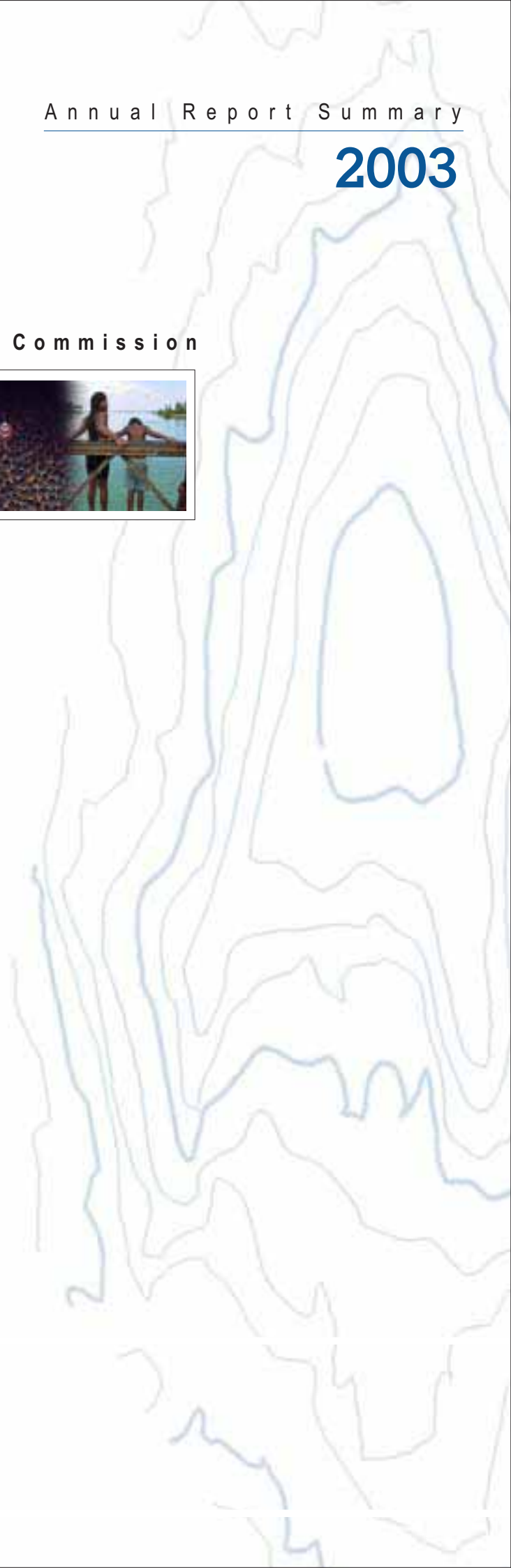


South Pacific Applied Geoscience Commission



DISCLAIMER

The mention of products, technologies, companies does not imply recommendation or endorsement by SOPAC, neither does it imply that these are necessarily the best available for the purpose.

NB: Box stories on pages 10, 15, and 19 are selected STAR presentations from the SOPAC Annual Session in Niue.

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INTRODUCTION

WHAT IS SOPAC?

SOPAC is the South Pacific Applied Geoscience Commission. It is an inter-governmental, regional organisation dedicated to providing services to promote sustainable development in the countries it serves. SOPAC's work is carried out through its Secretariat, based in Suva. The work programme is reviewed annually by the Governing Council assisted by: Secretariat representatives (SOPAC), a Technical Advisory Group (TAG), and a Science, Technology and Resources Network (STAR).

WHAT DOES SOPAC DO?

SOPAC's work focuses on providing assistance to its member countries in three key programme areas: Ocean and Islands Programme, Community Lifelines Programme and Community Risk Programme. Ocean and Islands is an integrated programme focused on research, development and management of non-living resources in ocean and island systems addressing issues relating to seabed resources, energy, maritime boundary delimitation and monitoring of ocean processes. Community Lifelines is a diversified programme that strengthens national capacities in energy, water and sanitation, information and communications. Community Risk is a comprehensive programme aimed at reduction of community vulnerability through improved hazard assessment and risk management.

These three key programme areas are supported by the Corporate Services Programme. To effectively provide these support services, SOPAC maintains an information technology unit, provides publication and library services, and offers technical and field services for specific project work.

WHO BENEFITS FROM SOPAC?

Member countries are Australia, Cook Islands, Federated States of Micronesia, Fiji Islands, Guam, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. American Samoa, French Polynesia and New Caledonia are associate members. Any island member country can request assistance from SOPAC. Benefits accrue to island member countries directly through the provision of basic geological knowledge and indirectly, through improvements in land and ocean use, leading to improved health through water and sanitation provision, wealth generation through the development of mineral resources, hazard and disaster management and sustainable development by taking into account the geo-environmental impacts of development.

WHO PAYS FOR SOPAC?

SOPAC is funded by member-country contributions and supported by the following donors: Australia, Fiji Islands, Canada, France, Ireland, Japan, New Zealand, Office of US Foreign Disaster Assistance, Taiwan, the United Kingdom, the Commonwealth Secretariat, the European Union, and certain UN agencies. Where donors have provided assistance for specific activities in the Work Programme, either at the regional or country level, this is acknowledged in the Annual Report Summary.

FOREWORD

To those of you who have been following SOPAC's progress over the past 5 or 6 years I hope, through this my final note, to be able to report a successful end to an eventful chapter in the growth of a regional organisation.

It would be easy to list the many changes and improvements effected over time within the organisation. A great deal of which would be routine and some might say long overdue. But I don't think this is where SOPAC can claim success. Neither can an annual clean bill of health by the Auditors or growth in the annual budget, on their own, be the measure of our true success.

Those of you who have been reading our annual reports will know that we have worked very hard at achieving more than just the good annual report card. It has been more than surviving the scrutiny of another Governing Council meeting, more than keeping the donors on side and definitely more than just totalling up the tasks we've carried out for our member countries.

SOPAC, if it wanted to be could have been and could have kept many of its stakeholders happy with being the best supply-side driven organisation. After all over the years we had developed a reputation for carrying out good applied science. If it wanted it could have just concentrated on following global trends and goals. In a way we did this as we related our work to addressing poverty issues and contributing to sustainable development.

However, look back through earlier reports and note very early in the piece a desire to make a difference to the lives of those we are here to serve.

If we were to achieve any measure of our success it would require both a change in focus and in vision. The focus would need to move from the organisation to the clients and the vision from what the organisation should be like to where our owners, the Pacific Islanders, wanted to be. The change was from what we could supply to what our members demanded.

And so in the last few years we have tried to effect these changes through implementing the memberships' new Corporate Plan. A subtle, though extremely important point being that the vision, goals, and the plan had to be driven by the countries and not the Secretariat. What the Secretariat has done was to develop a new strategic and programmatic approach, one it has tried to implement over the last two years.

Last year I said that when we next reported to you it would be somewhat easier to see just how we are performing. You will note that reporting is now against programmes and success might now be assessed by how we perform against indicators and no longer by how many tasks we carry out.

Maybe I could be accused of being overly optimistic in claiming a successful end to a chapter. I won't argue the point but let history decide.

What I am optimistic about is that we have a Secretariat with programmes that are on the right course. Next year will see it begin to work with its membership in drawing up its second Corporate Plan. Hopefully the teething problems will all be over.

And so indeed a new course has been charted and at the 2003 Annual Session in Niue a new Captain of the ship appointed – Ms Cristelle Pratt. She will inherit a crew of dedicated professionals of the highest calibre. I trust Cristelle will enjoy the privilege of being Director of SOPAC.

I believe that to work for such an organisation is a great honour in itself. But to know that one, in some small way can contribute to making a difference to the lives of one's fellow Pacific Islanders is indeed reward beyond measure.



Alf Simpson
Director



WORK PROGRAMMES

OCEAN & ISLANDS



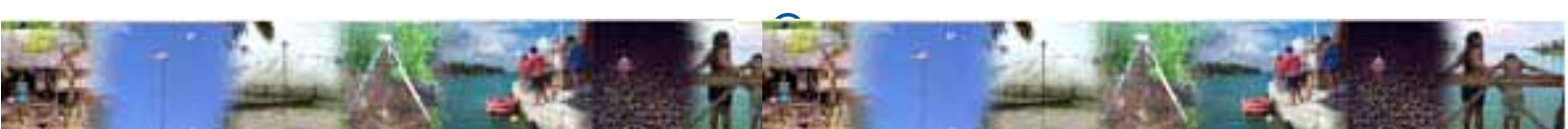
COMMUNITY LIFELINES



COMMUNITY RISK



CORPORATE SERVICES



OCEAN & ISLANDS

The Ocean and Islands Programme commenced the implementation and reporting of its activities under the component areas: Resource Use Solution, Monitoring Physical and Chemical Change of Ecosystems, and Ocean Governance, at the beginning of 2003. The following narrative provides highlights of activities undertaken which seek to contribute to the ultimate goal of *improved scientific knowledge of ocean and islands ecosystems for the sustainable management of natural resources*.

Resource Use Solutions

Under the component Resource Use Solutions, which seeks to provide appropriate technologies, field-based scientific assessments, mapping and surveying to address critical issues of development, unsustainable exploitation of marine and mineral resources, land degradation, coastal erosion, declining water quality and salt-water intrusion, and habitat degradation, the following suite of activities were undertaken during the year:

Multibeam mapping and geophysical surveys were carried out in the Cook Islands, Fiji, Vanuatu and Tonga and the products for these resource assessment activities will be transferred to countries to contribute toward more considered planning, development and management decisions.

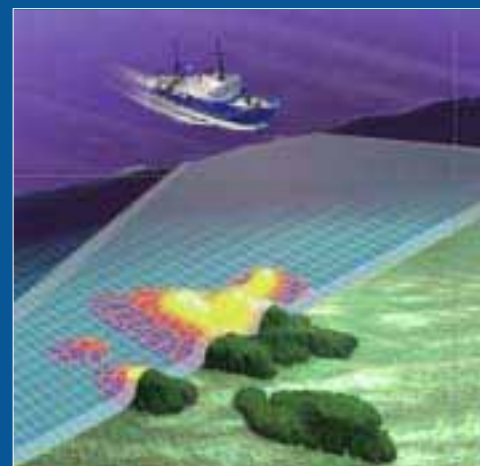
For example, the recent survey of the Penryhn Lagoon provides a detailed dataset for relevant Government departments and ministries, the local council, pearl farmers and other users to work together toward the development of an integrated management plan for the lagoon.

