerals some years ago. Niue has requested assistance in reassessing the mineral potential and developing its mineral policy.

Cook Islands (CI98.XX) Manganese Nodule Strategic plan

Manganese nodules rich in cobalt occur in the Cook Islands EEZ. With the recent demand and high price of cobalt, the possibility of mining

nodules has become a strong consideration for the Cook Islands Government. The request to assist in the preparation of a short-, medium- and long-term strategic plan for development of the resource has been made by the Cook Islands Government.

Regional: (RP98.25) Mineral Resource Policy Formulation and Implementation

Exploration activity in the region continues to be vigorous with an estimated A\$30 million being spent in exploration. For mine development, in the next three years, at least three mines are expected to be developed in the region with an access of A\$200 million being invested by mining companies.

As a consequence of such development the need for sound resource policy formulation and implementation has become a matter of urgency for several of the SOPAC member governments. SOPAC will assist in the preparation of mineral policy statements and review existing legislation.

OFFSHORE

- Provide a regional advisory service or a forum for the development of minerals and mining legislation, particularly offshore minerals legislation as presently required by Papua New Guinea.
- Develop or provide access to a database of regional and international minerals and mining legislation and produce specialised studies in order to assist member countries in the development of national legislation.
- Assist member countries access legal advice and necessary assistance in the negotiation of exploration and mining contracts etc.

3.5 Aggregates

For many of the SOPAC member countries, the sustainable development of sand and aggregate deposit is a priority activity. Also associated with this is the surveying assessment of lagoon resources as an alternative to beach mining.

Fiji: (FJ98.30) Assessment of alternative lagoon sand resources, for a primary industry Laucala Bay, Namuka Bay

Carbonate sand is mined from the back reef slope of the barrier reef to extract lime which is used to produce Portland cement for the construction industry, lime for fertiliser in the sugar industry, and use in the leaching process in the gold industry. Current resources are

estimated to have a 3 to 5 years life span. To ensure resource sustainability and compliance with new environmental legislation to be introduced in 1998, new resources need to be mapped and approved for exploitation to ensure smooth transition and survival of the industry. SOPAC assistance has been requested.

Marshall Islands: (MI97.02) Assessment of alternate aggregate resources, Majuro Lagoon

Work to date has delineated several resources of sand and gravel within a 15 kilometre radius of Delap, Uliga and Darriet DUD the main urban centre of Majuro. As yet no resources have been identified in Laura some 30 kilometres from Western Majuro. With major road construction works being implemented under external funding in the future, additional resources in the west are required and SOPAC assistance in identifying such resources has been requested.

Tonga: (TG97.01) Assessment of marine aggregate resources and sand mining in Vava'u.

Sand mining in the tidal zone adjacent to Holeva currently supplies Vava'u with construction material. A limited resource and due to its nature is not sustainable. Mapping of the deposit by SOPAC has been done to develop a mining strategy to allow for site rehabilitation. Future supplies of sand and gravel aggregates must be sourced from the marine environment if supplies are to be sustainable. Further bathymetric, and geophysical mapping of these deposits are required by SOPAC to assess the resource quantity and quality, and identify the best means in which to extract it.

Federated States of Micronesia: (FM98.18) Assessment of marine aggregate resources and sand mining

Within Pohnpei the state EPA is the regulatory body which approves sand and aggregate mining permits. Current studies have been implemented and are to continue in 1998 to develop guidelines for implementation into legislation for marine aggregate and sand mining as Pohnpei State is divided into several municipalities and to date marine sand resources have only been identified in one. Requests to EPA to approve permits for marine sand mining in other municipalities is pending identification and mapping of these prospects. SOPAC has been requested to oversee the work to be carried out prior to preparation of new legislation.

New Caledonia: (NC98.09) Assessment of sand resources

New Caledonia seeks assistance with carrying out shallow water seismic surveys for sand resources assessment within the southern lagoon.

SOPAC continues to work with other organisations and institutions to resolve the problems of inadequate supply of sand and aggregates for infrastructural development, coastal protection and beach maintenance. Project proposals are being developed with Marine Minerals Technology Centre of Hawaii and the British Geological Survey of UK. Linkages are also likely to be developed with IFREMER (France) and UNESCO/CSI.

3.6 SOPAC-Japan Deep Sea Co-operative Minerals Program

Review and pass on the results of the cruise of the Hakurei Maru No. 2 in the Federated States of Micronesia EEZ in 1997. This was carried out as part of the third year of activities of the 3rd SOPAC/Japan Co-operative Deepsea Minerals Program. In the third quarter of 1998 under the SOPAC/Japan program, it is planned that the Hakurei Maru No. 2 will carry out a further cruise to assess the potential of submarine mineral resources within the Exclusive Economic Zones of the Federated States of Micronesia and the Marshall Islands to:

- evaluate possible manganese crust and nodule deposit sites,
- collect detailed mapping, sampling and classification of seamounts in addition to assessing the areal extent of the manganese crusts and nodules with high accuracy,
- produce detailed bathymetric maps of the seafloor and seamounts, and
- produce detailed mapping, morphological study of seamounts.

3.7 Deepsea Mineral Databases and Mapping

SOPAC will continue to maintain and expand deepsea mineral databases (especially for manganese nodules, cobalt-rich crusts, metalliferous sediments and hydrothermal minerals), compile and publish regional maps as required.

SOPAC will also continue to assess database and review mineral potential of the surveyed area with a view to formulating programs for future work in the EEZs of member countries. Initially seek funding for the assessment of the Eastern Kiribati EEZ.

Kiribati: (KI98.20) Manganese Nodules Assessment

To assess and update information on manganese nodules in the Kiribati EEZ. The work is

anticipated to be conducted in collaboration with Dr Cronan of Imperial College, London.

3.8 Seafloor Surveys of Structures with Hydrocarbon Potential

SOPAC will maintain a watching brief on off-shore cruises in the region with the view to encouraging the collection of seismic records and if possible the collection of seafloor samples over potential hydrocarbon structures identified on old seismic records.

3.9 Retrieval of Seismic Tapes, Maintaining Availability, and Updating of Data for Hydrocarbon Assessment and Promotion of Data Packages to the Oil Industry

Work planned for 1998 includes:

- Updating of the Petroleum Data Catalogues for Solomon Islands, Vanuatu, Fiji and Tonga will continue. These catalogues supplement the glossy brochures covering the petroleum prospects of the island nations.
- 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.
- Complete the updating of the hydrocarbon display to take into account new information and display material now available. This will greatly improve the presentation of information at oil conferences. This work began during August and September 1997 and is being undertaken by Dr Patrick Coleman and Peter Butler at AGSO in Canberra.

Water Resources Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Sustainable development and utilisation of water resources in member countries.

Purpose:

Meet the needs for water resources, waste management, health and sanitation through the

provision of resource policy and management advice, appropriate information and training.

Outputs:

- Strategic sectoral plans.
- Assessment of water resources.
- Development of water resources.
- Advice on sanitation and water resource management.
- Trained member country individuals.

Activities:

- Review and revise member country Master Plans for water resource development.
- Collect, assess, and analyse selected information on water resources, sanitation and waste management.
- Evaluate existing water supply and sanitation systems.

2. Staffing

Positions	Donor	Status
Environmental Engineer	Various	Probable
Hydrogeologist	CFTC	Secured
Hydraulic Engineer	UN	Secured
Hydrogeologist	UN	Secured

The Water Resources Unit will also have staffing support from the Distance Education/ Training Coordinator who is also a hydrogeologist.

3. Key Tasks 1998

3.1 Develop Project Plans with Member Countries.

In consultation with member countries, prepare project proposals to improve sector performance and delivery of water and sanitation services.

Marshall Islands: (MH98.18) Water and Sanitation Program

Visit Marshall Islands to discuss recommendations made in the Water Sector Action Plan

(SOPAC Technical Report 236) with government officials. Selected water sector recommendations will be developed into proposals to seek bilateral funding.

Solomon Islands: (SB98.17) Water and Sanitation Program

Visit Solomon Islands to review and discuss existing data collection system. Carry out on site staff training and collect data on mining and waste disposal activities that may affect groundwater quality. Recommendations will be made for groundwater quality investigations.

Tuvalu: (TU98.12): Upgrade Water Sector Plan

Visit Tuvalu to review existing water and sanitation documents and inspect existing facilities. This will result in a Water and Sanitation Plan that identifies projects to improve water and waste disposal facilities.

Vanuatu (VU98.xx) Technical Assistance

Provide technical assistance to monitor possible effects of mining on water resources.

New Caledonia: (NC98.10) Assistance in Water and Sanitation

New Caledonia is seeking SOPAC's assistance with water and sanitation activities.

3.2 Implement priority activities in participating countries

Cook Islands: (CK98.06) Groundwater investigations

Visit Rarotonga to undertake groundwater investigations to assess potential use in order to supplement existing surface water resources.

Kiribati: (KI98.??) Water Resources Study

Assist in assessing the water resources of Ocean Island (Yet to be confirmed by Kiribati).

Tonga: (TG98.??) Technical Assistance

Assessment of water resources on an outer island with potential for tourism development. (Yet to be confirmed by Tonga).

Samoa: (WS98.??) Savai'i Water Resources Survey

Visit Samoa and undertake preliminary water resources survey of the island of Savai'i in conjunction with the Apia Observatory and the Water Authority. On-site training of staff.

Federated States of Micronesia: (FM98.17) Rural Water Supplies

Visit the Federated States of Micronesia to discuss existing rural water supply problems.

Collect relevant data and prepare feasibility/design reports.

Fiji: (FI97.13) Water Resources

Assist MRD with groundwater assessment and development and PWD with related water sector activities as required.

3.3 Regional Tasks

Demand Management and Conservation

Surveys will be conducted in Kiribati, Tuvalu, Tonga, Samoa and Solomon Islands to assess the water usage and losses. Outputs will focus on recommendations to reduce water wastage through physical and educational means.

Small Scale Wastewater Treatment Facilities

Appropriate wastewater treatment technologies will be identified to accommodate small groups of dwellings in Fiji, Marshall Islands and Tonga.

Development and application of national water resources databases [requires funding]

Assist with the development and application of national databases for the long-term storage of water resources and related information by building the capabilities within member countries and providing technical support and backup facilities.

Modelling of freshwater lens systems

Promote the development of guidelines for small island freshwater lens system development and management through appropriate groundwater modelling studies.

3.4 Develop a Regional Database System for Member Countries to Store and Retrieve Water and Sanitation Information

Select and establish an appropriate database system to enable **all member countries** to store various types of water and sanitation information. Continue to develop and disseminate information through the virtual library and the small island water information network (SIWIN) that is scheduled to be established at SOPAC. Provide training to use the database system. Provide a regional archive to store individual country information as a backup copy.

