

STRATEGIC RECOMMENDATIONS FOR ADDRESSING TSUNAMI RISKS

SOUTH PACIFIC TSUNAMI AWARENESS WORKSHOP

FORUM SECRETARIAT, SUVA, FIJI, 1-3rd JULY 2004

WORKSHOP STATEMENTS:

Tsunamis are an underrated hazard that have and can have a major impact on Pacific island countries. Recent tsunami events in PNG and Vanuatu demonstrate the vulnerability of our nations to the destructive nature of tsunamis.

There is an urgent need to improve our understanding of the risks from tsunamis and to learn from regional and international institutions, and our bi-lateral and multi-lateral partners of the various options available to mitigate the risk.

In recognizing the limited development of risk reduction infrastructure and national capacity building, the Workshop resolves that a regional strategic approach is required.

Consequently, the participants of the South Pacific Tsunami Awareness Workshop held 1-3 July 2004 in Suva, Fiji resolve that SOPAC consider the recommendations in relation to the development of the Pacific Regional Strategic Action Plan for Disaster Risk Reduction.

EMERGING THEMES and MEASURES OF SUCCESS:

1. Involve all countries and national stakeholders to build capacity and develop human resources to support the data information needs in tsunami risk reduction.
2. Establish partnerships to integrate regional risk management tasks within the CHARM framework.
3. Build international and intra-regional cooperative relationships to support tsunami risk reduction activities (modeling, risk assessments, best management practices, data sharing, warning systems etc.).
4. Advocate to ensure Information Technology and Communication (ICT) infrastructure sufficiently supports regional and national requirements for tsunami warning services

THEME 1. TSUNAMI HAZARD & RISK IDENTIFICATION

- Data Collection & Information Use to Reduce Risk
- Tsunami Hazard & Risk Assessment
- Early Warning
- Mitigation Option

Moderator: Akapo Akapo

Recorder: Lasarus Vuetibau

Members: Leilua M. Akapo, Lawrence Anton, Phil Cummins, Gaye Downes, Stan Goosby, Viacheslav K. Gusiakov, Chalapan Kaluwin, Laura Kong, Masturyono, Mulipola A. Titimae, Rennie Vaimo'unga, Lasarus Vuetibau, Stuart Weinstein

TABLE 1. Theme 1 Objectives, Outcomes and Activities

Objective	Expected Outcomes	Activities to achieve Objective
<p>1. To establish a regional Tsunami Warning System (TWS) in order to provide early warning for regional earthquakes under PTWC magnitude threshold</p> <p>Basic components of the TWS:</p> <ul style="list-style-type: none"> - Data observation network (seismic and water level stations to monitor seismicity and sea levels) - Data transmission and receiving systems for TWS evaluation, and data sharing amongst nations - Data processing system at center for acquiring, archiving, and tsunamigenic evaluation (operating 24h/7d) - Dissemination of warnings 	<p>< 2 yrs:</p> <ul style="list-style-type: none"> • Technical proposal for the creation of a Southwest and Central Pacific TWS. Coordinated by the TWG-SP <p>> 2 yrs:</p> <ul style="list-style-type: none"> • Establishment of a Regional TWS capable of responding to Pacific needs • All South Pacific countries become members of ICG/ITSU • Clearinghouse for distribution of information/data 	<p>< 2 yrs:</p> <p>Conduct Feasibility Study with existing observational data and communication infrastructures</p> <p>> 2 yrs:</p> <ul style="list-style-type: none"> • SP countries establish networks and infrastructure for early warning system in the region • SOPAC with support of ITIC to liaise with countries in encouraging ICG/ITSU membership. • PDC in coordination with SOPAC and ITIC to establish clearinghouse for distribution of information/data
<p>2: To identify areas at risk and to develop hazard mitigation plan for each of these areas.</p>	<p>< 2 yrs:</p> <p>Historical earthquake and tsunami database for region based on international guidelines that would support early warning and tsunami risk management (Member countries of WG, GTDB Project, NZ, Australia, ITIC, PDC)</p> <p>> 2 yrs:</p> <ul style="list-style-type: none"> • Production of maps/inventories on vulnerable sites/areas of the region • National/Regional Reports on Tsunami risk assessment and management for the region • Incorporate Tsunami Risk Assessment to National Disaster Mgmt Plans (Member govts with international support) 	<p>< 2 yrs:</p> <p>SP countries with support of SOPAC and GTDB Project, ITIC and PDC to collect data on</p> <ul style="list-style-type: none"> - historical seismicity, tsunami, and volcanic events. - economics, population, critical infrastructure and lifelines, and other environmental hazards <p>> 2 yrs:</p> <p>SP countries with support of SOPAC to assess potential tsunami impact and undertake modeling for at-risk areas</p>