Electronic and hardcopy products comprising integration of datasets into GIS, maps and reports with recommendations, which are the result of surveys carried out in the Federated States of Micronesia, Marshall Islands and Samoa have been completed.

The intention is to conduct in-country consultations in the Federated States of Micronesia and the Marshall Islands in 2004 to ensure that the products are more effectively utilised through raised awareness of the benefits of the data and information products as tools for more considered planning and management decisions within the areas that have been surveyed, across key user groups.

As well, the results and recommendations of the Commonwealth Secretariat – funded initiative to address the critical issue of erosion of some coastal areas on Tongatapu and Atata Islands, Tonga was finalised and delivered. It is envisaged that some of the recommendations of this activity will be taken up under the SOPAC-EU EDF8 Project.

Significant progress has been made on the design and development of the Pacific Islands Regional Maritime Boundaries Information System, with existing data being validated. This will form the basis for the development of strategies for the completion of delimitation activities for countries in so far as the technical aspects



Multibeam echosounder used in seafloor mapping.



Over 200 pearl farm boundaries were mapped in the Penryhn Lagoon using the multibeam echosounder.

are concerned. The onus for the negotiation and agreement of the numerous shared boundaries that exist within the Pacific Islands region is for the Island States to finalise between themselves.

The agreement by Council to reallocate funds to enable the transcription of geophysical data stored in the SOPAC Petroleum Databank at Geoscience Australia in Canberra, from magnetic tapes to current medium and formats, has allayed growing concerns of the potential loss of an invaluable dataset of resource information within selected island member countries. It is widely acknowledged that the re-acquisition of these data would be prohibitively expensive and in the current research and exploration climate of marine mineral resources highly unlikely.

With regard to capacity building activities the second year of the current offer of the *Certificate in Earth Science and Marine Geology* was completed, with seventeen students from eleven countries successfully completing two courses in *Earth Materials* and, *Marine Geology and Earth History*.

Two of the seventeen students have now successfully completed all of the academic requirements to be awarded a CESMG. On-the-job training of Pacific Island nationals either in the field or at the Secretariat remains an inherent, important element of all technical activities of the Secretariat.

Monitoring Physical and Chemical Change in Ecosystems

The component of *Monitoring Physical and Chemical Change in Ecosystems* seeks to establish long-term, routine monitoring and observing systems of physical and chemical parameters, to provide timely and accessible information for improved understanding of the ecosystems of our ocean and islands and for the more prudent management of their resources.

Highlights for activities carried out during the year under the component include:

A Regional Workshop on *Potential Applications for Ocean Observation of the Pacific Islands Region*, which was convened in late-2002, has led to the development of a design concept for the establishment of a *Pacific Islands Regional Ocean Information System*.

It is envisaged that the PIROIS will provide appropriate data and information products, derived from data collected under the various international Global Ocean Observing System (GOOS) programmes and projects, to multiple users in the Pacific Islands region. These products will undoubtedly benefit the planning, sustainable development and management activities occurring in both ocean and island settings.

The establishment and implementation of coastal-GOOS activities continued to be delivered through the Pacific Islands GOOS regional alliance. The most noteworthy achievements being assistance provided to the Cook Islands for the procurement, commissioning and deployment of two moored oceanographic monitoring buoys for their Penryhn and Manihiki Lagoons.



SOPAC Petroleum Data Bank's Chief Custodian, Peter Butler (left) with VIPs from Tonga. The Data Bank is located at Geoscience Australia in Canberra, Australia.



The deployment of one of two physical oceanographic monitoring buoys procured with NZAID bilateral funds, for Penryhn and Manihiki lagoons, Cook Islands.



Secretariat staff preparing for a marine survey.



Retrieval of the magnetometer off the southeast coast of Viti Levu, Fiji, during a marine survey conducted under the SOPAC/EU EDF8 Project.

These long-term, sustained monitoring systems will collect physical and chemical data to be available in near real-time. SOPAC has developed protocols enabling the processing of these data, with appropriate products to be made easily accessible to key users. The monitoring buoys were procured through bilateral funding arrangements between the Cook Islands and New Zealand, with some of the training and commissioning costs being met by the GOOS Project Office of UNESCO-IOC.

Our role in the implementation of the third phase of the South Pacific Sea Level and Climate Monitoring Project continues to grow, with responsibilities extending toward continued assistance in the field survey components of precise differential levelling and, the installation and maintenance of continuous global positioning systems, under the geodetic component of the project. The maintenance and calibration of the sea-level recorder network and databases (SEAFRAME sites) were also carried out.

SOPAC made field visits to all of the twelve countries participating in the project and wherever possible transferred survey skills to national counterparts during field missions. The Regional Data Archive for the SPSLCMP III continued to be maintained and updated.

Ocean Governance

The Ocean Governance component seeks to contribute to the establishment of an integrated framework that ensures sound stewardship and management of ocean environments at the local, national and regional levels.

This is through assisting island member countries meet their obligations under relevant international and regional conventions and agreements such as the *United Nations Convention on the Law of the Sea*, as well as to support the development and implementation of appropriate policy, planning and regulatory frameworks at national and regional levels.

In this regard, initiatives relating to the design, development and testing of a Marine Scientific Research Cruise Coordination Database was significantly progressed. This is particularly important toward assisting island member countries, who are States Parties to the Law of the Sea Convention in meeting their obligations on those provisions that relate to marine scientific research.

In addition, SOPAC has actively contributed and participated in the planning of the Pacific Islands Regional Ocean Forum (PIROF), the mechanism to implement the Forum Leaders endorsed *Pacific Islands Regional Ocean Policy*. The PIROF will be convened in early February 2004, with a view to developing an integrated regional framework for strategic action of ocean and ocean-related initiatives that will influence the programming of all CROP agencies and their partners in development.

THE JAPAN / SOPAC CO-OPERATIVE DEEP-SEA MINERAL RESOURCES STUDY



Cristelle Pratt



Nobuyuki Okamoto

SOPAC and the Government of Japan have been jointly conducting surveys of deep ocean mineral resources in the Exclusive Economic Zones (EEZs) of SOPAC member countries since 1985.

The first stage of this joint project comprised three, five-year phases, with surveys conducted within the EEZ's of eleven SOPAC member countries, being the Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. The primary objective of the first stage was to assess the marine mineral potential of these eleven countries.

The first three-year phase of Stage 2, completed in March 2003, involved surveys within the EEZ's of the Cook Islands, Fiji and the Marshall Islands. Its objectives, and the proposed objectives for the recently finalised second phase, was to evaluate the resource potential of marine minerals in the prospective areas found during Stage 1 in selected countries, as well as acquire environmental baseline data for use in environmental assessments in the event of future marine mining activities.

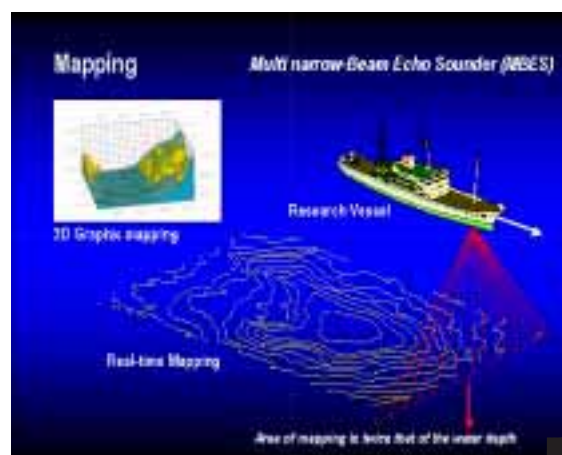
A new agreement for ongoing deep ocean mineral exploration of the seabed in selected areas within the EEZ's of the Federated States of Micronesia (FSM), Fiji, Kiribati and Niue, was signed on 27 February 2003, at the SOPAC Secretariat in Suva by representatives of those countries, the South Pacific Applied Geoscience Commission (SOPAC), the Japan International Co-operation Agency (JICA) and the Metal Mining Agency of Japan (MMAJ).

The new agreement covers seabed surveys to be carried out over a three-year period commencing in April of 2003. The 2003 survey cruise will be conducted in the EEZs of Kiribati and Niue in November-December, 2003. The 2004 and 2005 survey cruises will acquire data within the EEZs of Fiji and FSM, respectively. The one-month surveys will use the Japanese Research Vessel *Hakurei Maru No 2*.

The overall project, since its inception in 1985, has obtained excellent results and has identified numerous sites with potential marine mineral resources of manganese nodules, cobalt-rich manganese crusts and polymetallic massive sulphides. The deep-sea mineral resources contain valuable metals such as nickel, copper, cobalt, zinc, lead, silver, gold and other minerals. Pacific Island countries acknowledge the need to continue to collect deep-sea mineral resources data and information, in order to identify new mineral occurrences, as well as improve understanding of those resources that have already been found, as well as to understand the environmental baseline conditions that exist.

Findings indicate greater abundance of deep ocean mineral resources than similar mineral resources found on land. Anticipated manganese, nickel and cobalt resources of manganese nodules on the seabed are estimated to be over a hundred-fold greater than on-land resources. If this is indeed the case, it follows that deep-sea mineral resources within the Pacific Islands region may hold an important opportunity to the future sustainable economic development of some Pacific Island States.

To date, the Japanese Government has spent approximately FJD 120 million on this eighteen-year joint project. A further FJD 15 million is anticipated to be spent over the next three years.



COMMUNITY LIFELINES

The Community Lifelines Programme comprising activities associated with energy, water, and information and communication technologies (ICT) provides mechanisms through which SOPAC member countries might be assisted in developing their own solutions to meet national, regional and global development challenges in these areas. Programme activities while addressing member-country demands are also consistent with the Millennium Development Goals for energy, water, wastewater, and information and communication technologies; and other global and international drivers such as the world summits on “Sustainable Development” and “the Information Society”.