3.5 Continue Water Sector Training Activities.

Providing hydrology and hydrogeology inputs to Certificate in Earth Science and Marine Ge-

ology course and assisting USP with degree courses containing water sector components. Support other training activities through fellowships and organising workshops and seminars on Demand Management and Conservation (RP98.22), Driller Training (RP98.23) and Technologies for Augmenting Freshwater Resources in Small Island Developing States. (Workshops and seminars all require funding)

Provide on-site training when visiting **member countries**.

3.6 Foster Closer Cooperation and Collaboration Among Countries, SOPAC, Donors and Other Agencies.

Water and Sanitation Coordinating Centre

Continue to act as coordinating centre for water and sanitation activities in the region. Develop plans for appropriate programs on relevant activities with SPC (health & sanitation), SPREP (solid waste management), WHO, UNDP, UNICEF, UNEP and WS&S Collaborative Council. Disseminate information on water related activities within the region and relevant activities outside the region via a regular newsletter for member countries and interested agencies

Provide technical support

Implement project proposal plans and provide technical support for in-country water and sanitation activities (Regional Project).

Assistance to Private Sector & Utilities

Provide support as Interim Secretariat until the Pacific Region Water and Wastewater Utilities Association is fully operational (Regional Project).

3.7 Develop a Regional Funding Structure to Support the Water and Sanitation Sector Activities at SOPAC

Consult with bilateral, multilateral and other donors active in the water and sanitation sector for support for the technical assistance and resource unit at SOPAC beyond 1997, for example: UNDP, Commonwealth Secretariat, EU, UNESCO (IHP), UNEP, ADB and UNDP/World Bank Water and Sanitation Program.

Energy Unit

1. Goal, Purpose, Outputs & Activities

Goal:

To strengthen the energy sector in member countries through activities which can best be carried out at a regional level.

Purpose:

To support the information requirements and enhance the skills required for management and operation of the energy sector in member countries. This Energy Program complements the EU-funded Pacific Regional Energy Program (PREP).

Outputs:

- Improved capacity of governments and energy sector agencies to decide on energy supply and conservation options.
- Improved capacity of power utilities in business management and technical and operational areas.

Activities:

- Small energy projects program.
- Policy and technical advice.
- Training and technical assistance.
- Pilot-phase joint implementation program.
- Pacific-Danish environmental education and action program.
- Pacific Regional Energy Project (PREP).

2. Staffing

Positions⁽¹⁾	Donor	Status
Energy Advisor	New Zealand	Probable
Renewable Energy Advisor ⁽²⁾	New Zealand	Probable
Program Support Assistant	Unknown	Probable

⁽¹⁾ Australia and NZ will determine whether they provide funding support for these positions following their consideration of the findings of the review of the Energy Program undertaken during June/July 1997.

⁽²⁾ Partial funding of this Renewable Energy Adviser position may be available from Denmark as part of the proposed Pacific-Danish Environmental Education & Action Program.

3. Key Tasks 1998

3.1 Small Energy Projects Program

Administer on-going projects and assist countries in developing and implementing new projects in a range of energy sector areas including renewable energy technologies and energy conservation (**All member countries**).

3.2 Policy and Technical Advice

Provide policy advice and training in appraisal techniques and financial/economic analysis for proposed projects. Monitor, analyse and distribute information on economic and technical performance of a range of energy supply technologies used in the region. Provide in-country follow-up training and advice on the national energy supply/demand databases and data collection as required (**All member countries**).

3.3 Training and Technical Assistance

Provide support for training attachments and small-scale consultancies to meet particular energy sector needs. Provide selective support for non-ACP utility involvement in PREP extension activities (**All member countries**).

3.4 Pilot-phase Joint Implementation Program

Coordinate and administer the implementation of the two projects (grid-connected photovoltaics and demand-side management) funded under this Program by the Australian Department of Environment, Sport and Territories (**Fiji, Solomon Islands**).

3.5 Pacific-Danish Environmental Education and Action Program

Coordinate regional aspects of the renewable energy component of this Program for which the Danish Government has approved funding in-principle. A final decision on funding will be subject to the Danish Government's response to the findings of a feasibility study conducted during June/July 1997. Regional aspects of the first phase of the Program include installation of windloggers, training in wind energy assessment, seminars on wind energy and electrification of outer islands, and preparation of an

inventory of experiences with energy-efficient and renewable energy technologies (**Fiji, Tonga, Vanuatu, Cook Islands, Niue** for wind-specific activities; **all member countries** for general rural electrification and renewable energy activities).

Cook Islands: (CI97.17) Wind Energy

Assess geotechnical aspect of the proposed construction of a model wind turbine site. This includes investigations and recommendations for the foundation of the wind turbine, the planning of access roads and environmental issues.

3.6 Pacific Regional Energy Project (PREP)

The SOPAC Energy Unit is expected to continue to work closely with the EU-funded Pacific Regional Energy Project (PREP).

ENVIRONMENTAL SCIENCE PROGRAM

Coastal Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Improved management of the coastal zone of member countries for preservation and sustainable development.

Purpose:

Assist decision-makers and planners to develop coastal zones and extract resources while protecting coastal zones from degradation.

Outputs:

- Coastal process evaluation and assessment.
- Coastal environment and resource assessment maps.
- Coastal baseline studies.
- Coastal hydrodynamic models.
- Sediment budget analyses.
- Trained member country individuals.

Activities:

- Collect, assess, and analyse information on coastal, oceanic and atmospheric processes.
- Plan and conduct bathymetric and marine geophysical surveys.
- Monitor beach erosion.
- Model coastal circulation and sediment transport.
- Construct storm surge numerical models from available data.
- Investigate climate variations and geological causes leading to sea-level rise.
- Train member country professionals in coastal assessment and management techniques.
- Advise on best-practice coastal management procedures.

2. Staffing

Positions	Donor	Status
Coastal Geologist	China	Secured
Coastal Geologist	CFTC	Recruiting
Computer Geologist	France	Secured
Electronics Engineer	RB	Secured
Electronics Technician	Australia	Secured

It is envisaged that during the year, the Computer Geologist will transfer to the Information Technology Unit; likewise the GIS Manager should funding be secured. All remote sensing and GIS general tasks for 1998 are therefore in the Information Technology Unit.

3. Key Tasks 1998

3.1 Coastal Management

General sedimentological mapping of the coastal zone is a valuable tool in defining coastal problems, and often produces qualitative answers to the management of problems such as coastal erosion, and pollution. The study of aerial photography is commonly used as a tool to extend the time-base of observations made during field mapping surveys. Mapping for coastal management purposes are planned as follows:

Tuvalu: (TU98.13) Coastal Erosion and Coastal Management Studies

A briefing session is planned in Funafuti with government and non-government personnel on the outcomes of the work recently completed on Fongafale, Amatuku, Vaitupu and Nukufetau. Following this activity, future work will be planned as necessary.

Federated States of Micronesia: (FM97.01) Baseline coastal mapping to assist with developing Aggregate Mining Legislation in Pohnpei

Extraction of well-graded aggregate for random fill and road works has caused severe disruption to parts of the coastline of Pohnpei. The aggregate is won by progressive dredging and simultaneous construction of a bund wall. The result is an enclosed, over-deepened water body, cut off from normal tidal circulation, and with vastly altered water quality. Baseline mapping will be carried out preparatory to rehabilitation of these bunded areas.

Cook Islands: (CK97.14) Coastal Mapping to assist with development of a Strategy for Foreshore Protection and Development in Rarotonga and Aitutaki

Coastal mapping will be carried out in critical tourist areas of Rarotonga in order to determine sediment budgets for those areas, and support the development of strategies for foreshore development and protection. The mapping will supplement previous work carried out by SOPAC and others.

Niue: (NU97.02) Coastal Geomorphology Map

A hand drawn coastal morphology map was prepared by SOPAC in 1995-1996. It would be beneficial to extend the existing coastal mapping by adding electronic database, mainly via survey, remote sensing and airphoto interpretation, to include data on geomorphology, geologic structure, reef/erosional terraces and marginal platform characteristics, offshore bathymetric data as it becomes available, metric height contours onshore, physical information and anthropogenic features.

Federated States of Micronesia: (FM98.19) Coastal Erosion Studies in Chuuk and Yap

Several of the outer atoll islands of Chuuk and Yap States are experiencing coastal erosion. Planning will begin during the coming year to establish whether critical sites can be visited during a 2-3 week cruise using a vessel to be made available by Government.

Samoa: Coastal Geomorphological Map of Savai'i
Assistance was requested with the production of a coastal geomorphological map of Savai'i, noting that this could likely be carried out in conjunction with the compilation of a volcanic hazards map (WS98.14).

Federated States of Micronesia: (FM97.15) Impact of the Airport Runway and Borrow Pits on Reef Flat on Coast of Chuuk

Over one and a half million cubic metres of fill was dredged from the coastal flat and deposited nearby to construct the Chuuk airstrip. The borrow pit and the runway itself are continuing sources of concern, suspected of promoting coastal erosion in the area. Coastal mapping, current measurements and examination of past sand movement using aerial photos will be carried out to assess the impacts of these engineering works on the natural coastline.

Federated States of Micronesia: (FM97.14) Coastal Erosion and Management of Yap

The removal of mangroves in the past on the southern shore of Yap Proper, and the dredging of aggregate for road fill, has promoted the formation of a deep channel along the shore. Causeway construction further to the west has caused sand accumulation locally but is thought to be promoting erosion further down the coast. Coastal mapping will be carried out in both areas to assess the impact of these earlier engineering works.

3.2 Marine Geophysical Surveys

Although SOPAC's marine geophysical capability is located administratively within the Mineral Resources Unit, marine surveys are carried out for the Coastal Unit where appropriate. The marine geophysical team is able to carry out detailed, continuous bathymetric and seismic reflection profiling, as well as sediment sampling, current measurements and temperature-density-salinity spot profiles. Several requests have been received from **member countries** for specific investigations related to commercial or research projects.

Kiribati: (KI98.18) Offshore Bathymetry South Tarawa

An international study is currently underway into improving the sewerage outfalls of South Tarawa. Part of this study involves numerical modelling of the pattern of currents around the outfalls, and, in this way, the distribution of pollutants along the coast. A critical element for the modelling; the detailed bathymetry off-

shore of the outlets is lacking and SOPAC has been requested to conduct a survey to provide this important input. Funding for the project will be wholly external.