TABLE 2. Theme 1 Activity Work Plan for the next 2 years

What	Who	How	When
Conduct Feasibility Study with existing observational data and communication infrastructures	All South Pacific countries	Consultancy Study that will:- 1. Identify and evaluate existing seismic and sea-level stations in order to determine their possible application in the TWS operations and needs for additional stations 2. Identify and evaluate technologies for real-time data transmission and receiving (commercial telephone lines, VHF radio links, satellite channels) 3. Identify and select real-time data processing system (based on existing systems – PTWC, ATWC, JMA, CPPT, etc.) 4. Select warning criteria (based on analysis of historical data) 5. Develop warning dissemination system (communication plan)	SOPAC to initiate within the next 6-12 months
Tsunami Data Collection to Identify Areas at Risk	All Countries	NDMO to take initiative with support of SOPAC, GTDB Project, ITIC and PDC	Start within the next 18months

THEME 2. PREPAREDNESS FOR EFFECTIVE RESPONSE

- Linking Early Warning to Effective Response
- Development and Strengthening of Response Systems and Tools with Other Partners
- Prevention, Preparedness, Response and Recovery

Moderator: Matt Smith

Recorder: Charley Douglas, Maliu Takai

Members: George Crawford, Atu Kaloumaira, Wilfred Lus, Asaeli Malewa, Toafa Vaiagae, Masahiro Yamamoto, Loti Yates

TABLE 3. Theme 2 Objectives, Outcomes and Activities

Objectives	Expected Outcomes	Activities to achieve Objectives
1. Develop Framework for Effective Response System for Preparedness and Emergency Response To Tsunamis	1.1 Guidelines available for developing plans	1.1.1 Conduct user questionnaire surveys 1.1.2 Develop guidelines for developing plans
	1.2 A timely response to tsunamis	1.2.1 Develop national tsunami response plans
	1.3 Tsunami-ready community	1.3.1 Develop partnership for acquiring educational material 1.3.2 Development of education programme and target key stakeholders (e.g. community, politicians, first responders). 1.3.3 Incorporation of training in formal and informal education 1.3.4 Develop national education strategy (tsunami)
2. Develop regional and national capacity (technical and management)	2.1 Provision of accurate and timely information	2.1.1 Raise tsunami awareness at national and community levels 2.1.2 Conduct table top exercises 2.1.3 Conduct an assessment on current capability of communication network 2.1.4 Communication / Media 2.1.5 Networking with national and regional partnership

TABLE 4. Theme 2 Activity Work Plan for the next 2 years

What	Who	How	When
Conduct Feasibility Study	All SP Countries, SOPAC, ITIC & PTWC	A. Present Feasibility Study Proposal at the STAR meeting coordinated through SOPAC.	Sept 2004
Strengthen Current Educational Programmes	PNG	A. Review and strengthen education curriculum material	Start within the next 18months
Develop Guidelines for National Tsunami Response Plans	All Countries Target A Samoa, Tonga SI & Vanuatu	A. Coordinated through SOPAC & raised to Governing Council B. Bring in facilitators eg ITIC & its partners	SEPT 2004 SOPAC Governing Council Meeting
Raise Tsunami Awareness at national and community levels	All countries	A. Collate materials as available from other partners B. Engage media, press releases, run workshops C. Include in National Disaster Awareness week as a Theme D. Strengthen on-going efforts	On-going
Conduct Questionnaire Survey	All Countries	A. Send out surveys forms to Points of Contacts	Annually in the first quarter

AGENDA
SOUTH PACIFIC TSUNAMI AWARENESS WORKSHOP
1-3 July 2004, Forum Secretariat, Suva, Fiji

Day 1 INTRODUCTION, USERS NEEDS, and INTRODUCTION TO TRAINING

0800 Session 1: Opening Session – NDMO Fiji

Arrival /Welcome/ Opening Speech / Prayer

0830 Session 2 : Goals of Workshop/ Agenda/ Expectations (*Atu Kaloumaira, SOPAC*)

0845 Session 3 : Country Presentation (max 15 minutes) - A Samoa, Cook Islands, PNG, Samoa, Solomon Islands, Tonga, Vanuatu & Fiji.