Energy, water, and information and communication technologies are recognized as three essential inputs for effective social and economic development. In the past there has been insufficient attention paid to the inter-linkages between these three vital sectors and how they bear on environmental and social issues at the national level. The key challenge for the Community Lifelines Programme, in the immediate- and long-term future is effecting the strengthening of these linkages, and others that may become apparent in the interim. This will be chiefly through strengthening in-country capacity for planning and strategic management, among others.

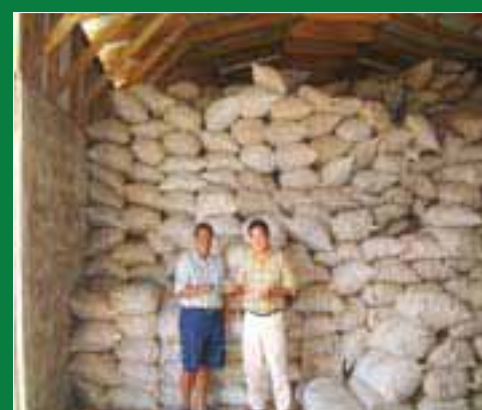
The Community Lifelines Programme implemented its 2003 programmed activities under the following key components: *Resource Assessment, Development and Management, Asset Management, and Advocacy and Governance within Community Lifelines*. The overview of key activities that follows highlights contributions to improving “communities’ access to energy, water and sanitation, and information and communication technologies for sustainable livelihoods.”

Resource Assessment, Development and Management

The Regional Biomass Resource Assessment Programme that commenced in 2002 was completed within this period by international consultants from the Imperial College in London through funding from the Perez-Guerrero Trust Fund, the Government of Taiwan/ROC and funds from the Community Lifelines Small Energy Projects Programme.

The programme involved the development of web-based training materials including convening in-country resource assessments and the providing resource assessment training for Pacific islands nationals in six Pacific island countries: Fiji, Kiribati, Tuvalu, Tonga, Samoa, and Vanuatu. As a result of the biomass resource assessments and training, there has been renewed interest in the efficient utilisation of biomass for energy production and a number of project proposals were prepared and submitted for funding.

The Wind Energy Education Programme is being implemented in conjunction with the University of the South Pacific through it’s School of Pure and Applied Science (Physics Department), and the United Nations Environment Program (UNEP) through the UNEP Collaborating Centre on Energy and Environment (UCCEE). Key events were the preparation of detailed training modules that



Biomass Resource - Energy content of coconut oil can be used directly (after filtering) in diesel engines with modified fuel supply systems

were completed under a local contract, and the commencement of the installation of a 20-kW demonstration wind turbine. The first post-graduate course on wind energy commenced at USP in the second semester with five students participating. Funding for the programme is provided through UNEP and the French Government.

Energy resource assessments for wind and wave energy were continued at critical locations and technical support provided as required. Renewed interest in wave and ocean energy resulted in the development and signing of a memorandum of understanding between SOPAC and US Wave Energy Inc. This led to the review of earlier wave data collected by the Oceanor/NORAD wave energy programme and computer simulations to predict the performance of a wave-powered generator system called Wave Energy Module (WEM). Following the confirmation of the earlier- predicted wave energy potential, the US Wave Energy Inc, in conjunction with the Fiji Department of Energy and SOPAC, assisted with the deployment of a submerged wave data logger at Kadavu, Fiji Islands.

Activities in renewable energy recommenced this year with implementation of a UN/ESCAP-funded training needs assessment. This was followed by a pilot training programme on solar photovoltaic project development where the ultimate goal was the provision of better renewable energy training in the Pacific region primarily through technical assistance and practical training attachments and workshops. The overall objective was to prepare a longer-term training programme that focused on the key areas as identified through the training needs assessment.

SOPAC provided the coordination for, and participated in, the UNESCO Regional Steering Committee and Symposium on managing water resources in climatic extremes and natural disasters, comprising three separate events. Firstly, a two-day conference on Water Resources Management under Climatic Extremes and Natural Disasters with attendance of hydrologists from twenty-two (mainly Asian and Pacific) countries, and also from Canada, United Kingdom, and the Netherlands. Secondly, a one-day field trip that focused on groundwater bores and the treatment of wastewater. Thirdly, the two-day meeting of UNESCO's International Hydrological Programme Regional Steering Committee for Southeast Asia and the Pacific attended by seven Pacific island countries. One of the main outcomes of the meeting was the admission of Pacific island countries as new members of the Regional Steering Committee of UNESCO's International Hydrological Programme.

A regional programme on water quality training and database updating for the Marshall Islands and Fiji commenced this year. The programme's objective was to provide training and technical advice to staff in their water quality monitoring laboratories for the purpose of improving their skills to monitor drinking water quality. The programme's being treated as a priority and will be implemented in other member countries as human and financial resources become available. This programme also has an *Asset Management* component that is inclusive in the training and technical advice reported above.



A wind resource turbine for energy production in Mangaia, Cook Islands.



Deploying a wave gauge in Kadavu, Fiji.



Vanuatu based Wan Smol bag Drama group performing as part of the World Water Day activities organised in partnership with Live and Learn in Suva.



Well monitoring in Bairiki, Kiribati.

World Water Day activities were undertaken in collaboration with the NGO Live and Learn for the second year in a row, under the 2003 theme: Water for the Future. As has become customary, promotional stickers, posters and fact sheets were developed along with teacher training materials which Live and Learn used in follow-up teacher training workshops in four Pacific island countries.

Technical assistance was provided to strengthen in-country human resource capacity in the use of GIS and remote sensing tools to assess land-cover change for monitoring biodiversity, water catchment area identification, resource-use identification and monitoring in areas that can extend from on-shore through coastal zone to shallow water. Capacity-building activities were undertaken in regional, sub-regional and national workshops, and training attachments. Sustainable ICT-based solutions are also deployed to countries via products and systems designed to not only meet end-user requirements in the short term but that can also be easily maintained and further developed cheaply.

ICT solutions, including the use of open-source software and GIS and remote sensing tools were actively promoted through the following: participation in international and regional fora; publication of issues of the Regional GIS and Remote Sensing Newsletter; development and maintenance of electronic mailing lists, and on-line discussion fora to transfer data, information and techniques. National GIS and Remote Sensing User groups are regularly assisted and supported to ensure and encourage networking and regular information sharing among national agencies to maximise use of limited resources and avoid duplication of effort.

Asset Management

A sanitation park project serving as a training and educational facility was formally approved with funding provided through the New Zealand Pacific Initiative for the Environment. Planning for the implementation of the project commenced with the World Health Organisation, Fiji School of Medicine and Ministry of Health and other stakeholders during the year. A formal programme of activities associated with the development of the park was prepared which includes, capacity building in organisational skills, facilitating improvement of gender awareness, promotion of sanitation and hygiene, and provision of assistance in the selection of sanitation facilities. It was also proposed that the construction of the various working model components at the Fiji School of Medicine would commence in early 2004.

Technical assistance and policy advice were provided to Pacific island countries and Fiji-based missions in the development and maintenance of ICT-based solutions and in particular the establishment of Local Area Networks and Wide Area Networks (LAN/WAN) to improve operational efficiencies in communication, marketing and access to information.

Assistance was provided in the identification, selection and procurement and optical enhancement of satellite imagery that serve as foundational datasets (backdrops) for resource and infrastructure managers. Appropriate open-source solutions were promoted and deployed to enable Pacific island countries to develop national capacity while reducing costs.

Advocacy and Governance within Community Lifelines

Following on from the 3rd World Water Forum Pacific preparatory regional consultation jointly convened with the Asian Development Bank in July 2002, the Pacific Regional Action Plan on Sustainable Water Management (Pacific RAP) was published with ministerial endorsement by fourteen governments.

The Pacific RAP was subsequently presented at the 3rd World Water Forum in Kyoto in March. It is being used extensively as a general reference document and as a strategic development tool at all levels, with a number of PICs using it in the development of their own national water strategies.

Also at the 3rd World Water Forum in Kyoto the opportunity was taken to formalise the Joint Caribbean-Pacific Programme for Action on Water and Climate with the signing of a Memorandum of Understanding (MoU) and the creation of a water sector south-south transfer mechanism with the Caribbean Environmental Health Institute. The MoU, particularly acknowledges that many aspects of water resources management, environmental health, and geoscience, afford excellent opportunities for cooperation between Caribbean and Pacific small islands countries.

The Pacific Islands Energy Policy and Plan (PIEPP) remained a guiding document for the energy sector at both regional and national levels. It provided a basis for the development of national energy policies and at the regional level has been the basis upon which activities relating to the Type II Initiatives were developed.

In addition, work continued with the development of partnerships through the umbrella Pacific Water and Energy Type II Initiatives. This resulted in the securing of funding in 2003 for the production of a Pacific Islands Climate Update Bulletin and delivery of the first year of a training course on Hydrology for Pacific island nationals scheduled for early 2004.

For energy, an initial three-year partnership with the Government of Denmark through the EU and UNDP for a new project "Pacific Islands Energy Policies and Strategic Action Planning" was developed.

SOPAC took over the Chair of the Round Table on Climate Change, Climate Variability and Sea Level Rise from USP in 2003 and, through the Community Lifelines Programme, was responsible for the convening of the 3rd Round Table Meeting. Outputs from the meeting included establishing arrangements for the review of the Climate Change, Climate Variability and Sea Level Rise Framework; and compiling a summary record for the meeting. Coordination and logistical support was also provided for the World Bank and Asian Development Bank-funded 2nd High-Level Consultation on Climate Change that preceded the 3rd Round Table Meeting.



Rubbish collection points such as this are mapped to GIS software.



A rubbish collecting point displayed in spatial data environment. This will optimise rubbish collection saving money which then can be added towards the refund for empty bottles and cans.

PUTTING THE SCIENCE BACK INTO POLICY: THE PACIFIC REGIONAL ACTION PLAN ON SUSTAINABLE WATER MANAGEMENT



Clive Carpenter

The Pacific Regional Action Plan on Sustainable Water Management was one of the major outcomes of a year long consultation facilitated by SOPAC amongst its member countries, in preparation for the 3rd World Water Forum in 2003.