Niue: (NU97.01) Niue Wharf Extension Study

In order to make the Niue Wharf operationally safe during rough weather, a proposal has been put forward to extend the wharf 20 m seaward. Damage to the wharf structure during a recent exercise to deepen the approach channel underlines the need for a thorough study of the proposed extension for which SOPAC will provide assistance.

Fiji: (FJ98.23) Sigatoka Sand Dunes Area Investigation

The National Trust of Fiji has requested a geophysical survey around the mouth of the Sigatoka River in order to answer questions for a National Heritage project related to early human settlement in this area. Funding for the proposed project will be obtained through the National Trust.

Fiji: (FJ98.24) Volumetric Survey of Monasavu Lake

The operators of the Monasavu Reservoir, FEA, have requested a further volumetric assessment of the reservoir to estimate water reserves there in view of continuing siltation from rivers feeding the dam. Funding for the project will be obtained through FEA.

Samoa: Savai'i marine geophysical study

A SOPAC-NZOI study on aggregate resources was completed in 1989. Follow up work has been requested on the northern and eastern side of Savai'i.

3.3 Sediment and Circulation Studies

The Coastal Unit in the past has carried out sedimentation and circulation studies in discrete areas of lagoons, but has lacked the capability to examine whole lagoons as entire, interactive systems. The only way to achieve the goal of examining contemporaneous changes over bodies of restricted waters that have areas of some hundreds of square kilometres, is to use numerical circulation modelling techniques. Monitoring of ocean and lagoon physical and chemical parameters is an important key to promoting successful maricultural enterprises in the lagoons of atoll countries and improve balance of trade.

Studies of coastal erosion and sedimentation of channels or boat-access points, also require data such as beach and nearshore profiles,

taken repeatedly over a long period, to be able to assess the likely causes of sediment movement. The data can be incorporated into, or used to check the validity of, numerical models of sediment movement. MIKE 21 hydrodynamic modelling software is designed for use in predicting the movement of mud or sand-sized sediment under a wide variety of circulation regimes. Once a regime of erosion and/or sedimentation has been established the effects of the phenomenon on specific engineered coastal structures or coastal development can be analysed within the Hazard Assessment Unit

For **Tuvalu, Kiribati and Marshall Islands**, SOPAC will continue its collaborative project with the Victoria University of Wellington directed at understanding the biological aspects of carbonate sediment budgets. In addition the preparation of a booklet similar to *Coasts of Pacific Islands* entitled "Pacific Islands and Carbonate Sediments", is planned.

Vanuatu has funding from ADB to carry out an urban infrastructure study in Port Vila and Luganville and SOPAC is likely to be asked to carry out circulation studies on a cost-reimbursable /contract basis.

Solomon Islands: (SB98.20) Marovo Lagoon Risk Assessment

Following completion of the Honiara chapter of the Pacific Cities Project, the focus of attention will move to Marovo Lagoon where mining and logging activities threaten to clash with plans to register Marovo as a World Heritage Area. The proposed project will use the experience gained in developing GIS databases for major Pacific Cities to provide a complete database aimed to be used as a planning tool to assist complementary development of resource utilisation and preservation areas.

3.4 Storm Surge Modelling Studies

A storm surge is a short-term rise in sea level associated with intense low-pressure weather systems like cyclones. The extent and height of a storm surge is strongly influenced by the bathymetry of the coastal shelf area onto which it encroaches, and by partially-enclosed embayments in the coastline. While the investigations of the Coastal Unit will focus on describing nearshore bathymetry and coastal morphology aspects, the study of storm surges is closely linked to the behaviour and path of the associated cyclone and, as such, will require close co-operation with the South Pacific Tropical Cyclone Warning Service Upgrade Project of the Regional Special Meteorological

Centre in Nadi, and the Flinders University National Tidal Facility in Adelaide. The combined data will be modelled numerically using MIKE 21 hydrodynamic modelling software, amongst other tools. The resulting scenarios can then be incorporated into the GIS databases and, ultimately, the risk assessments produced by the Hazard Assessment Unit.

3.5 Sea-Level Rise Studies

The US Country Studies Program has funded a study of sea-level rise due to global warming in Fiji on the vulnerability of Suva, and a smaller study in Kiribati on the vulnerability of the most densely populated part of Tarawa. SOPAC was subcontracted by each of the respective countries to carry out these studies on their behalf. The Coastal Unit has the technical expertise and support necessary to conduct quantitative assessment of sea-level rise scenarios, and analyse community vulnerability in conjunction with the GIS database and numerical modelling capability of the Hazard Assessment Unit.

Collaboration with SPREP on the implementation of the PICCAP Project is anticipated.

3.6 Climate Change and Coastal Erosion Studies

Studies of the El Niño phenomenon have advanced rapidly over the last couple of years. Comparisons of erosion patterns with the El Niño patterns have indicated that the two may be intimately linked, at least in some areas of the Pacific. Certainly, recent SOPAC studies have shown that erosional and depositional areas on the beaches of South Tarawa alternate in phase with fluctuations in the Southern Oscillation Index.

SOPAC will continue beach monitoring of coastal erosion sites as requested. Likely ones are the Laura and DUD areas of Majuro, **Marshall Islands**, Kosrae in the **Federated States of Micronesia** and South Tarawa in **Kiribati**.

3.7 Collaboration with other agencies

During the coming year it is anticipated that SOPAC will continue to develop and strengthen linkages with other agencies as follows:

- Evaluation and use of Synthetic Aperture Radar (SAR) Imagery with the Jet Propulsion Laboratory, Pasadena.

- Evaluation of the use of satellite imagery (SPOT) for lagoon bathymetric mapping with SPT-IFREMER.
- Developing methods for monitoring reef bleaching and community structure using remotely-sensed data with the University of Waterloo.
- Developing coastal defence strategies on lowlying tropical islands in collaboration with the British Geological Survey.
- Evaluation of possible use of Laser Airborne Depth Sounder (LADS) for use as a tool to assist in shallow water bathymetric surveys with LADS Corporation Australia.

3.8 Development of a Shallow Water Swath-Mapping Capability

High-resolution swath mapping, using multibeam echo sounders, is able to delineate a complete underwater landscape in a fraction of the time that is currently required by the single beam echo sounder, and with greater accuracy. Swath mapping has the potential to enhance the management of Pacific atoll lagoons and provide significant benefits to Pacific island peoples in terms of successful and cost-effective development projects.

As part of its brief, SOPAC carries out detailed bathymetric mapping for developments in lagoons and harbours, and surveys for pipeline routes and other coastal engineering projects. New developments in computer technology have brought the benefits of high-resolution swath mapping within the capabilities of small to medium operators like SOPAC. The Coastal Unit is working to acquire swath-mapping equipment in order to cut operating costs and time, and to achieve higher accuracy and coverage in shallow marine investigations.

Hazard Assessment Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Minimisation of human and economic losses and damage and safer and more cost-effective development and utilisation of the man-made and natural environments.

Purpose:

Predict the effects of hazards on the health, wealth and development potential of member countries.

Outputs:

- A regional scientific GIS hazard database to facilitate development planning, decision-making and risk assessment at the national level.
- Risk assessments for specific areas and given disaster scenarios.
- Advice to national planners on the potential impacts of oceanic and coastal processes on development.
- Newsletter for dissemination of up-to-date information on hazards and community risk.
- Trained member country individuals.

Activities:

- Collect, assess, and analyse information on coastal, oceanic and atmospheric processes where appropriate to hazard assessment.
- Model and forecast the effects of natural and man-made hazards on the built environment and socio-economic framework.
- Develop and provide a GIS database to support decision-making for physical development planning and disaster mitigation.
- Train member country professionals in risk assessment and analysis techniques.
- Advise development organisations on potential impacts of environmental hazards, and oceanic and coastal processes.
- Advise planners on the physical impediments to and risks inherent in development, and on related mitigation strategies.

2. Staffing

Positions	Donor	Status
Coastal Engineering Geologist	CFTC	Secured
Engineering Geologist	Korea	Recruiting
Technical Support Assistant	Australia	Secured

3. Key Tasks 1998

3.1 Risk Assessment and Response Planning for Coastal Hazards

Coastal hazards include sea-level rise, erosion, earthquakes, tsunamis, landslides, volcanoes, storm surges and cyclones. These hazards, and the attendant risks affecting major development areas, are addressed through a series of work programs including hazard assessment studies, earthquake microzoning studies, community asset surveys, tsunami modelling studies, and the analysis of risk in various hazard scenarios. The key to these studies is the accumulation of all appropriate data on a single GIS database for each study area, and utilisation of the GIS capabilities to analyse risk, based on various scenarios generated through numerical modelling.

Four major areas currently being addressed are identified below:

- Pacific Cities Risk Assessments
- Earthquake Microzoning Studies
- Surveys of Community Assets
- Volcanic Hazards Mapping

PACIFIC CITIES RISK ASSESSMENTS

The aim of the Pacific Cities project is to assess risk from all hazards in selected major cities of the Pacific.

The project seeks to connect AGSO's Cities Project (National Geohazards Vulnerability of Urban Communities) based in Brisbane, with SOPAC's original (but more limited) Pacific Geo CitiPlan, so that duplication of effort is avoided, and so that the latter can eventually take advantage, through collaboration and training, of methodologies being generated by the former.

Close links will also be developed between in-country and international meteorological agencies. Key amongst these will be the Flinders University National Tidal Facility in Adelaide, and the South Pacific Tropical Cyclone Warning Service Upgrade Project which complements the Regional Special Meteorological Centre in Nadi, where Fiji plans to take on a much more prominent role in meteorological predictions in the Pacific region.

Pacific Cities is primarily concerned with the co-ordination of sub-projects, collection of data

from different sources and projects and the entry of data onto a common GIS database.

Fiji: (FJ98.18) Suva Pacific Cities Risk Assessment

The Suva chapter of the Pacific Cities Project provides the over-riding co-ordination on other hazard projects carried out by SOPAC in Suva city and harbour. The project also seeks to draw on, and fit with, current initiatives of the Fiji Government, and existing external projects such as the ORSTOM-USP Suva Lagoon Ecotrope Project and the Suva Vulnerability and Adaptation to Sea-Level Rise Study, in order to develop a truly global hazards database for Suva.

Papua New Guinea: (PG98.11) Lae Pacific Cities Risk Assessment

The Lae chapter of the Pacific Cities Project provides the over-riding co-ordination on other hazard projects carried out by SOPAC in Lae city and harbour. The project also seeks to draw on, and fit with, current initiatives of the PNG Government, and existing external projects, in order to develop a truly global hazards database for Lae. At present, for this project to proceed, external funding will be required.