1100 Session 4 : Survey Findings (*Atu Kaloumaira, SOPAC*) **1045 Morning Tea**

1120 Session 5 : ITSU-ITIC (*Laura Kong, ITIC*)

1140 Session 6 : Comprehensive Global Tsunami Mitigation – TROIKA
Hazard assessment, warning guidance, education /awareness/planning
(*Laura Kong, ITIC*)

1200 Session 7: Tsunami Science and General Overview of Seismicity and Tsunami characteristics of Region (*Stuart Weinstein, PTWC*)
Differences in subregions caused by tectonics. Day 3 can be used for further discussions on detailed island-specific hazard and risk information.

1300 Lunch

1400 Session 8 : Regional Projects

(a) SOPAC (*Atu Kaloumaira & Robert Smith, SOPAC*)

(b) AusAID South Pacific Sea Level & Climate Monitoring Project
(*Chalapan Kaluwin, AMSAT, Forum Secretariat*)

1430 Session 9 : Tsunami Training

(a) WARNING GUIDANCE

(i) *General Considerations* (*Laura Kong, ITIC*)

1500 Afternoon Tea

1515 (ii) *Tsunami Warning Systems*

USA (PTWC, AC/ATWC, Intl, Regional, Local) - (*Stuart Weinstein, PTWC*)

1545 Japan (Japan TWS) – (*Masahiro Yamamoto, JMA*)

1615 Discussion Session

1700 Return to Hotel

DAY 2 Session 9 cont'd :TSUNAMI TRAINING

0800 Summary and Goals for the Day

0815 (a) WARNING GUIDANCE *cont'd*

(ii) *Tsunami Warning Systems*

NZ (*Gaye Downes, GNS New Zealand*)

Indonesia (*Mastur Masturyono, Indonesia BMG*)

Australia (*Phil Parker*)

ICG/ITSU SWPIO TWS WG (*Australia, Phil Cummins*)

0915 (iii) *Other Stakeholders & Their Needs, Roles & Responsibilities*

US National Tsunami Hazard Mitigation Program & Local authorities,

- Community Roles (*George Crawford, Washington, USA*)
- 1000 (b) HAZARD ASSESSMENT **0945 Morning Tea**
 (i) *Overview : Hazard Assessment & Risk Evaluation (Laura Kong, ITIC)*
include importance of collecting all data possible, esp those for which PTWC does not receive data in real-time. ITIC to act as Data Archiving Center for recent events, so please send (digital, hard copy, eyewitness observations)
- 1010 (ii) *Seismicity & Tsunami History - Use of GTDB for Hazard ID and Risk Assessment (Slava Gusiakov, Russia)*
Include SL station map (all stations)
- 1055 (iii) *Numerical Modelling (Gaye Downes, GNS New Zealand)*
- 1140 (c) MITIGATION PREPAREDNESS - Examples from the USA, Japan, and NZ
 (i) *Overview: Education, Outreach, Mitigation, Countermeasures (Laura Kong, ITIC)*
 (ii) *US TsunamiReady program (Laura Kong, ITIC)*
 1200 (iii) *Education and Public Awareness products (National Tsunami Hazard Mitigation Programme) – (George Crawford, Washington, USA)*
Tsunami video – Indigenous folktale from 1700 earthquake and tsunami
- 1330 (c) *cont'd MITIGATION PREPAREDNESS – Examples from USA, Japan, and NZ* **1230 Lunch**
 (iv) *Social Science Perspectives and Roles of non-governmental & other organizations – (Gaye Downes, GNS New Zealand)*
- 1345 (v) *Memorials, Land-use, Countermeasures – Okushiri, Japan tsunami and recovery – (Masahiro Yamamoto, JMA; Laura Kong, ITIC, Okushiri Memorial Museum video)*
- 1430 (d) TECHNOLOGY **1415 Afternoon Tea** (*JMA Safety Video*)
 UTILISED - TWS
 requirements – local or regional – instruments, evaluations needed, telecomm for data and message dissemination
 (i) *Earthquake Monitoring and Evaluation*
 (ii) *Sea Level Monitoring and Evaluation*
 (ii) *Message Dissemination communication pathways – old / new technologies*
Session 10 : PTWC (30 min) – (Stuart Weinstein, PTWC)
- 1500 **Session 11: NW Pacific Regional TWS (15 min) – (Masahiro Yamamoto, JMA)**
- 1515 **Session 12 : CONCEPTS FOR THE FUTURE – Possible Activities for the South Pacific**
 (a) *Overview (Laura Kong, ITIC)*
Stakeholder coordination through Tsunami Technical Review Committee Tsunami Integrated Scenario
- 1530 (b) *Warning Dissemination – Sirens (George Crawford, Washington, USA)*
- 1545 (c) *Community Numerical Modelling (Gaye Downes, GNS New Zealand)*