The Pacific Regional Action Plan on Sustainable Water Management (Pacific RAP) uses a holistic framework to water management based upon six thematic areas, which together address the 18-20 priority issues and needs of small island developing states in the water sector.

The thematic areas are: i) Water Resources Management; ii) Island Vulnerability; iii) Awareness; iv) Technologies; v) Institutional Arrangements, and vi) Financing. The Pacific RAP is both a regional policy level blueprint and a regional strategy articulating the agreed actions of 18 countries, (14 with ministerial-level endorsement), necessary to achieve sustainable water management.

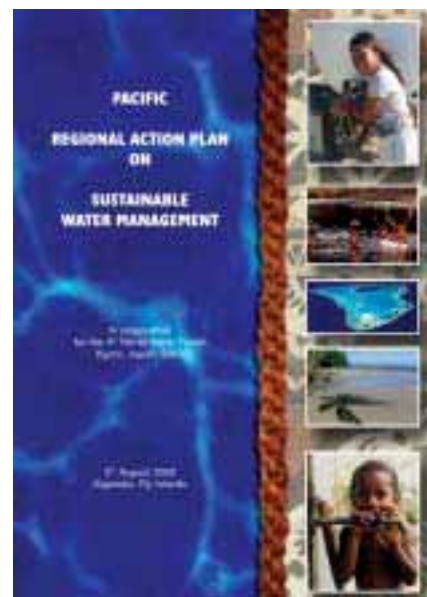
Integral to this regional action plan is the use of science to provide national, regional, and community level stakeholders with the knowledge and information required to make informed and enhanced decisions.

In a region where background data sets are often absent due to unavailable human and financial resources, the Pacific RAP identifies the need to address critical data gaps whilst building national and regional technical and scientific capacity to collect, store and use these data sets.

Application of science to national, regional and community water policy and strategy can be found in almost all of the six thematic areas, but particular attention is given to the need to link water and climate-related disciplines including meteorology, climatology, hydrology and hydrogeology to water resources management, especially during the climatic extremes of cyclone-related flooding and El Niño-related drought, and associated disaster preparedness. This is highlighted in the agreed priority action of the Pacific HYCOS proposal (Hydrological Cycle Observation System).

Other examples of the integration of science into the Pacific RAP include satellite imagery, remote sensing and GIS for water resources development and protection; vulnerability and hazard assessments for disaster preparedness of water & wastewater utilities assets; social sciences in community participation and engagement in rural water & sanitation; hydraulic modelling for water distribution system management and leakage reduction programmes; hydrochemistry and microbiology for water quality programmes and to advocate the link between good water and wastewater management and improved public health and environmental protection.

The Pacific RAP illustrates to politicians and other decision makers the need to understand the importance of science in enabling informed decisions to be made and therefore to recognise that such science has both a real and tangible value as well as a considerable cost to undertake. It also challenges scientists not to indulge in self-interest but rather concentrate their energies on applying their expertise to such science as has actual benefits to the peoples of the Pacific Islands.



COMMUNITY RISK

The past twelve months have been a process of transition as the new Community Risk Programme commenced and the three-year Disaster Management Unit (DMU) Project came to an end. There were many lessons learnt from the DMU Project, which have been factored into the new programme and it has also successfully integrated a range of hazard reduction and risk management related activities within the Secretariat, including the Environmental Vulnerability Index (EVI) Project, the outstanding community-based disaster management approach in Vanuatu and Tuvalu and the hazards component of the new EU Community Vulnerability Project in African Caribbean Pacific Countries (ACP) Countries.

The combination of the regional mandate entrusted to SOPAC and the supporting role of our international partners particularly Emergency Management Australia, the New Zealand Ministry of Civil Defence and Emergency Management and the International Strategy for Disaster Reduction Secretariat, has resulted in a number of very tangible benefits to the region.

Unfortunately major disasters still occur on a regular basis as we have seen once again this year with cyclone Ami in Fiji and cyclone Zoe in the Solomon Islands. The impact of such disasters can reduce a nation's capability for achieving sustainable development and in the worst case can even reverse the benefits of existing development.

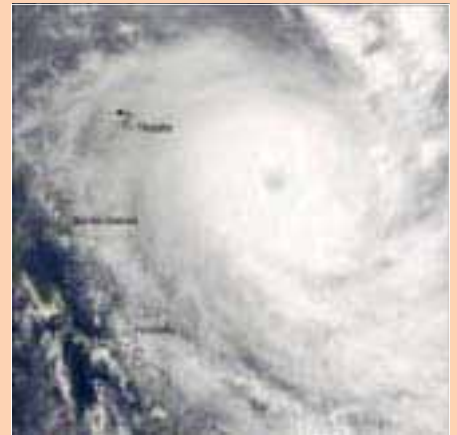
Even in developed countries the weaknesses of the traditional, reactive approach to managing major disasters is increasingly regarded as being unsatisfactory. In Small Island Developing States such as those in the Pacific the weaknesses of such an approach can be magnified given a relatively small public sector capability and a limited resource base.

Internationally, proactive disaster reduction and risk management is being made a priority in an attempt to advance community safety, sustainable living and sustainable development. The Community Risk Programme has been designed to embrace and develop this new approach through the following key components:

Strengthening Resilience to Disasters

The previous approach to disaster management in the region focused very much on managing the impact of the disasters themselves and was primarily based on preparedness and response strategies and programmes. In order to strengthen resilience to disasters it is important to recognise that:

- Hazards do not, of themselves, create disasters – these only occur when hazards impact on communities, infrastructure, resources or the environment.
- The impact of a disaster event creates a situation, which is usually well beyond the capability of single individuals or agencies to deal with effectively. Situation management therefore requires a comprehensive, integrated and 'whole-of-government' response to ensure not only that the event itself is managed as effectively as possible but also that longer-term rehabilitation and reconstruction facilitate sustainable living and sustainable development.



The rare Category 5 Tropical Cyclone Zoe that caused much damage in Solomon Islands and Vanuatu.



Damage caused by Cyclone Zoe in the Solomon Islands.

This new approach requires that disaster reduction and risk management policies and arrangements be incorporated into a whole-of-country strategy for building safer communities. It will also support and enhance the current role of the National Disaster Management Office (NDMO) in undertaking its responsibilities in the key areas of disaster preparedness, public awareness and disaster response coordination and foster the strengthening of a range of national partnerships.

Mitigating the Effects of Hazards

In order to build safer and less vulnerable communities it is necessary to understand the cause and effects of risks to which they are exposed. A hazard assessment process and a rigorous analysis and evaluation of the associated risks, to develop improved mitigation strategies, can achieve this. Determining levels of community vulnerability requires the integrated application of appropriate local, scientific and technical knowledge. Priorities for risk reduction will emerge from the application of appropriate risk management and vulnerability assessment tools.

Mainstreaming Risk Management

Currently national risk management activities in the Pacific tend to be limited to single government departments. In many instances national risk reduction efforts are uncoordinated and in such cases duplication of efforts are common and planning gaps exist.

In order to address the issues of communities at risk, Pacific Island Countries need to have committed themselves to a more integrated, all hazards and whole of country comprehensive hazard and risk management process that will enhance the sustainability of national planning processes and encourage a more coordinated and integrated regional approach to risk reduction. The process needs to include all key stakeholders involved in hazard mitigation and risk management including relevant government departments such as planning, NDMOs, NGOs, community groups, private sector, donors, and regional partners.

Community Risk Programme Capacity Building Activities

The major highlight of the year was the 11th Pacific Regional Disaster Management Meeting and Communities at Risk Conference. This regional activity was co-hosted by the SOPAC Secretariat and the Fiji Ministry of Regional Development and officially opened by the Prime Minister of Fiji, Laisenia Qarase. Over eighty participants representing twenty countries attended and their deliberations have helped set the direction of the programme for the next 2-3 years.

The meeting also endorsed the programme strategy of targeting a small number of member countries each year to consolidate capacity building efforts, particularly institutional strengthening of the National Disaster Management Offices. Mr Salvano Briceno, the Director of the UN Secretariat for the International Strategy for Disaster Reduction, delivered the keynote address.



ISDR Director, Salvano Briceno delivers the keynote address at the Communities at Risk conference in Sigatoka, Fiji in May.



Participants from 20 countries attended the 11th Pacific Disaster Managers Meeting in Sigatoka, Fiji.

Two major initiatives emerged from the meeting and conference and these were:

1. A partnership between SOPAC and the International Strategy for Disaster Reduction (ISDR) to coordinate the Pacific input to the 2005 review of the Yokohama Strategy and Plan of Action.
2. The development of a draft regional policy for Communities at Risk.

Other capacity building highlights included:

- The arrival of the EU Project Risk Analyst Michael Bonte who has now joined the Community Risk Programme Team.
- The securing of additional funding from the Dutch Government for a 3 year attachment of a Risk Analyst to the programme.
- The establishment of a Pacific Emergency Management Training Advisory Group consisting of a number of key regional organisations involved in regional training programmes.
- The completion of the Disaster Risk Management in Marginal Communities and Catastrophe Insurance Projects in Vanuatu.

Disaster Risk Management Training and Development

Through a partnership between the SOPAC Community Risk Programme and The Asia Foundation and US Office of Foreign Disaster Assistance the following training courses were delivered in the past 12 months:

Overseas Courses

- Disaster Management Courses in Bangkok attended by 3 regional representatives.
- Facilitors Skills course in Costa Rica attended by 2 regional representatives.

Regional Courses

- Initial Damage Assessment attended by 13 NDMOs.
- Emergency Operations Centres Management attended by representatives from 12 countries.
- Exercise Management attended by representatives from 11 countries.

National Courses

- Fiji – Emergency Operations Centres Management, Initial Damae Assessment and Introduction to Disaster Management.
- Solomon Islands – Training for Instructors and Introduction to Disaster.
- Federated States of Micronesia – Introduction to Disaster Management and Training for Instructors.
- Cook Islands – Emergency Operations Centres.



Exercise Management course in Nadi, Fiji.



Emergency Operations Centre course in Rarotonga, Cook Islands.