Samoa: (WS98.13) Apia Pacific Cities Risk Assessment

The Apia chapter of the Pacific Cities Project provides the over-riding co-ordination on other hazard projects carried out by SOPAC in Apia city and harbour. The project also seeks to draw on, and fit with, current initiatives of the Samoa Government, and existing external projects, in order to develop a truly global hazards database for Apia. At present, for this project to proceed, external funding will be required.

Solomon Islands: (SB98.19) Honiara Pacific Cities Risk Assessment

The Honiara chapter of the Pacific Cities Project provides the over-riding co-ordination on other hazard projects carried out in Honiara city and harbour.

Tonga: (TO98.20) Nuku'alofa Pacific Cities Risk Assessment

The Nuku'alofa chapter of the Pacific Cities Project provides the over-riding co-ordination on other hazard projects carried out in Nuku'alofa city and harbour.

Vanuatu: (VU98.18) Port Vila Pacific Cities Risk Assessment

The Port Vila chapter of the Pacific Cities Project provides the over-riding co-ordination on other

hazard projects carried out in Port Vila city and harbour.

Vanuatu: (VU98.19) Luganville Pacific Cities Risk Assessment

Following completion of the Port Vila chapter of the Pacific Cities Project, the focus of attention will move to Luganville where critical port and export facilities are at risk, particularly from the high level of seismic activity in this area. Currently no funding has been identified.

EARTHQUAKE MICROZONING STUDIES

Seismic Microzoning in Capital Cities in the South Pacific is a GII-USAID funded project, aimed at producing a seismic microzonation and earthquake risk assessment of four major Pacific cities; Honiara, Nuku'alofa, Port Vila and Suva, which is now entering its third and final year.

A new project funded by the French Pacific Fund, and aimed at producing 3-D earthquake modelling of Suva peninsula and tsunami modelling in Suva Harbour, will come online in late 1997, and is set to conclude within 12 months.

Fiji: (FJ97.03) Suva Earthquake Microzoning Study

Key tasks to be achieved are the entry of geological mapping carried out by SOPAC and MRD in conjunction with NZIGNS, onto a MapInfo database, along with more detailed, existing geotechnical borehole data. The characterisation of seismic microzonations through Nakumura testing has been completed in part by NZIGNS, and the remaining part will be carried out in conjunction with MRD.

Solomon Islands: (SB97.04) Honiara Earthquake Microzoning Study

Key tasks to be achieved are the entry of geological mapping carried out by the Mines and Minerals Division of the Ministry of Energy, Mines and Minerals, and Honiara Town Council, onto a MapInfo database, along with more detailed, existing geotechnical borehole data. The characterisation of seismic microzonations through Nakumura testing has yet to begin because of technical difficulties. Completion of this aspect is planned for the coming year.

Tonga: (TO97.03) Nuku'alofa Earthquake Microzoning Study

Key tasks to be achieved are the entry of existing geological mapping by the Ministry of Lands, Surveys and Natural Resources onto a MapInfo database, along with more detailed, existing geotechnical borehole data. The characterisa-

tion of seismic microzonations through Nakumura testing has yet to begin, and may be completed through a consultancy with agencies which have completed this method of testing elsewhere.

Vanuatu: (VU97.02) Port Vila Earthquake Microzoning Study

Key tasks to be achieved are the entry of geological mapping carried out by the Department of Geology, Mines and Water Resources onto a MapInfo database, along with more detailed, existing geotechnical borehole data. The characterisation of seismic microzonations through Nakumura testing has been completed in part by the Department in conjunction with ORSTOM, and the remaining part will be carried out in the coming year.

Fiji: (FJ98.19) Seismic Zonation of Suva Central City and Simulation of Tsunami Risk in the Harbour

The principal technical objectives of this project funded by the French Pacific Fund are to identify and delineate active tectonic structures in the Suva region and determine the characteristics of earthquakes, ground response to events and geotechnical parameters. The project will identify sectors having homogeneous seismic response and establish a seismic zonation of Suva. A further objective is to model the propagation of tsunamis in Suva Harbour. The results will be presented in the appropriate forum, and training of local participants will be a key part of the project. The results will be utilised by the organisations involved in risk analysis, disaster mitigation and civil protection measures in Suva. Members of the local organisations MRD-SOPAC-USP, with the collaboration of personnel from A2EP (New Caledonia), will be in charge of the first two stages, in close co-operation with BRGM and LDG (France). The project will use the data to construct numerical models during the third phase. The fourth phase is marked by a specialist French mission to Suva for the presentation of results, installation of models and training of local participants. Finally, the fifth phase corresponds to the application of results which will be carried out in conjunction with the Minister for Fijian Affairs, Regional Development and Multi-Ethnic Affairs, in close co-operation with the authorities of the city of Suva, particularly the Suva City Council.

SURVEYS OF COMMUNITY ASSETS

While the assessment of hazards goes forward in a number of projects, there can be no final assessment of risk without detailed knowledge

of community assets - infrastructure and population data. An electronic questionnaire to determine the vulnerability of community assets in Pacific cities will be purpose-designed, trialed and implemented, initially in Suva.

The questionnaire developed in the project design phase above will be designed primarily for use with GPS-capable, hand-held data recorders to facilitate entry into the MapInfo database for all cities involved in the Pacific Cities project. The survey will involve a team of graduate students equipped with data recorders, under the direction of a consultant, for a period of several weeks.

Fiji: (FJ98.20) Project Design and Trial Survey of Community Assets, Suva

The questionnaire will assess community risk arising from a range of hazards affecting community assets, and will include data on demographics, building attributes, location of lifelines, and distribution of essential services. The design phase includes a survey of all possible end-users, including disaster mitigation authorities, of the database to allow their input and comment.

Fiji: (FJ98.21) Survey of Community Assets, Suva Pilot Area

A wide-ranging database will be built from a combination of the survey results, existing Suva City Council and Government databases and risk analyses based on various scenarios generated by information in the database or through numerical modelling. The survey itself will seek to gather data on the location and value of assets, details of infrastructure, use and occupation information and the vulnerability and post-disaster importance of key facilities. This phase of the survey will initially cover the 2 x 2 km Suva Pilot Area set out under the Suva Earthquake Risk Management Project.

Solomon Islands: (SB98.21) Survey of Community Assets, Honiara

A wide-ranging database will be built from a combination of the survey results, existing Honiara Town Council and Government databases and risk analyses based on various scenarios generated by information in the database or through numerical modelling. The survey itself will seek to gather data on the location and value of assets, details of infrastructure, use and occupation information and the vulnerability and post-disaster importance of key facilities.

Tonga: (TO98.21) Survey of Community Assets, Nuku'alofa

A wide-ranging database will be built from a

combination of the survey results, existing databases on Nuku'alofa and risk analyses based on various scenarios generated by information in the database or through numerical modelling. The survey itself will seek to gather data on the location and value of assets, details of infrastructure, use and occupation information and the vulnerability and post-disaster importance of key facilities.

Vanuatu: (VU98.20) Survey of Community Assets, Port Vila

A wide-ranging database will be built from a combination of the survey results, existing Port Vila Council and Government databases and risk analyses based on various scenarios generated by information in the database or through numerical modelling. The survey itself will seek to gather data on the location and value of assets, details of infrastructure, use and occupation information and the vulnerability and post-disaster importance of key facilities.

VOLCANIC HAZARDS MAPPING

SOPAC will continue to promote the project proposal and recommendations developed during the Volcanoes Workshop held in Vanuatu early in 1997.

Samoa: (WS98.14) Volcanic Hazard Mapping, Savai'i

A composite volcanic hazards map of Savai'i will be produced subject to availability of funding.

Solomon Islands: (SB98.28) Volcanic Hazard Mapping, Savo

SOPAC will participate in the volcanic hazard mapping of Savo if funding requests to AusAID and UKODA are approved.

3.2 Modelling of Pollution, Surge, Seiche, Wave and Tsunami Hazards

SOPAC is taking delivery of a wide range of MIKE 21 hydrodynamic modelling software, together with specialist training, as part of an aid project from the Danish Government. This software will initially be trialed on the coastal quarters of the four cities currently being addressed by the Pacific Cities Project. The harbours and lagoons of the four cities are all subject to some, or all, of anthropogenic pollution, risk from sea-level rise, wave action, storm surge, seiching and tsunami, erosion and sedimentation. Previous studies have been limited

by the wide areal and temporal variations experienced in large bodies of water. MIKE 21 provides an opportunity to view and analyse these problems and risks at an appropriate scale and to provide guidelines for remedial action.

Fiji: (FJ98.22) Suva Harbour MIKE 21 Hazard Modelling

Suva Harbour suffers from a number of sources of pollution and is vulnerable to storm surges and tsunamis. Developments planned for both the upper and lower reaches of the harbour await an assessment of sedimentation and erosion in those areas. The bathymetry of the harbour has been detailed in past surveys, and will be the principal input in determining circulation of pollutants and wave characteristics in the harbour area. The scenarios developed using MIKE 21 will provide direct input into the assessment of risk to Suva from a number of hazards. MIKE 21 modelling will provide an important adjunct to the use of French modelling software in the Ecotrope project, and both may be used as comparative benchmarks for each other. Currently, no funding is available for this important project.

Solomon Islands: (SB98.22) Honiara Harbour MIKE 21 Hazard Modelling

Honiara Harbour suffers from a number of sources of pollution and is vulnerable to storm surges and tsunamis. The dormant Savo volcano lies only a short distance directly offshore. The shallow bathymetry of the harbour will be detailed in a planned survey as part of the Honiara Earthquake Microzoning Study and will be the principal input in determining circulation of pollutants and wave characteristics in the harbour area. The scenarios developed using MIKE 21 will provide direct input into the assessment of risk to Honiara from a number of hazards. Currently, no funding is available for this important project.

Tonga: (TO98.22) Nuku'alofa Lagoon MIKE 21 Hazard Modelling

SOPAC, in conjunction with the Government of Tonga, proposes to utilise French expertise in performing a marine investigation and computer hydrodynamic analysis of the Tongatapu lagoons in order to determine the causes and impacts of existing and potential pollution.

French expertise is available to perform hydrodynamic modelling of the large lagoon and inlet system around Nuku'alofa. In conjunction with the French, SOPAC is able to perform hydrodynamic analyses of selected areas using the Danish Hydraulics Institute software MIKE 21 to supplement the risk analysis.