COASTAL SEDIMENTS OF THE TROPICAL PACIFIC:

WHAT WE KNOW AND WHAT WE NEED TO KNOW FOR THEIR MANAGEMENT THROUGH THE 21ST CENTURY



John Collen

Coastal sediments are an important resource for habitation, tourism and construction in all tropical Pacific nations. As sediments are immediately affected by environmental change and human activities, understanding their dynamics and budgets is vital to predicting the responses of the systems to changes and to managing the coastal and nearshore environment.

Our knowledge of many processes varies; some are well understood but others need much study. The starting point is sediment composition, with relative proportions of the important components known from some areas; determining these is not always straightforward and may require sedimentological and geochemical techniques. Most sediments are biogenic carbonates so knowledge of the biology of a range of organisms, and especially rate of carbonate precipitation, is crucial. Growth rates and carbonate production are well known for some groups for some areas but less so for others. Most studies are of productivity of species per unit area (often areas favourable for growth or amenable to study) but total productivity across the entire system is more important. Species distribution is also important, and total productivity probably varies regionally.

Mechanical and bio-erosion processes and rates determine how much of the carbonate produced reaches the nearshore system. There are few reliable studies of this and the relative importance of normal and catastrophic events needs to be assessed. Depositional processes, including transport directions and mechanisms, beach abrasion and burial diagenesis, also need further study. It is important to determine the “normal” residence time of each type of clast in each part of the system. For example, if the residence time of a foraminiferan test on a beach is 50 years and if these contribute 60 % of the sediment (as is common), then loss of the living foraminifera will cause loss of 12 % of the beach per decade through attrition alone, without climatic change.

Parameters vary significantly across the Pacific region and understanding the sediment budget at one location will not meet all needs. Until the “normal” processes are understood, reactions of the systems to global climate and other change cannot be quantified.



CORPORATE SERVICES

INFORMATION AND COMMUNICATION TECHNOLOGIES

The main focus of the Information and Communication Technologies (ICT) Component was the ongoing operation, maintenance and development of the server-based information system that is available to all staff via a networked infrastructure. In addition to mail and Internet access three web sites are hosted by the system: the primary site www.sopac.org, the internal site siw.sopac.org and the recently developed site for the EDF8 project map.sopac.org.

An ongoing task was the continuing analysis of software and the use of open-source products, where appropriate, while ensuring that licensed software is acquired for new and rebuilt computers. The former provides a cost-effective method to introduce software that can be adapted by end users while the latter ensures that the organisation is compliant with software licencing.

The EDF8 project includes the provision of IT equipment to each of the 8 Pacific ACP States. The procurement, setup and delivery was timed to maximise warranty and ensure the timely supply of current software versions and hardware. The equipment includes an equipment rack with server and associated power conditioning and networking equipment to run the open-source MapServer in addition to a desktop computer, colour printer and software set where the office suite was also open-source.

The ongoing upgrade of the servers was undertaken to ensure that the requirement for increased performance and capacity is addressed while minimising downtime by employing technologies such as RAID with hot swap components. A constraint during 2003 has been the ability of the existing tape backup system to keep pace with the increasing storage capacity. The existing DAT tape system will need to be replaced by the latest generation LTO tape system in early 2004.

The majority of end user computer equipment was selected, procured and setup to suit programme or individual requirements while maintaining conformity of manufacturer, specifications, operating system and core software set to maximise interoperability and minimise costs through economy of scale. In addition printers are selected as duplex where possible to minimise paper usage and conformity of manufacturer and models selected to standardise on consumables and minimise costs again through economy of scale.

All new staff, temporary attachments and consultants requiring to use the system are required to undertake an induction course that is conducted by the ICT staff and the induction manual was updated to meet changing requirements. This process provides a standard process to familiarise staff with the system and increase efficiencies.

A major highlight was the establishment of a training room for capacity-building activities carried out by all technical programmes. The room can accommodate 18 participants and several trainers. The area was networked in a flexible manner to provide a closed network, a network connected to SOPAC's internal information system and a network connected to the outside Internet. This flexibility allows ICT training for SOPAC staff and outside agencies and provides security for the organizations corporate data holdings.



Mapserver hardware



Incoming SOPAC Governing Council Chair, Sisilia Talagi of Niue with outgoing Director, Alf Simpson.

A task tracking system (ZenTrack) was implemented for evaluation that enables recording of routine jobs and fault reports that should enable improved delivery of services. It is anticipated that ZenTrack can be applied to other components of the Corporate Support Services to provide a process for recording, prioritising and actioning requests for assistance or service. This system should enable tracking the ongoing requests for assistance by programme and the level of support provided by a Corporate Support Services Component whether this be development of a programme's web pages or design and deployment of a process to analyse data.

PUBLICATIONS & LIBRARY

A three-month delay to the electronic archiving of historical printed reports was experienced at the beginning of the year after recruitment of the new Publications & Library Assistant to replace long-serving Abigail Duaibe who left for further studies in New Zealand. The delay was due to expired scanning hardware. The Virtual Library scanning system was fully operational again from May, and the scanning of historical material resumed. Good progress was made with the scanning of the Proceedings series, the Annual Reports and the Technical Reports. The new recruit has also gained confidence in the maintenance and updating of the Virtual Library, along with the routine procedures associated with the distribution of publications and maintaining a stock of consumables for the Secretariat.

The EU-SOPAC Project started to produce reports in earnest in 2003. Procedures were established in conjunction with Project leadership for a simple registration and retrieval system for EU-SOPAC Project reports that will ensure the end-of-Project review is in no way hampered by a clumsy report retrieval system. The advent of this Project strains an already over-stretched publications service. The recruitment of an Executive Planning Officer who has been tasked with supervising some of the annual routine corporate compilations provides relief and some flexibility in keeping up with corporate publishing responsibilities.

It also became apparent that with the increasing use of the Internet as a reliable and legitimate communication conduit coupled with the digital handling of all new information, the member countries as the main clients for new information, are able to associate more closely with the report writing phase of a field project. Maps, field analyses and preliminary results, are being communicated quicker to authorities even before a full report becomes available. This also eases the pressure on the publication services for meeting annual session deadlines for technical reports as was the practice in the past.

Three large non-routine publishing projects were also preoccupying the publications service in 2003. These were the by-products of the 3rd World Water Forum preparatory Pacific Regional Consultation on Water in Small Island Countries; an update of the geology of Guam; and the Jackson Lum Memorial Volume – Pacific Minerals in the New Millennium: Science, Exploration, Mining, and Community. Completed in time for the 3rd World Water Forum in Kyoto in March were the Pacific Regional Action Plan on Sustainable Water Management, and a number of other published items; and the Guam geology update was completed in August. The bulk of the work on the Jackson Lum Memorial Volume was completed in July, with the external editor completing the bulk of the final editing in October. Final cosmetic editing remains to be completed on the volume and an early 2004 publication release date is expected.



The members of the Science, Technology & Resources Network, especially its Chair (Professor John Collen) are acknowledged for their roles in peer review and technical editing of technical reports produced by staff of the Secretariat.

The full list of reports completed and published during the reporting period is included in Appendix 2 of this annual report.

Library services continued with the routine cataloguing and provision of bibliographic search services for staff, researchers and partner libraries from within and outside the region. Skills-transfer work for the Solomon Islands was deferred to 2004. Training workshops were attended by the librarian, to continue to network with counterparts in other parts of the Pacific and the world. The recent Greenstone library information systems training in November by the University of Waikato – in conjunction with UNESCO was extremely useful in identifying open-source (free) software that has been successfully designed and tested to interface and migrate almost every library system in use in the Pacific to date to the common Greenstone platform.

This eventuality has been favourably received by most of our partner libraries in the region. The SOPAC Secretariat will begin the migration in 2004, running two systems in parallel until the migration is completed of all the historical. Work has started on digitising the aerial photo collection for cataloguing and full digital retrieval on the new system.

A large-format laminating machine; and a new heavy-duty digital photocopier are two replacement pieces of equipment that have been added to the tools of the trade that are maintained at the Publications & Library Service.

The 32nd Session of the SOPAC Governing Council was hosted by Niue at their capital Alofi. A summary record was produced for clearance by the end of the meeting on 27 September, and the Proceedings volume was published at the end of November.

FINANCE

The work of the Finance Component throughout the year focused on ensuring the following services were provided:

- Professional financial services;
- Advice to management on financial matters;
- Timely management, donor, financial, audit reports and council documents;
- Assistance in the preparation of the Work Programme and Budget;
- Development of appropriate financial administration policies and procedures based on appropriate best practices;
- Development and maintenance of project databases;



Publications and Library assistant, Elenoa Rokodi, with new scanner.

- Maintenance of finance package funded by Australia (Sun Business Account); and
- Assistance in the preparation of SOPAC's draft Risk Management plan.

Timely preparation and reporting to donors and support agencies included the following:

Australia : Prepared financial reports on Australia's annual and special funding to SOPAC for the annual SOPAC/Australia high-level consultation.

New Zealand : Prepared financial reports on New Zealand's annual and special funding to SOPAC for the annual SOPAC/New Zealand high-level consultation.

EU : Prepared financial reports, narratives and budget for the EDF8 project.

Other Funding : Ad-hoc reports and financial statements for new and ad-hoc donor funding provided during the year.

ADMINISTRATION

The work of the Administration Component throughout the year focused on ensuring the following services were provided:

- Assistance in the preparation of the Work Programme and Budget;
- Professional personnel services which included ongoing job evaluation;
- Implementation of Performance Management System at the Secretariat;
- Review of Staff Regulation and Induction Manual;
- Recruitment Policy formulation;
- Administration, office and property support services which include relocation and refurbishing of work spaces;
- Maintenance of the payroll package;
- Organising SOPAC Governing Council meeting logistics; and
- Preparation of Governing Council meeting documents.



Anwarul K. Chowdhury, Under Secretary General of the United Nations and High Representative for the Least Developed Countries and Small Island Developing States, made a courtesy call to SOPAC in August 2003.



SOPAC-EU PROJECT :

REDUCING VULNERABILITY OF PACIFIC ACP STATES

The SOPAC-EU Project was launched at the signing of its Financing Agreement on 13 March 2002, via funding from the 8th European Development Fund (EDF8) Pacific Regional Indicative Program totalling EUR7,000,000 (~14,000,000FJD). The initial implementation of the Project is focused on those SOPAC Member Countries who are also ACP States under EDF8, namely, Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The Project is consistent with UN Agenda 21, the Barbados Programme Of Action [BPOA] for Small Island Developing States [SIDS] and recent initiatives of the UN Economic and Social Council [ECOSOC] that recognise the vulnerability of small island states and emphasise the role information communication technology can play in assisting such countries in resource development.

The goal of the Project is to address vulnerability reduction in the Pacific ACP States through the development of an integrated planning and management system – Island Systems Management. The objective is to strengthen integrated development in Pacific ACP States by concentrating on three key focal areas in the island system:

- hazard mitigation and risk assessment;
- aggregates for construction; and
- water resources supply and sanitation.

The Project is addressing problems such as: unavailability of accurate and timely data [GIS, remote sensing and bathymetry]; weak human resource base [capacity]; limited resources [money and infrastructure]; and, lack of appropriate management plans, policies and regulatory frameworks to deal with these three focal areas.

The Project is being implemented by SOPAC over a period of four years, focusing on field surveys in selected onshore areas and coastal harbours, lagoons, bays and shallow waters. User-friendly spatial databases will be developed from these survey areas [together with up-to-date aerial photos and satellite images] through application of Global Positioning Systems [GPS], and Geographic Information Systems/Remote Sensing [GIS/RS] tools. Access for all stakeholders to these common spatial databases via effective communications networks will be established through the foundation of dedicated information and communication centres in-country, and training in the use of the tools developed.

For each country, this information will support the development of a knowledge base in these three focal areas thereby enabling the production of planning and management tools such as codes of practice, guidelines and draft legislation, to enhance integrated development for selected geographic areas or nation-wide.

In response to the need for extra floor space at the SOPAC Secretariat to accommodate Project staff, a new office building became the first major expenditure from Project funds. The building was opened by the EU Commissioner, Poul Nielson (pictured), on Saturday, 5 October 2002. Recruitment of seven specialist and three support staff members was completed by September 2003, with a Project Leader subsequently appointed from within the specialist staff. Following completion of multi-stakeholder consultations in each country, geographical intervention areas were defined and country work plans drafted. Some key implementation activities already completed are marine surveys of the whole of the southern coast of Viti Levu, Fiji and around Efate, Vanuatu; numerous GPS/RS/GIS training workshops and the initiation of recruitment for in-country interns to work with Project staff.

Further information on the SOPAC-EU Project and details of in-country work programmes and selected Project study sites can be obtained from the Secretariat, or by accessing the SOPAC-EU Project Website: <http://map.sopac.org/tiki/tiki-index.php>



Commissioner Poul Nielson.

Appendix 1: SUMMARY OF 2003 FUNDING BY PROGRAMME

ANTICIPATED SOURCE OF FUNDS	GRAND TOTAL	TOTAL OCEAN & ISLANDS PROGRAMME	TOTAL COMMUNITY LIFELINES PROGRAMME	TOTAL COMMUNITY RISK PROGRAMME	TOTAL CORPORATE SERVICES PROGRAMME	TOTAL DIRECTORATE
A: DONOR FUNDING						
Australia-Annual Grant	1,603,128	886,130	79,939	637,059	0	
Australia-Special Grant	74,000	0	74,000	0	0	
Australia Marine Science & Technology	108,433	108,433	0	0	0	
CFTC	280,000	280,000	0	0	0	
EMA	200,000	0	0	200,000	0	
ESCAP	80,000	0	80,000	0	0	
European Union	3,131,438	1,148,980	1,539,813	283,910	158,735	
Fiji	7,500	7,500	0	0	0	
France	200,000	0	200,000	0	0	
Ireland	226,269	0	0	226,269	0	
Japan	157,500	112,500	45,000	0	0	
Japan-Forum Partnership Programme	168,480	168,480	0	0	0	
National Oceanic and Atmospheric Admin.	86,957	86,957	0	0	0	
New Zealand-Annual Grant	713,431	44,784	339,880	298,059	0	30,707
New Zealand-Special Grant	103,300	103,300	0	0	0	
OFDA	52,784	0	0	52,784	0	
Secretariat of the Pacific Community	20,000	0	20,000	0	0	
Taiwan/ROC	108,695	108,695	0	0	0	
UN-ISA	138,450	138,450	0	0	0	
United Kingdom (ODI)	124,168	124,168	0	0	0	
United Kingdom/DFID	344,006	0	344,006	0	0	
United States of America	110,000	0	110,000	0	0	
VARIOUS	143,699	134,173	0	0	0	9,525
TOTAL DONOR FUNDING	8,182,238	3,452,551	2,832,638	1,698,082	158,735	40,232
B: TOTAL REGULAR BUDGET (principally membership contributions)	2,175,528	138,014	141,131	0	1,299,303	597,080
TOTAL 2003 REVISED BUDGET	10,357,766	3,590,565	2,973,769	1,698,082	1,458,038	637,312

TOTAL 2004 APPROVED BUDGET	12,303,553	3,845,408	3,603,953	2,278,137	1,840,430	735,625
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Appendix 2: LIST OF REPORTS & PUBLICATIONS (as at 31 August 2003)

PROCEEDINGS VOLUME

South Pacific Applied Geoscience Commission (SOPAC) 2002. Proceedings of the Thirty-First Session, hosted by the Government of the Republic of Nauru in Suva, Fiji Islands, 25 September - 2 October 2002. Proceedings of the annual session of SOPAC 31: 111 p.; 8 app.

TECHNICAL REPORTS

353 Kilmer, F.H., Resig, J.M., Longshore, J.D. 2003. A stratigraphic study of Late Middle Eocene/Early Oligocene volcanic arc rocks of Southern Guam. SOPAC Technical Report 353: 54 p.; 4 figs.; 3 plates

356 Kaly, U.L., Pratt, C.R., Mitchell, J., Howorth, R. 2003. The Demonstration Environmental Vulnerability Index (EVI). SOPAC Technical Report 356: 137 pp.; 5 app.; 8 tables, 9 figs.

CRUISE REPORT

Binns, R.A. (et.al.) 2002. Exploration and mining report 939C. Final Cruise Report RV Franklin, FR-02/2002 "BISMARCK – 2002". Submarine hydrothermal and volcanic activity in the Western Bismarck Island Arc, Papua New Guinea. [Confidential]

PRELIMINARY REPORTS

1. Water Resources Unit 2001. Report of visit to Ebeye, Kwajalein, Marshall Islands, 22-24 October 2001. SOPAC Preliminary Report 134: 16 p.; 4 app.

2. Shorten, G.G. 2002. Earthquake and tsunami damage assessment in Port Vila. SOPAC Preliminary Report 135: 10 P.

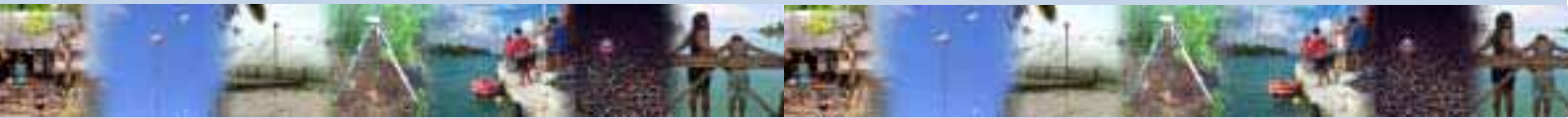
MISCELLANEOUS REPORTS

486 2002. Energy auditing made easy: an energy audit guide for students in the Pacific Islands. SOPAC Miscellaneous Report 486: 25 p.

487 Collen, J. (eds.) 2002. Abstracts of papers presented at the STAR session 2002. SOPAC Miscellaneous Report 487: 80 p.

488 Howorth, R. 2002. Pleasant island: a product of sustainable development or a starting point for things to go wrong. The role of geoscience in sustainable development in the Pacific over the next decade, based upon a reality for the past 100 years. SOPAC Miscellaneous Report 488: 8 p.





489 Pratt, C., White, O. (compl.) 2002. Proceedings of the Regional Workshop 1, Tanoa Hotel, Nadi, Fiji, 8-9 October 2002. EU EDF 8 - SOPAC Project: Reducing Vulnerability of Pacific ACP States through integrated planning and management (Island Systems Management) in the sectors impacting on hazards, aggregates and water resources. SOPAC Miscellaneous Report 489: 40 p. Note: Also referred to as: EU-SOPAC Project Report 1

491 Scott, D., Overmars, M., Falkland, T., Carpenter, C. 2003. Pacific dialogue on water and climate: synthesis report. SOPAC Miscellaneous Report 491

492 White, O., Rao, B. (compl.) 2003. Proceedings of the Fiji National Workshop 1, Mineral Resources Department, Suva, Fiji, 4 December 2002. EU EDF 8 - SOPAC Project: Reducing Vulnerability of Pacific ACP States through integrated planning and management (Island Systems Management) in the sectors impacting on hazards, aggregates and water resources. SOPAC Miscellaneous Report 492 Note: Also referred to as: EU-SOPAC Project Report 2

493 Howorth, R., Allinson, L. (compl.) 2002. Proceedings of the Vanuatu National Workshop 1, Melanesian Hotel, Port Vila, Vanuatu. EU EDF 8 - SOPAC project: Reducing vulnerability of Pacific ACP states through integrated planning and management (Island Systems Management) in the sectors impacting on hazards, aggregates and water resources. SOPAC Miscellaneous Report 493. Note: Also referred to as: EU-SOPAC Project Report 3.

496 Shorten, G.S. 2003. Challenges for the application of earthquake engineering in the Pacific Islands. SOPAC Miscellaneous Report 496 Note: Paper 150 Conference: Pacific Conference on Earthquake Engineering (7th : 2003 : University of Canterbury, Christchurch)

497 South Pacific Applied Geoscience Commission (SOPAC) [2003]. Business Plan 2003. SOPAC Miscellaneous Report 497 Note: Located in end pocket of MR 449

498 Sanday, R., Forstreuter, W. (compl.) 2003. Report of a visit to Port Vila, Vanuatu by GIS/Remote Sensing Specialist, Wolf Forstreuter and Resource Economist, Reginald Sanday, 1-5 February 2003. EU EDF 8 - SOPAC Project Report 4: Reducing Vulnerability of Pacific ACP States through Integrated Planning and Management (Island Systems Management) in the sectors impacting on hazards, aggregates and water resources. SOPAC Miscellaneous Report 498 Note: Also referred to as: EU-SOPAC Project Report 4

499 South Pacific Applied Geoscience Commission (SOPAC) 2003. Work programme and strategies. SOPAC Miscellaneous Report 499: 52 p.