The work will involve preparation of a detailed MapInfo GIS database over the area of Nuku'alofa city and the Tongatapu lagoons: Fanga'uta lagoon and Fanga Kakau lagoon. A detailed bathymetric survey of the Tongatapu lagoons and inlet areas will be carried out and current measurements performed at selected sites in study area. This will be followed by computer hydrodynamic modelling of pollution in the study area, and evaluation of the impacts and costs of pollution.

Vanuatu: (VU98.21) Port Vila Harbour MIKE 21 Hazard Modelling

Port Vila Harbour suffers from a number of sources of pollution and is vulnerable to storm surges and tsunamis. In particular, seiching was noted in the harbour during earlier earthquake disturbances. The bathymetry of the harbour was detailed in a 1997 survey forming part of the Port Vila Earthquake Microzoning Study and will be the principal input in determining circulation of pollutants and wave characteristics in the harbour area. The scenarios developed using MIKE 21 will provide direct input into the assessment of risk to Port Vila from a number of hazards. Currently, no funding is available for this important project.

3.3 Pacific Island Counterparts

Under the conditions of the major funding agencies of the Hazard Assessment Unit, including CFTC through the Commonwealth Secretariat, Pacific Island counterparts are closely involved in all aspects of the work. Currently Kenneth Bulehite of the Honiara Town Council, **Solomon Islands**, Morris Stephen of the Department of Geology, Mines and Water Resources, **Vanuatu**, and Kelepi Mafi of the Ministry of Lands, Surveys and Natural Resources, **Tonga** are key participants in the Pacific Cities project and all the relevant, associated sub projects.

3.4 Liaison and Co-operation with Other Agencies

The Hazard Assessment Unit aims to maintain existing programs and establish new programs in coastal management and hazard assessment with UNDHA-SPPO, SPREP, APEC and SEAGRANT/PIN. Through the Pacific Cities project, it also seeks to obtain the co-operation and input of all Government and Local authorities, international and private organisations involved in all the aspects of community risk assessment. Links are being established with AGSO in order to tie the objectives, methodolo-

gies and standards of the Pacific Cities and Australian Cities projects more closely.

The project “*Seismic Microzoning in Capital Cities in the South Pacific*” is carried out in close co-operation with the Geophysical Institute of Israel (GII). Collaboration with ORSTOM in the *Port Vila Earthquake Microzoning Study* is a key element of that project, and may well extend to other, related projects in the near future.

The project *Seismic Zonation of Suva Central City and Simulation of Tsunami Risk in the Harbour* involves close co-operation with the Noumea-based A2EP and the French BRGM organisation.

A major new initiative is in preparation with the Fonds Française pour l’Environnement Mondial (FFEM) to develop co-operation with French researchers and practitioners across a wide variety of fields, including the hazard and risk assessment areas.

Ocean Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Sustainable development of open ocean areas within the EEZs of member countries.

Purpose:

Assist decision-makers and planners to understand ocean processes, develop ocean areas and extract resources while protecting oceans from over-exploitation and pollution.

Outputs:

- Regional cruise databases.
- Ocean process evaluations and assessments.
- Ocean resource assessment maps.
- Advice on UNCLOS duties and obligations.
- Trained member country individuals.

Activities:

- Coordinate and compile cruise information.

- Coordinate regional ocean observing systems (GOOS) programs.
- Produce maps of ocean area bathymetry and resources.
- Watching brief on new ocean technology and developments
- Maintain and update regional databases.
- Liaise with other oceanographic and marine research institutes and organisations.

2. Staffing

Position	Donor	Status
Unit Coordinator	Unknown	Unsecured

It is anticipated that in the absence of staff, the activities in this Unit will be shared by other staff and coordinated overall by the Directorate.

3. Key Tasks 1998

3.1 Cooperation for the Implementation of Ocean Observing Buoy Network Deployment, Maintenance and Data Utilisation

Japan Marine Science and Technology Center (JAMSTEC) will launch the Triangle Trans-Ocean Buoy Network (TRITON) plan in the tropical Pacific warm pool region to better understand basin scale heat transport with emphasis on El Niño/Southern Oscillation(ENSO), that influences global climate change. The Program will involve measuring the surface fluxes, water temperature, and salinity down to 750 m and full meteorological factors vital to study the water mass formation process and long range climate variation on a decadal scale.

SOPAC will cooperate to carry out the implementation of the TRITON deployment, maintenance, and data utilisation by liaising with relevant organisations and relevant **member countries** in particular **Federated States of Micronesia**.

3.2 Bathymetric Mapping

Continue SOPAC's association with the joint IOC/IHO GEBCO series as a reviewer for the Southwest Pacific.

Continue with the Committee on Digital Bathymetry especially for Sheet 5.12 which covers the SOPAC region. SOPAC has agreed to assist with the gridding exercise of Sheet 5.12 which is being co-ordinated through NGDC. SOPAC will continue to attend GEBCO meetings and continue to provide assistance and receive new data when collected in the region.

Although the Southwest Pacific Hydrographic Commission (SWPHC) has gone through a quiet period over the past 12 months, SOPAC will continue as an Observer.

The SOPAC-initiated Shallow Water Digital Bathymetric Data Base will continue to be improved and added to as new data becomes available. This data will be provided to relevant hydrographic organisations for their use.

3.3 Cruise Coordination and Data Collection

SOPAC will continue to monitor research cruises in the region and keep **member countries** informed of planned cruises, provide completed data results produced and coordinate opportunities for participation. 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. The Secretariat will continue to pursue collaboration with other regional and global ocean observation and monitoring programs.

3.4 Research Cruise and ODP proposals

Attempts to attain maximum mapping coverage of member countries EEZ through the promotion of seabed mapping projects is but one of the on-going activities. The Secretariat will continue to provide support for other research programs such as the STARMER, HYFIFLUX II and other programs.

Assistance will also be provided to individual member countries in the development of EEZ mapping, resource assessment and other such programs being prepared for bilateral funding (**Fiji, Tonga**).

3.5 Capacity to Respond to LOS issues

The member countries must be appraised and be able to act in response to their rights and obligations under the UNCLOS. Of particular concern, though not limited to, are matters re-

lating to the International Seabed Authority, Marine Scientific Research (MSR), boundary delimitation and provisions such as those under Article 76 (SOPAC Miscellaneous Report 227). SOPAC wishes to strengthen its collaboration with the FFA Boundary Delimitation program as well as develop its own in-house capacity. **Federated States of Micronesia, Fiji, Tonga and New Caledonia** have already asked for assistance in this area. To carry out such programs, SOPAC will seek to develop capacity so as to:

- provide specialised assistance to SOPAC member countries in the legal and technical aspects of the delimitation of maritime zones and boundaries and the determination of the outer limits of the continental shelf, including the preparation of appropriate databases and maps, the negotiation of maritime boundaries and preparation of the legal, scientific and technical data concerning the outer limits of the continental shelf and provision for training in aspects of delimitation;
- provide specialised legal and technical assistance to SOPAC member countries in the practical implementation of the Law of the Sea Convention on matters within SOPAC's technical area of expertise;
- monitor developments in the International Seabed Authority and assist SOPAC member countries to participate effectively in the work of the Authority by disseminating information, analyses, studies and reports and, where appropriate, coordinating regional policy; and
- assist member countries to adopt regulations concerning MSR and develop efficient and effective administrative practices for handling requests for consent to conduct MSR by foreign institutions.

SOPAC will monitor and keep member countries informed of ODP activities in particular the scheduled Leg 180 in the Woodlark Basin and Leg 181 in the Southwest Pacific Gateway as well as progress on the proposed leg in Tonga.

3.6 Ocean Unit Services

In order to carry out many of the activities of the SOPAC Ocean Unit, SOPAC will attempt to seek funding for and recruit the services of a Unit Coordinator. In the interim, under the guidance of the Directorate, SOPAC will attempt to provide as many services to the **member countries** as it is able to.

NATIONAL CAPACITY BUILDING PROGRAM

Human Resources Development Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Strengthened national capacity in geoscience through education and training of member country individuals.

Purpose:

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.

Outputs:

- Trained member country individuals.

Activities:

- Conduct the Certificate in Earth Science and Marine Geology course.
- Provide training for individuals through the Fellowship, Scholarship and schemes.
- Organise and implement regional workshops and in-country seminars.

2. Staffing

Positions	Donor	Status
Training Coordinator	CFTC	Secured
Assistant Training Coordinator	Unknown	Unsecured

During 1998, it is hoped that funds can be secured to make an appointment to the Assistant Training Coordinator position. It is also anticipated that most professional staff will continue to contribute significantly to the activities of this Unit.

3. Key Tasks 1998

3.1 Certificate in Earth Science & Marine Geology

The Certificate in Earth Science & Marine Geology will be in its final year of a three year cycle in 1998. Twenty participants from **Cook Islands, Fiji, Kiribati, Papua New Guinea, Solomon Islands, Tonga, and Vanuatu** attended the Advanced Courses in 1997 and all are expected to return for the final year. The final year courses are Advanced Courses: SCC23 Earth Resources & Mapping and Advanced Course 4 SCC24: Earth Science in Development Projects, Hazards and SCC25 Hydrology/ Hydrogeology will be offered.

Computer-aided teaching methods together with distance education resources are being introduced where relevant.

3.2 SOPAC Scholarship Scheme

First degree training in geology and, engineering and related disciplines, normally for four years will continue to be provided by way of one scholarship at USP for **Tonga** for 1998. The scholarship awardee at Oxford Brookes University from **Solomon Islands** graduated in June of 1997 and the **Vanuatu** student is expected to graduate from USP at the end of 1997.

3.3 SOPAC Fellowship Scheme

The Fellowship Scheme provides for on-the-job training for periods up to three months for technical training and experience at the SOPAC Secretariat, at places other than the Secretariat, onboard research vessels and attendance at specialised workshops and conferences. Expectations are that member country nationals will work on their own country projects while on Fellowships. Funds are secured for between 10-15 fellowships next year. At the time of compilation, the following requests have been received:

- **Kiribati** for two Department of Lands staff for GIS training.
- **Solomon Islands**, an attachment for cartographic and technical drafting training.

3.4 Workshops

Regional workshops will be implemented as required to support activities of other Programs. At the time of compilation of this Work Program, the following were planned.

- A Conference on Marine Benthic Habitats and their Living Resources is being scheduled to be held 9-16 November in **New Caledonia**.
- A SOPAC/WESTPAC GOOS Workshop on GOOS awareness and cost-benefit analyses is hoped to be held in February 1998, with the venue yet to be decided.
- Water Demand Management and Conservation subject to funding.
- Drilling training for water resources production and assessment, subject to funding.