504 Lomani, E. [nd]. Settlement in Nasinu town, Suva. SOPAC Miscellaneous Report 504

505 Carpenter, C., Lawedrau, A. 2002. Forests and water: effects of forestry activities on surface water quality in the Pacific region: a case study of the Rewa River

catchment, Fiji Islands. International Forestry Review. 4(4): 307-309. SOPAC Miscellaneous Report 505

506 Maharaj, R.J. 2003. Evaluation of impacts of harbour engineering, Anibare Bay, Republic of Nauru. SOPAC Miscellaneous Report 506: 13 p. Note: Referred paper published in: W.Kioba et. al. 2003. Proceedings of the Second International Conference on Asian and Pacific Coasts (APAC2003), 7-11 September 2003, Chiba, Japan. CD-ROM, Version 1.0

507 Shorten, G.G., Schmall, S. 2003. Disaster risk management in marginal communities of Port Vila, Vanuatu: project summary. SOPAC Miscellaneous Report 507: 8 pages.

TRAINING REPORTS

92 Prasad, S. 2002. Library Attachment at SOPAC Secretariat, 13-17 August 2001 (for Caroline Joel, Clerk/Typist, Department of Geology, Mines & Water Resources, Port Vila, Vanuatu). SOPAC Training Report 92.

93 Mario, R. 2001. Cook Islands training attachment report. SOPAC Training Report 93.

94 Maharaj, R.J., Dobui, F. 2002. Course SCC24: Earth Science in Development Projects, Hazards: Certificate in Earth Sciences & Marine Geology (ESMG) 14th January 2002 - 5th April 2002 The University of the South Pacific (USP) Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 94

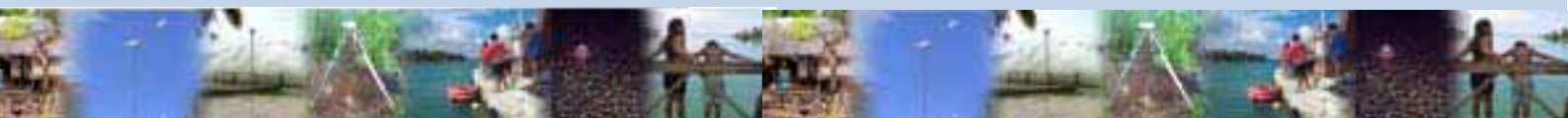
95 Maharaj, R.J., Dobui, F. 2002. Courses SCC25: Hydrology and Hydrogeology: Certificate in Earth Sciences & Marine Geology (ESMG) 14th January 2002 - 5th April 2002 The University of the South Pacific (USP) Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 95

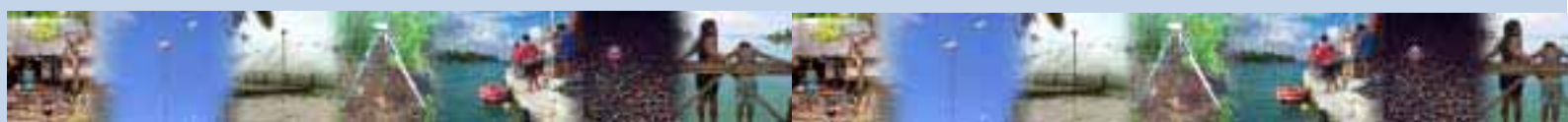
96 Maharaj, R.J., Dobui, F., Naidu, A.V. 2002. Six-month status report 1: Certificate in Earth Sciences & Marine Geology (ESMG) November 2001-May 2002, The University of the South Pacific (USP) Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 96

97 Maharaj, R.J., Dobui, F., Naidu, A.V. 2002. Second Six-Month Progress Report : Report II, 4th May 2002 - 4th November 2002: Certificate in Earth Sciences & Marine Geology (ESMG), 2002 - 2005, Year 1, The University of the South Pacific (USP) Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 97

98 Sili, A.T. 2002. Fellowship Training Attachment at SOPAC Secretariat. SOPAC Training Report 98: 12p. Restricted.

99 Mario, R., Chang, G. 2002. Pacific Islands Forum Diesel Maintenance Programme. SOPAC Training Report 99: 14 p.





100 Stephen, M. 2002. Fellowship Training at the IT Section, SOPAC Secretariat. SOPAC Training Report 100: 4 p.

102 Maharaj, R.J. 2003. CFTC Programme Report III – ESMG Highlights. SOPAC Training Report Report 102: 111 p. RESTRICTED.

103 Maharaj, R.J., Dobui, F., Naidu, A.V. 2003. Lecture summaries and review exercises for Basic Earth Science and Marine Geology: SCC01: Certificate in Earth Sciences & Marine Geology (ESMG), 2002 - 2005, Year 1, The University of the South Pacific (USP) Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 103

104 Maharaj, R.J., Dobui, F., Naidu, A.V. 2003. Basic Earth Science and Marine Geology lecture notes: Certificate in Earth Sciences & Marine Geology (ESMG), 2002-2005, Year 1, The University of the South Pacific (USP), Laucala Bay Campus, Marine Studies Department (MSP), Suva, Fiji Islands. SOPAC Training Report 104

105 Maharaj, R.J. 2003. Volcanology: magma, volcanoes, volcanic hazards: a introduction. USP: B. Sc. Earth Science - year three (3): SC301 - Applied Geology lecture series. SOPAC Training Report 105

JOINT CONTRIBUTION REPORTS

144 South Pacific Regional Environment Programme (SPREP), South Pacific Applied Geoscience Commission (SOPAC). 2002. The Pacific Freshwater Education Kit: an education package for schools in the Pacific Islands Region. (SOPAC Joint Contribution 144) 12 p. Note: (I) Includes Water Activity Sheets 1-30; (II) Watery Facts 1-15

146 Metal Mining Agency of Japan (MMAJ), Japan International Cooperation Agency (JICA) 2003. Report on the cooperative study project on the deepsea mineral resources in selected offshore areas of the SOPAC region (Volume 3) sea area of the Republic of the Marshall Islands. JICA, [s.l.]: 201 p.; 17 app.; figs (SOPAC Joint Contribution 146) Note: CONFIDENTIAL TILL APRIL 2004

EU-SOPAC PROJECT REPORTS

1 Pratt, C., White, O. (compl.) 2002. Proceedings of the Regional Workshop 1, Tanoa Hotel, Nadi, Fiji, 8-9 October 2002. EU-SOPAC (EDF8) Project Report 1. Note: Also referred to as: SOPAC Miscellaneous 489

2 White, O., Rao, B. (compl.) 2003. Proceedings of the Fiji National Workshop 1, Mineral Resources Department, Suva, Fiji, 4 December 2002. EU-SOPAC (EDF8) Project Report 2. Note: Also referred to as: SOPAC Miscellaneous Report 492

3 Howorth, R., Allinson, L. (compl.) 2002. Proceedings of the Vanuatu National Workshop 1, Melanesian Hotel, Port Vila, Vanuatu, 6 December 2002. EU-SOPAC (EDF8) Project Report 3. Note: Also referred to as: SOPAC Miscellaneous Report 493

4 Sanday, R., Forstreuter, W. (compl.) 2003. Report of a visit to Port Vila, Vanuatu by GIS/ Remote Sensing Specialist and Resource Economist, 1-5 February 2003. EU-SOPAC (EDF8) Project Report 4. Note: Also referred to as: SOPAC Miscellaneous Report 498

5 Gouldby, B., Booth, S. 2003. Proceedings of the Kiribati National Workshop 1, MNRD, Bairiki, Tarawa, Kiribati, 4th March 2003. EU-SOPAC (EDF8) Project Report 5: 6 p.; 3 attachments

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7 Booth, S., Sanday, R. (compl.) 2003. Proceedings of additional consultations, Port Vila, Vanuatu, 31st March – 4 April 2003. EU-SOPAC (EDF8) Project Report 7

8 Booth, S. (compl.) 2003. Proceedings of the Tuvalu National Workshop 1, Telecom Conference Centre, Funafuti, Tuvalu, 9th April 2003. EU-SOPAC (EDF8) Project Report 8

9 Sanday, R., Forstreuter, W. (compl.) 2003. Proceedings of the Samoa National Workshop 1, Ministry of Foreign Affairs Conference Room, Apia, 23rd April 2003. EUSOPAC (EDF8) Project Report 9

10 Gouldby, B., Martin, F. (compl.) 2003. Proceedings of the Tonga National Workshop 1, Pacific Royal Hotel, Nuku'alofa, Tongatapu, Tonga, 4th April 2003. EU-SOPAC (EDF8) Project Report 10

12 Booth, S., Martin, F. (compl.) 2003. Proceedings of the Solomon Islands National Workshop 1, King Solomon Hotel, Honiara, Solomon Islands, 29th May 2003. EUSOPAC (EDF8) Project Report 12: 29 p.

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14 Howorth, R., White, O. (compl.) 2003. Project summary report, June 2003. EU-SOPAC (EDF8) Project Report 14.