3.5 STAR Meeting

A meeting of STAR, chaired by Dr Keith Crook will be held during the 1998 SOPAC Annual Session.

3.6 In-Country Seminars

In-country seminars, usually of no more than one-week duration, will be held as requested by member countries in 1998 subject to availability of funding on topics as required.

Basic geology and either hydrogeology, minerals or coastal geology training courses typically of two weeks duration are planned for **Papua New Guinea, Solomon Islands, Vanuatu and Samoa** during 1998. Requests for in-country training courses in GIS, and software packages MapInfo, MS Access and MS Powerpoint are being reviewed for **Solomon Islands and Papua New Guinea**.

The development of a technical writing skills course coupled with presentation techniques training is under consideration. This activity may be undertaken back to back with other in-country seminars or using exercises such as document revision or updating as a focus for the activity.

The provision of training in geochemical techniques for gold determination, mines inspectorate attachments and jurisprudence for mine personnel are under consideration.

Coastal issues in-country seminars planned for **Niue and Tonga** in 1997 were deferred, funding is secured and these will be rescheduled for 1998 following confirmation from national representatives. For **Kiribati**, a follow-up seminar is planned to that which was held in 1997 on coastal awareness in support of the National Coastal Awareness Campaign.

A seminar is provisionally planned for early 1998 for **Papua New Guinea** to discuss offshore mineral exploration and issues as they relate to amending legislation, developing policy and environmental guidelines.

Solomon Islands: Over the last year, with the development of Gold Ridge Mine, the Water and Mineral Resources Division has lost many of its professional staff to the private sector and prospecting companies operating in the Solomon Islands. Consequently the Division is facing difficulties in many sections and has requested urgent assistance from SOPAC with institutional strengthening and capacity building.

3.7 Coastal Mapping Workshop

Efforts will continue to be made to secure funding to hold the regional Coastal Mapping Workshop in **Papua New Guinea**.

3.8 Advice and Assistance with Formal Education Programs

Assistance will be provided as requested with the development of courses and materials for secondary and tertiary institutions in the region, and in particular assist and advise with courses and teaching at USP. In 1998, it is anticipated that SOPAC staff will once again play a major role in the teaching of the degree course SC301 Applied Geology.

3.9 Development of Distance Education Programs

Distance education programs in the geosciences are being evaluated with a view to the most effective method of applying these to **member countries**. Major constraints such as data transmission and Internet availability will be investigated. A skeleton curriculum which will complement the ESMG Certificate course will be established during the year.

Information Technology Unit

1. Goal, Purpose, Outputs & Activities

Goal:

An efficient information technology system and skills-based, supporting sustainable development in geoscience in member countries.

Purpose:

Meet the demands for electronic information by member country governments and regional organisations to manage resources and risk.

Outputs:

- Regional, electronic databases.
- Internet services to member countries.
- Installation and upgrading of computer hardware and software.
- Trained member country individuals.

Activities:

- Collect, manage and disseminate electronic geoscientific data on the resources of the region.
- Support member country information systems.
- Support Secretariat information systems.
- Conduct a regional communications program.
- Fellowship attachments and workshops.

2. Staffing

Positions	Donor	Status
Information Technology Manager	RB	Secured
Database Development Officer	Various	Probable
Computer Operator	France (funding c/f)	Secured

It is anticipated that during 1998, the Computer Geologist will be incorporated within this Unit from the Coastal Unit; likewise the position of GIS Manager should funding be secured and an appointment made.

3. Key Tasks 1998

SUPPORT TO MEMBER COUNTRIES AND THE SECRETARIAT IN INFORMATION SYSTEM DEVELOPMENT

3.1 Support to Member Countries in Information System Development

SOPAC is dedicated to the support of **all 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 access to timely and accurate information.

The objective is the provision of relevant and effective IT systems to assist member countries in discharging their obligations under resource management objectives.

Assistance will be provided to several countries in upgrading Information Systems with hardware and software in line with equipment recommended by the 1997 Regional IT Strategies Meeting. **Niue, Samoa, Solomon Islands** and **Vanuatu** have requested assistance in this area. A training component is normally included in all upgrades.

3.2 Production and Organisation of Coastal Data

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.

The objectives are to produce digital data sets that can serve **all member countries** and are distributed from the Regional Data Centre.

Cook Islands will be provided with all relevant data on CD and assistance will be provided in organising this data in conjunction with the MapInfo workshop.

For **Federated States of Micronesia**, assistance will be provided to the Pohnpei Environmental Protection Agency in implementing a GIS based Information System for the purpose of organising and analysing coastal data.

For **Niue**, assistance will be provided to consolidate within GIS databases currently held by the Government of Niue, existing marine resource (non biological) information generated by SOPAC about Niue and within its EEZ.

New Caledonia is seeking assistance in the production and organisation of coastal data, as well as the retrieval of offshore data.

3.3 Support to Member Countries on Law of the Sea Related Issues

It is anticipated that further assistance on a cost recovery basis, will be provided to the International Seabed Authority in the development of their deep-sea mineral databases. The overall objective of which is to help **all member countries** compile data sets to support their claims.

SUPPORT TO MEMBER COUNTRIES AND THE SECRETARIAT IN GIS DEVELOPMENT

3.4 Support to Member Countries in GIS Development

SOPAC will continue to support **all member countries** in the use of GIS and Remote Sensing technology, particularly by way of development of databases and training of in-country technicians involved in development of GIS related work.

In 1998 It is anticipated that there will be a similar project to the development of the Vanuatu Mineral Resources database in the **Solomon Islands**. Fellowship attachments for Lands Department staff in **Kiribati** have also been requested.

3.5 Development of GIS Utilities for use Within Member Countries and the Secretariat

SOPAC dedication to support **all member countries** in the use of GIS Remote Sensing technology requires retrieval and development of small utilities to meet the need of the professional in the Secretariat as well as the profes-

sional in-country. The development of these tools is an ongoing task and these are provided to member countries either during in-country visits or during fellowship attachments.

The objective is to provide on demand, solutions to enhance the capability of the software platform adopted by SOPAC.

Tonga will be provided with current GIS standards that conform to IOC guidelines.

3.6 Development of GIS Capabilities through In-country MapInfo Training Workshops

In recent years, 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, and involves the relevant government organisations.

The objectives include the training of users from the various government departments and the demonstration of the benefit of the use of GIS to high-level decision-makers.

For **Cook Islands** and **Niue**, an In-country MapInfo Workshop will be held to assist technical staff develop GIS and remote sensing capabilities for use in coastal management and fisheries.

Fiji and **Solomon Islands** will be provided a MapInfo/Access based GIS solution for their respective power utilities under the Pacific Regional Energy Program which will be followed by a workshop. In addition to MapInfo, Microsoft Access and PowerPoint training will be provided to **Solomon Islands**.

There will be a follow-up phase for **Tonga** under the Pacific Regional Energy Program to further enhance their GIS based information system and implement a network solution.

SUPPORT FOR MEMBER COUNTRIES AND THE SECRETARIAT IN COMMUNICATIONS DEVELOPMENT

3.7 Support to Member Countries in Intranet/Internet Development

It is anticipated that the **Fiji** Internet/Intranet Group will continue to develop, and avenues will be explored, to provide faster access and more cost-effective service through alternative technologies. It is further anticipated that FIG

can be devolved when, and if, a second Internet Service Provider is formed in Fiji to provide necessary competition to the national telecommunications carrier who is currently enjoying a monopoly for providing Internet services.

It should be noted that several PIC telecommunications companies regard Fiji as a model and any removal in monopolies will result in drop in charges and a resulting benefit to other countries.

A major objective of FIG has been the development of a scaleable and transferable model which together with experiments with satellite systems such as PEACESAT, where terminals are already deployed in most PICs, offer opportunities to establish Internet services where these are non-existent or unaffordable in **other member countries**.

SOPAC will provide assistance in the growth area of Virtual Libraries which are likely to be developed in other organisations and **other member countries** where Internet is available.

The growth of Internet world-wide and the need for Internet in PICs as well as SOPAC's experience at both the transport and content layers has led to several requests for assistance from **member countries**. It is anticipated that there will be in-country visits to several member countries to evaluate alternatives for Internet connectivity with a focus on widely available and cost-effective service in the shortest possible time. **Marshall Islands** and **Tuvalu** in particular have requested assistance with a national LAN/WAN solution while **Marshall Islands** has requested assistance with implementing a LAN and Internet access for their Fiji office.

Disaster Reduction Unit

1. Goal, Purpose, Outputs & Activities

Goal:

To strengthen the sustainable economic and social development of member countries through reduction of the loss of lives, damages and disruptions caused by natural disasters.

Purpose:

To support National Authorities in disaster management activities through advice information and training opportunities.

Outputs:

- A regional coordination program.
- A focal point for information exchange.
- A regional resources database.
- Access to resources of regional organisations and programs, donors and other organisations.

Activities:

- Promotion of advocacy for disaster management activities.
- Assist member countries in disaster reduction activities by utilising SOPAC's existing relevant capabilities such as: an extensive and diverse Human Resources Development Program; a recognised regional Centre of Excellence in handling remotely sensed data; advanced information gathering and dissemination facilities through a Regional Data Centre; and advanced regional and global communications facilities such as a dedicated SOPAC PEACESAT Station and Internet links.
- Co-ordinate at the regional level, assistance towards country policy development and HRD and capacity strengthening in disaster management.

2. Staffing

Positions	Donor	Status
Unit Coordinator	Unknown	Vacant

3. Key Tasks 1998

3.1 Policy and capacity strengthening:

- to provide advice and support in raising the level of awareness of natural disasters;

- to assist in developing systematic and integrated approaches to disaster management planning including the use of remotely sensed data;
- to encourage countries and donors in giving priority to hazard assessment and vulnerability analysis;
- to encourage greater emphasis for disaster mitigation activities; and
- to encourage the incorporation of disaster management and particularly disaster mitigation considerations, in the preparation of plans for sustainable development.

3.2 Human resources development:

- to develop an inventory of suitable regional resources available for disaster management training;
- to assist national disaster managers to develop training strategies based on needs assessment; and
- to ensure that training and other programs in the region are co-ordinated.

3.3 Regional and International linkages:

- to provide assistance to the regional Pacific Islands Disaster Management Committee;
- to provide a focal point and clearing house for disaster management information (especially remotely sensed data) for the region;
- to enhance donor/recipient co-ordination through regular consultations on work programs, expectations and needs;
- to promote research into regionally appropriate disaster mitigation techniques;
- to arrange briefings on disaster management issues for SOPAC Governing Council meetings; and
- to develop an inventory of regional disaster management and communication requirements and available resources.