15 2003. Project 2003 Work Plan and Budget. EU-SOPAC (EDF8) Project Report 15: 103 p. [RESTRICTED]

OTHER REPORTS & PUBLICATIONS

20 trip reports

ROUTINE PUBLISHING PROJECTS

Completed were:

1 Annual Report (for year 2002)

3 issues of corporate newsletter *SOPAC News*

9 issues of e-mail newsletter *SOPAC NewsUpdate*



Appendix 3: SECRETARIAT STAFF LIST (as at August 2003)

SECTIONS	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
DIRECTORATE					
Director	Alfred Simpson	Fiji	Feb 1995	Feb 2001	Feb 2004
Deputy Director	Russell Howorth	New Zealand	Oct 1986	Mar 2002	Mar 2005
Executive Assistant	Litia Waradi	Fiji	Apr 1989	Jan 2001	Dec 2003
Executive Planning Officer	Kakala Vave	Fiji	May 2003	May 2003	May 2004
OCEAN & ISLANDS PROGRAMME					
Manager Ocean & Islands	Cristelle Pratt	New Zealand	May 2000	Sep 2003	Sep 2006
Senior Adviser – Physical Oceanography	Benjamin Gouldby	United Kingdom	Feb 2003	Feb 2003	Feb 2006
Senior Adviser – Resource Economist	Reginald Sanday	Fiji	Jan 2003	Jan 2003	Jan 2006
Senior Adviser – Marine Geophysics	Robert Smith	Australia	May 1988	July 2001	July 2004
Senior Adviser – Aggregates	Vacant				
Senior Adviser – Geoscience Training	Russell Maharaj	Trinidad & Tobago	Nov 2001	Nov 2001	May 2004
Senior Adviser – Marine Geoscience	Nobuyuki Okamoto	Japan	Sep 2001	Sep 2001	Sep 2003
Adviser – Technical (Electronics)	Simon Young	Fiji	Jan 1993	Jan 2002	Jan 2005
Project Officer II – Technical (Marine)	Quan Chung	Fiji	Jan 2003	Jan 2003	Jan 2006
Project Officer II – Technical (Surveying)	Andrick Lal	Fiji	Aug 2001	Aug 2001	Aug 2004
Project Officer II – Technical (Geoscience)	Sekove Motuiwaca	Fiji	Apr 1980	Jan 2001	Dec 2003
Project Officer II – Technical (Electronics)	Peni Musunamasi	Fiji	Jun 1989	Jan 2001	Dec 2003
Project Officer II – Technical (Mechanics)	Setareki Ratu	Fiji	Oct 1986	Jan 2001	Dec 2003
Adviser – Resource Economics	Owen White	United Kingdom	Oct 2001	Oct 2001	Oct 2003
Project Officer III – Geoscience Training	Arti Naidu	Fiji	May 2002	May 2003	May 2004
Programme Assistant – Ocean & Islands Programme	Vacant				
Project Officer II – Marine Geoscience	Famiza Yunus	Fiji	Jan 1999	Jan 2003	Jan 2004
Assistant Project Officer IV – Geoscience Training	Frances Dobui	Fiji	Apr 2003	Apr 2003	Apr 2004
COMMUNITY LIFELINES PROGRAMME					
Manager Community Lifelines	Paul Fairbairn	New Zealand	Jan 1998	Sep 2003	Sep 2006
Senior Adviser – ICT	Leslie Allinson	Australia	Nov 1992	Nov 1998	Nov 2004
Senior Adviser EU – Team Leader – Water Resources Specialist	Stephen Booth	United Kingdom	Feb 2003	Feb 2003	Feb 2006
Senior Adviser – Water	Clive Carpenter	United Kingdom	Apr 2001	Apr 2001	Apr 2004
Senior Adviser EU – GIS and Remote Sensing	Wolf Forstreuter	German	Jan 1999	Jan 2003	Jan 2006
Senior Adviser EU – ICT Specialist	Franck Martin	France	Sep 1993	Jan 2003	Jan 2006
Adviser – Water / Hydrogeology	Marc Overmars	Netherlands	Apr 2000	Mar 2003	Mar 2004
Advisor – Energy	Anare Matakiviti	Fiji	Feb 2000	Feb 2003	Feb 2006
Project Officer I – Water & Sanitation	Rhonda Bower	Fiji	Nov 1998	Feb 2003	Feb 2004
Project Officer I – Energy	Rupeni Mario	Fiji	Oct 1998	Mar 2003	Mar 2004
Project Officer II – ICT Network and Security	Graeme Frost	Fiji	Mar 1992	Jan 2001	Dec 2003
Project Officer II – GIS and Remote Sensing (SOPAC/EU)	Litea Buikoto	Fiji	Mar 1998	Mar 2003	Mar 2006
Project Officer II – Water & Sanitation	Alena Lawedrau	Fiji	May 2003	May 2003	May 2004
Programme Assistant – Community Lifelines Programme	Vacant				
Assistant Project Officer I – Energy	Yogita Chandra	Fiji	Jan 2002	Jan 2003	Jan 2004
Assistant Project Officer I – Water & Sanitation	Ilana Burness	Fiji	June 2002	June 2003	June 2004
Project Officer 1 – Water Quality	Luke Mosley	New Zealand			
Assistant Project Officer IV – GIS and Remote Sensing	Elizabeth Lomani	Fiji	Oct 2000	Jan 2003	Dec 2003

SECTIONS	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
COMMUNITY RISK PROGRAMME					
Manager Community Risk	Alan Mearns	Australia	June 2000	June 2003	June 2006
Senior Adviser – Risk	Michael Bonte	German	June 2003	June 2003	June 2006
Disaster Mitigation Adviser	Atu Kaloumaira	Fiji	Dec 2000	Jan 2001	Dec 2003
Professional Development Officer	Dawn Tuiloma	Samoa	Feb 2001	Feb 2001	Feb 2004
Materials Development Specialist	Emily Artack	Fiji	Apr 2003	Apr 2003	Sep 2003
Project Assistant – Hazard Assessment	Purnima Naidu	Fiji	Aug 2000	Jan 2003	Jan 2004
Programme Assistant – Community Risk Programme	Vive Vuruya	Fiji	Sep 1998	Jan 2001	Dec 2003
Project Officer – Disaster Management	Lesu Waqaniburotu	Fiji	Dec 2001	Dec 2001	Dec 2003
Assistant Project Officer – EVI	Jonathan Mitchell	Fiji	Feb 2003	Feb 2003	Feb 2004
CORPORATE SERVICES PROGRAMME					
Manager Corporate Services	Mohinish Kumar	Fiji	Mar 1998	Sep 2003	Sep 2006
Adviser – Publications	Mereseini (Lala) Bukarau	Fiji	Nov 1985	Oct 2000	Sep 2003
Accountant	Makereta Kaurasi	Fiji	Mar 1998	Mar 2001	Mar 2004
Conference & Travel Officer	Laisa Baravilala-Baoa	Fiji	Jul 1987	May 2003	May 2006
Administration Officer	Karen Datta	Australia	July 2001	July 2001	July 2004
Project Officer I – Library	Sunita Prasad	Fiji	May 1989	Jan 2003	Jan 2006
Finance Services Officer – I	James Ram	Fiji	May 2000	Jan 2003	Jan 2006
Assistant Administration Officer – SOPAC/EU Project	Subha Ram	Fiji	Jan 2003	Jan 2003	Jan 2006
Project Officer I – System Administrator	Timoci (Jim) Tora	Fiji	May 2001	June 2003	June 2006
Project Officer II – Publish./Graphic Arts	Reuben Vulawalu	Fiji	Apr 2001	Apr 2001	Apr 2004
Receptionist/Clerk	Unaisi Bainiloga	Fiji	Feb 1987	Jan 2001	Dec 2003
Driver/Clerk	Enele Gaunavou	Fiji	Jul 1988	Jan 2001	Dec 2003
Assist. Project Officer II – Web Developer	Anthony Browne	Fiji	Feb 1998	Jan 2003	Dec 2003
Assistant Project Officer II – ICT Training	Avinash Prasad	Fiji	June 1999	Jan 2003	Dec 2003
Office Assistant/Cleaner	Salestino Niu Daurewa	Fiji	Sep 1987	Jan 2001	Dec 2003
Assistant Finance Officer III	Emi Nofaga	Fiji	Aug 2002	Mar 2003	Mar 2004
Security Officer	Cama Temo	Fiji	Sep 2002	Sep 2002	Sep 2003
Security Officer	Waitisoni Tuberi	Fiji	Sep 2002	Sep 2002	Sep 2003
Assistant Project Officer IV – Publications/Library	Elenoa Rokodi	Fiji	Feb 2003	Feb 2003	Feb 2004

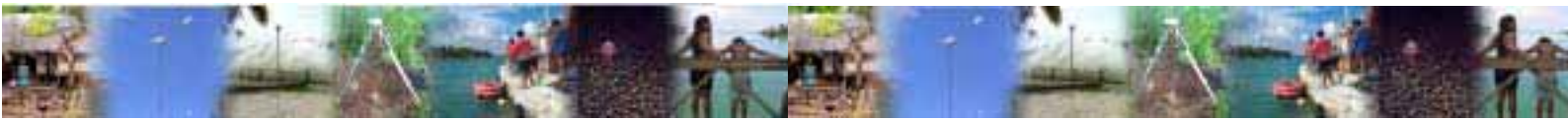


Appendix 4: LIST OF ACRONYMS

CFTC	– Commonwealth Fund for Technical Cooperation
CROP	– Council of Regional Organisations of the Pacific
DAT	– Digital Audio Tape
DFID	– Department of International Development (UK)
EEZ	– Exclusive Economic Zone
EDF8	– 8 th European Development Fund
EMA	– Emergency Management Australia
EVI	– Environmental Vulnerability Index
GIS	– Geographic Information Systems
GPS	– Global Positioning System
ICT	– Information and Communication Technologies
ISA	– International Seabed Authority
ISDR	– (UN Secretariat for the) International Strategy for Disaster Reduction
JICA	– Japan International Cooperation Agency
KIGAM	– Korea Institute of Geoscience and Mineral Resources
MSR	– Marine Scientific Research
LTO	– Linear Tape Open
NGO	– Non Governmental Organisation
NORAD	– Norwegian Agency for International Development
ODI	– Overseas Development Institute
OFDA	– Office of US Foreign Disaster Assistance
RAID	– Redundant Array of Inexpensive Disks
ROC	– Republic of China
SPC	– Secretariat of the Pacific Community
SPREP	– South Pacific Regional Environment Programme
STAR	– Science, Technology and Resources Network
TAG	– Technical Advisory Group
UNESCAP	– United Nations Economic and Social Commission for Asia and the Pacific
UNEP	– United Nations Environment Programme
UNESCO	– United Nations Educational Scientific and Cultural Organisation
USP	– University of the South Pacific
WWF	– World Water Forum
WSSD	– World Summit on Sustainable Development

NOTES





SOPAC