Publications and Library Unit

1. Goal, Purpose, Outputs & Activities

Goal:

Provision of readily-available and current information in geoscience to member countries.

Purpose:

Meet the demands for geoscientific data by member country governments and regional organisations to manage resources and risk.

Outputs:

- Technical reports.
- Special publications.
- Newsletters.
- Public awareness material.
- Audio-visual, photographic and cartographic information.
- Trained member country individuals.

Activities:

- Prepare and disseminate scientific and technical reports on SOPAC Work Program
- Prepare and disseminate public awareness material.
- Prepare and disseminate SOPAC promotional materials.
- Maintain and update reference library.
- Maintain Peacesat terminal.

2. Staffing

Positions	Donor	Status
Publications Coordinator	RB	Secured
Cartographer	Australia	Secured
Publications/Library Assistant	RB	Secured

3. Key Tasks 1998

3.1 Work Program reports

Provide for technical review, editing, publication and distribution of Work Program reports. Editing services can be arranged for **member countries** as required.

3.2 Technical summaries and promotional material

SOPAC News, SOPAC Projects and the Annual Report Summary will continue to be published. Other miscellaneous promotional materials, a service also available to **member countries** on request, will continue as needed or as requested.

Specific projects (probable technical bulletins):

- 1) Pacific Science Inter-Congress technical papers
- 2) IAVCEI Workshop papers

3.3 Publishing Services and Support to National Public Education Campaigns

Publishing support to **all member countries** on request and other cooperating agencies has increased in the past year and is expected to increase as a service that can be utilised by member countries, especially in support of national public awareness/education campaigns in the geosciences and related fields.

Specific requests for assistance:

- 1) **Cook Islands:** Manganese nodules brochure by Stuart Kingan.
- 2) **Guam:** [Updated] Geology of Guam (One Map) by Frank Kilmer (pending approval).
- 3) **Marshall Islands:** Coasts of Pacific Islands/translation into vernacular.
- 4) **Tonga:** Request from Tonga Water Board for general publishing assistance.
- 5) **Fiji:** Aeromagnetic survey-development of a promotional brochure.
- 6) **Vanuatu:** Edit and publish a minerals review of Vanuatu, likely to be published in two volumes.

3.4 Follow-up Workshop to Kiribati Coastal Awareness Workshop

A follow-up workshop to the May 1997 Coastal Awareness workshop is planned. The Workshop is specifically targeted at the hand-picked group to be part of a **Kiribati** National Coastal Awareness Campaign Committee. The 1997 Workshop participants felt that a confidence-building course on the technical aspects of coastal processes in the Kiribati situation will be needed for the national committee before it can start the coastal protection "evangelism".

3.5 Other Work related to Kiribati Coastal Awareness Project

Follow-up publishing is expected in 1998, in support of a **Kiribati** National Coastal Awareness Campaign. Expected products are newspaper articles, brochures, leaflets, posters etc. in English and the vernacular. A date and the length of the campaign is yet to be decided by Kiribati.

3.6 SOPAC Annual Session

Assist with preparations for the 27th Annual Session, overall responsibility for providing rapporteuring services at meetings and the preparation and publication of the Annual Session Proceedings will continue.

3.7 Maintenance of current services

Current library services will be maintained, especially reference services for Secretariat staff and **member countries**. A research cruise database and staffing services for the PEACESAT link with **member countries** will continue.

3.8 Member country assistance and transfer of skills

Assistance to **member countries** with their geoscience reference collections and libraries is currently placed on hold pending the securing of funding to appoint a Librarian. However it is anticipated that requests from the **Cook Islands** and **Solomon Islands** for assistance with their libraries can be fulfilled during the coming year.

Specific request:

- 1) **Cook Islands:** Two sets of the MMAJ/JICA reports on CK Mn resources.
- 2) **Cook Islands:** One complete set of Library holdings on the Cook Islands.
- 3) **Samoa:** Assistance to re-establish the Library at the Apia Observatory and put in place an effective catalogue system including the main ministry library, and for the Librarian a fellowship attachment to the SOPAC Library for one week.

3.9 SOPAC bibliography

The SOPAC bibliographic database will continue to be maintained and marine resources information will continue to be available to **all member countries**.

3.10 Drafting services

Provide drafting services for all SOPAC programs and publications, and other external projects separate but relevant to the SOPAC Work Program. The latter services are provided on a cost reimbursable basis.

3.11 Map publication

Arrange and supervise the publication and printing of maps, especially prepared for other Units in the Work Program.

Specific requests:

- 1) [Updated] Geology of Guam/mapping by Frank Kilmer (pending approval)
- 2) **Vanuatu:** Assistance with printing Minerals Occurrence Map of Vanuatu

3.12 Transfer of skills and training assistance

By way of Fellowship attachments, the Unit will continue to provide drafting training at the Secretariat on an "as requested" basis by **member countries**.

Cooperation among Information Services of SPOCC agencies is expected to increase with the Forum Secretariat taking the lead in 1998. The major outcome is envisaged to be in the transfer of skills and joint training programs for national counterparts.

CORPORATE SERVICES

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
Finance & Administration Controller	RB	Secured
Personal/Travel Assistant	RB	Secured

3. Key Tasks 1998

3.1 Formulate and Implement the Annual Work Program and Budget

Formulate an annual Work Program and Budget for SOPAC and ensure the effective implementation and follow up of the approved tasks and activities in accordance with the approved Work Program and Budget.

3.2 Implement Recommendations of the SOPAC Sub-Committee Review

Implement the recommendations of the SOPAC Sub-Committee (SSC) on the Future Role and Direction and of the Interim Standing Committee (ISC), as approved by Council.

3.3 Liaise with Member Countries on the Work Program

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 Project Profile Database such that every task can be defined, monitored and evaluated.

3.4 Advice to Member Countries

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.

3.5 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.

3.6 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.

3.7 Represent Secretariat at International and Regional Meetings

Represent SOPAC at relevant regional and international meetings (including SPOCC), and to be in attendance at the Forum and SIS meetings. At meetings of Multi-lateral Agencies, demonstrate SOPAC's capacity to more effectively implement certain global programs in the SOPAC region.

3.8 Implement Evaluations and Reviews

Ensure the proper implementation and reporting of evaluations and reviews directed by the Governing Council or donors. Seek to revise the SOPAC Corporate Plan such that they are consistent with the "Regional Strategy" and the new area of focus.

3.9 Develop Effective Policy Options

Develop effective policy options, consistent with the Governing Council's directives and SOPAC Constitution, for consideration by Council.

3.10 Co-ordinate and Monitor Aid Programs

Plan, coordinate 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 coordinate Donor round table meetings and encourage increased “cost sharing” of programs as a funding option.

3.11 Advice on Development of Funding Proposals

Monitor initiatives and develop funding strategies and proposals.

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

3. Key Tasks 1998

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 advice 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 Program Leaders 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 of periodic donor reporting and reimbursement

requirements including the following pertinent ones.

Australia: Six-monthly and annual financial reports on Australia's annual grant to SOPAC and any of its special/extra funding. Prepare financial reports and related papers for the annual SOPAC/Australia high level consultations (HLC)

New Zealand: Six monthly and annual financial reports on New Zealand's annual and any special funding to SOPAC. Prepare financial reports and related papers for the annual SOPAC/New Zealand high level consultations (HLC)

UNDP: Quarterly financial reporting including follow up of reimbursement of funds for each UN Project. Canada Quarterly financial reports and budget forecasts including follow up of reimbursement of funds. Annual audited financial reports and end-of-project (final) report for all concluding projects.

France: Annual financial and variance reports for each project including forecast of funding/budget for the future year.

CFTC: Annual financial reports for each project including variance reports.

EU: Monthly financial report for the Work Program budgets including follow up of reimbursements with RAO, EU Office and the Reserve Bank. Coordinate funding audit of the past year's Work Program and technical assistance, follow up audit report and management letter and provide explanations for any audit queries.

Other Funding: Provide ad-hoc reports and financial statements to new and ad-hoc donor funding provided during the year.

TECHNICAL MANAGEMENT

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:

- 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 SPOCC agencies and the “Regional Strategy” being developed by the Forum Secretariat.

2. Staffing

Positions	Donor	Status
Program Manager	RB	Secured
Resource Development PSA	RXB (New Zealand)	Secured
Environmental Science PSA	RXB (New Zealand)	Secured
National Capacity Development PSA	RXB (New Zealand)	Secured
National Capacity Development TSA	RB	Secured

Each of the three technical programs has a Program Support Assistant (PSA) whose responsibilities are shared by the units in that program. The National Capacity Development Program has a common Technical Support Assistant (TSA) providing service to all the units under this Program.

3. Key Tasks for 1998

As described above under the activities section.

APPENDIX 11

LIST OF CONFERENCE ROOM DOCUMENTS

DOCUMENT #	DOCUMENT TITLE
AS 26/1/Info 1	Information Circular
AS 26/1/Info 2	Program for Official Opening
AS 26/2/Info 1	List of Conference Room Documents
AS 26/2/Info 2	Provisional List of Participants
AS 26/3.1	Provisional Agenda
AS 26/3.2/Info 1	Draft Working Schedule
AS 26/3.2/Info 2	Working Procedures
AS 26/4.1	Designation of SOPAC National Representatives
AS 26/6.1	Issues arising from 25 th Annual Session
AS 26/6.2	Director's Annual Report
AS 26/6.2.1	Financial Report
AS 26/6.2.2	Work Program Report 1996/1997
AS 26/6.2.3	Draft Work Program and Budget for 1998
AS 26/6.3.1	Report on 1997 Accounts
AS 26/6.3.2	1996 Annual Report Summary
AS 26/6.3.3	SPOCC Summary Record and Report
AS 26/6.3.4	A Review of Non-Living Resources and Threats in the Pacific Region
AS 26/6.3.5	Review of Regional Coordination of Law of the Sea Issues in the South Pacific
AS 26/6.3.6	Review of Core Energy Program of the South Pacific Forum
AS 26/9	Reports of the SOPAC Sub-Committee and Interim Standing Committee
AS 26/9 suppl.	SOPAC's Future Role and Direction. Notes prepared for Council Briefing Session
AS 26/10.1.1 Info.	Ratification of SOPAC Constitution
AS 26/10.1.2	Management Advisory Committee Procedures
AS 26/10.1.3	Proposed Control over the General Reserve Funds
AS 26/10.3.2	Appointment of Management Advisory Committee
AS 26/11.2.1	Options for the Implementation of the 1998 Work Program and Budget

APPENDIX 12

LIST OF ACRONYMS

AAPG	- American Association of Petroleum Geologists	COARE	- see TOGA-COARE
ACP	- African, Caribbean and Pacific	COLA	- Cost of Living Adjustment
ADB	- Asian Development Bank	COM	- College of Micronesia (of FSM)
ADITC	- Australian Drilling Industry Training Committee	COMBAS	- a joint Japanese-French project to study active marginal basins in the Southwest Pacific (to follow the STARMER program)
AGC	- Atlantic Geoscience Center (Canada)	CORA	- Canadian Ocean Resource Associates Inc.
AGSO	- Australian Geological Survey Organisation (formerly BMR, Australia)	CPCEMR	- Circum-Pacific Council for Energy and Mineral Resources
AIDAB	- Australian International Development Assistance Bureau	CSI	- Coastal Regions and Small Islands (of UNESCO)
ANU	- Australian National University	CSIRO	- Commonwealth Scientific and Industrial Research Organisation (Australia)
APEA	- Australian Petroleum Exploration Association Limited	CSPOD	- Canadian South Pacific Ocean Development Program
APEC	- Asian-Pacific Economic Commission	DANIDA	- Danish International Development Agency
ASEAN	- Association of South-East Asian Nations	DDSMS	- Department of Development Support and Management Services (UNDP)
ATP	- authority to prospect	DGPS	- Differential Global Positioning System
BGR	- Bundesanstalt für Geowissenschaften und Rohstoffe	DMA	- Defence Mapping Agency (US)
BGS	- British Geological Survey	DORD	- Deep Ocean Resources Development Co. Ltd, Japan
BIO	- Bedford Institute of Oceanography (Canada)	DOS	- Disk Operating System
BRGM	- Bureau de Recherche Géologiques et Minières	DSDP	- Deep Sea Drilling Project
CalTech	- California Institute of Technology	ECU	- European Currency Unit
CCOP/SOPAC	- Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (now SOPAC)	EC/EEC	- European Community/European Economic Community
CEA	- Commissariat à l'Energie Atomique (Atomic Energy Commission), France	EEZ	- Exclusive Economic Zone
CFTC	- Commonwealth Fund for Technical Cooperation	EIA	- Environmental Impact Assessment
CIDA	- Canadian International Development Agency	ESCAP	- Economic and Social Commission for Asia and the Pacific (UN)
CNES	- Centre National d'Etudes Spatiales (National Center for Space Studies)	ESMG	- Earth Science and Marine Geology (SOPAC Certificate course)
CNRS	- Centre National de la Recherche Scientifique (National Center for Scientific Research), France	EU	- European Union
		FFA	- Forum Fisheries Agency
		FFEM	- Fonds Française pour l'Environnement Mondial

FINNIDA	- Finnish Department of International Development Cooperation	IHP	- International Hydrological Program (of UNESCO)
FNPF	- Fiji National Provident Fund	IMA	- International Market Allowance
FRG	- Federal Republic of Germany	IOC	- Intergovernmental Oceanographic Commission (of UNESCO, Paris)
FSM	- Federated States of Micronesia	IPCC	- Intergovernmental Panel on Climate Change
GDP	- Gross Domestic Product	IRIS	- Incorporated Research Institution for Seismology
GEBCO	- General Bathymetric Chart of the Oceans (IOC-IHO)	ISC	- Intertim Standing Committee (of SOPAC)
GERIS	- Geological and Earth Resources Information System (PNG)	I-SSEP	- Interiors - Science Steering and Evaluation Panel
GEST	- Group for the Export of Services and Technology of New Caledonia	ITIC	- International Tsunami Information Centre
GII	- Geophysical Institute of Israel	IYO (also YOTO)	- International Year of the Ocean
GIS	- Geographic Information System	JAMSTEC	- Japan Marine Science and Technology Center
GOOS	- Global Ocean Observing System	JICA	- Japan International Cooperation Agency
EuroGOOS	- European GOOS	JNOC	- Japan National Oil Corporation
NEARGOOS	- North-East Asia Region GOOS	KIGAM	- Korea Institute of Geology, Mining and Materials
MedGOOS	- Mediterranean GOOS	KMPC	- Korea Mining Promotion Corporation
GPF	- General Purpose Fund	KORDI	- Korea Ocean Research and Development Institute
GPS	- Global Positioning System	LADS	- Laser Airborne Depth Sounder
GSC	- Geological Survey of Canada	LAN	- local area network
GSJ	- Geological Survey of Japan	LITHP	- JOIDES Lithosphere Panel
HIG	- Hawaii Institute of Geophysics	MIMRA	- Marshall Islands Marine Resources Authority
HLC	- high-level consultation	MITI	- Ministry of International Trade and Industry (Japan)
HURL	- Hawaii Undersea Research Laboratory	MLML	- Moss Landing Marine Laboratories (US)
IAVCEI	- International Association of Volcanism and Chemistry of the Earth's Interior	MMAJ	- Metal Mining Agency of Japan
ICOD	- International Center for Ocean Development	MMTC	- Marine Minerals Technology Center (UH)
ICRI	- International Coral Reef Initiative	MOMAF	- Ministry of Maritime Affairs and Fisheries (Korea)
ICZM	- Integrated Coastal Zone Management	MOU	- Memorandum of Understanding
IDNDR	- International Decade for Natural Disaster Reduction	MRD	- Mineral Resources Department (Fiji)
IGNS	- Institute for Geologic and Nuclear Sciences (of New Zealand)	MSR	- marine scientific research
I-GOOS	- Intergovernmental Committee for GOOS	NASA	National Aeronautic and Space Agency, US
IGOSS	- Integrated Global Ocean Services System	NEDO (Japan)	- New Energy and Industrial Technology Development Organisation (Japan)
IFREMER	- Institut Francaise de Recherche pour l'Exploitation de la Mer (formerly CNEXO) (French Oceanographic Research Institute)	NGDC	- National Geophysical Data Center (US)
IHO	- International Hydrographic Organisation (of IOC/UNESCO)		

NIRE (Japan)	- National Institute for Resources and Environment	PIREIS	- Pacific Islands Resource and Environment Information Service
NIWAR	- National Institute for Water and Atmospheric Research (NZ)	PNG	- Papua New Guinea
NOAA	- National Oceanographic and Atmospheric Administration (US)	PPA	- Pacific Power Association
NOPACCS	- Northwest Pacific Carbon Cycle Study	PREP	- Pacific Regional Energy Program
NORAD	- Norwegian Agency for International Development	PROWESS (UN)	- Promotion of the Role of Women in Water and Environmental Sanitation Services
NSF	- National Science Foundation (US)	PTWC	- Pacific Tsunami Warning Centre
NZ	- New Zealand	PWA	- Pacific Water Association
OBS	- ocean bottom seismometer	QUT	- Queensland University of Technology (Australia)
OCEANOR	- Oceanographic Company of Norway AS	RMI	- Republic of the Marshall Islands
OCT	- Overseas Countries and Territories (which are associated with the European Union)	ROV	- remotely operated vehicle
ODA	- Overseas Development Assistance (UK)	RV	- Research Vessel
ODP	- Ocean Drilling Program	SAR	- Synthetic Aperture Radar
OEDC	- Ocean Engineering Development Company, Japan	SIDA	- Swedish International Development Cooperation Agency
OJP	- Ontong Java Plateau	SIS	- Small Island States
ORI	- Ocean Research Institute (University of Tokyo)	SIWA	- Solomon Islands Water Authority
ORMP	- Ocean Resources Management Programme (of USP, Suva)	SOC	- Southampton Oceanography Centre, UK
ORSTOM	- Institut Francaise de Recherche Scientifique pour le Développement en Coopération (formerly Office de la Recherche Scientifique et Technique Outre-Mer) (French Institute of Scientific Research for Cooperative Development)	SOEST	- School of Ocean and Earth Science and Technology (UH)
OTEC	- Ocean Thermal Energy Conversion	SPC	- Secretariat of the Pacific Community (formerly South Pacific Commission)
PAYE	- Paye As You Earn	SPDB	- SOPAC Petroleum Data Bank
PDWBC	- Pacific Deep Western Boundary Current	SPDRP	- South Pacific Disaster Reduction Programme
PEACESAT	- Pan Pacific Education and Communications Experiment by Satellite	SPF	- Special Purpose Fund
PEAMIS	- Pacific Environment Assessment and Management Information System	SPL	- Special Prospecting Licence
PESA	- Petroleum Exploration Society of Australia	SPOCC	- South Pacific Organisations Coordinating Committee
PICCAP	- Pacific Islands Climate Change Assistance Program	SPPO	- see UNDHA
PICES	- North Pacific Marine Science Organisation	SPREP	- South Pacific Regional Environmental Program
PIC	- Pacific Island Country	SPT	- Station Polynesienne de Teledetection (Papeete, Tahiti)
PICHTR	- Pacific International Center for High Technology Research	SSAP	- Sector Strategy and Action Plans
PIG	- Pacific Island Gold	SSC	- SOPAC Subcommittee of Council
		STA	- Science and Technology Agency of Japan
		STAR	- Science, Technology and Resources Network
		STARMER	- a joint STA (Japan)-IFREMER (France)-SOPAC program to study mineral resources

	on rift systems in backarc basins in the Southwest Pacific	UNESCO	- United Nations Educational Scientific and Cultural Organisation
SWPHC	- Southwest Pacific Hydrographic Commission	UNICEF	- United Nations Children's Fund
TAG	- Technical Advisory Group (of SOPAC)	UPNG	- University of Papua New Guinea
TAO	- Tropical Atmosphere Ocean Array	USGS	- United States Geological Survey
TCSP	- Tourism Council of the South Pacific	USP	- University of the South Pacific
TOGA	- Tropical Ocean and Global Atmosphere (WCRP)	WCRP	- World Climate Research Program
TRITON	- Triangle Trans-Ocean Buoy Network	WERI	- Water and Energy Research Institute (University of Guam)
UFP	- University of French Polynesia	WHO	- World Health Organisation
UH	- University of Hawaii	WMO	- World Meteorological Organisation
UNCLOS	- United Nations Convention on the Law of the Sea	WOCE	- World Ocean Circulation Experiment
UNDHA/SPPO	- United Nations Department of Humanitarian Affairs/South Pacific Program Office	WOVO	- World Organisation of Volcano Observatories
UNDP	- United Nations Development Program	WWSSC	- Water Supply and Sanitation Collaborative Council
UNDP/DDSMS	- see DDSMS	WWSSN	- World Wide Seismic Station Network
UNEP	- United Nations Environmental Program	YOTO	- Year of the Ocean