- 1600 (d) *Automated Alert Systems and Visualization of Tsunami Inundation Models*
(Stan Goosby, Pacific Disaster Center) (20 min)
- 1620 (e) *Reaching local communities – RANET project* (Atu Kaloumaira, SOPAC)
- 1635 Discussion Session
- 1700 Return to Hotels

DAY 3 REGIONAL AND NATIONAL STRATEGIES AND ACTION PLANS

- 0800 Summary and Goals for Today
- 0800-0845 SWPIO_TWS proposal for Regional Seismic and Sea Level Monitoring –
1-2 year feasibility project
- 0815 **Session 13 : Strategic Planning**
(a) First Session Group Work *Mitigation Needs – What Types of Mitigation*
(*technical, awareness*) and *What are priorities?*
Participants select which group to join. Recorder elected by Group.
Group 1: Focus on education and awareness programme / materials
Facilitators: Atu Kaloumaira (SOPAC) + 1 from Resource Group
Group 2: Focus on applications of new technology
Facilitator: Laura Kong (ITIC) + 1 from Resource Group
- 0915 (b) Report Back of Two Groups and Discussion
- 0945 (c) Briefing on Second Session Group Work and Expected Outcomes
(Atu Kaloumaira, SOPAC)
- 1015 (d) Second Session Group Work **1000 Morning Tea**
What should be the Strategy? And What is the
Implementation Plan?
What will be the Action Items and Times Frames for Action?
Identifying resources, commitments, processes, and target audiences
Same Groupings as for First Session
Group 1: Focus on education and awareness programme / materials
Facilitators: Atu Kaloumaira (SOPAC) + 1 from Resource Group
Group 2: Focus on applications of new technology
Facilitator: Laura Kong (ITIC) + 1 from Resource Group
- 1130 (e) Report Back of Two Groups and Discussion
- 1330 **Session 14 : Facilitated Discussion for Regional Strategy** **1200 LUNCH**
Summary of Workshop Action Items from morning.
The Future – Where do we go from here?
Identifying common themes for regional success, networking, information, data,
and technology sharing, regional programmes, and entities that can provide
regional support.
What are the measurable outcomes for forward reporting of successes?
Success indicators for STAR, Input into Regional Review for Yokohama
Strategy, 2005 Regional Disaster Management Meeting
Facilitators: Atu Kaloumaira (SOPAC), Laura Kong (ITIC)
- 1500 Afternoon Tea**
- 1515 **Session 15 : Summary and Wrap-Up** (Atu Kaloumaira, Laura Kong)

- (a) Meeting Resolutions*
- (b) Individual Country Workplans to Meet Needs*
- (c) Encourage countries to join ITSU*
- (d) Meeting Proceedings to be Published*

1615 **Session 16 : Closing - SOPAC**

1630 Return to Hotel

1730- ITSU Working Group on Southwest Pacific and Indian Ocean Tsunami

1930 Warning System – Suva Motor Inn, poolside



PROCEEDINGS OF THE THIRTY-THIRD SESSION

hosted by the
Government of Papua New Guinea in the
Coral Coast, Fiji Islands

17-24 September 2004

October 2004

- d. Regional equipment holdings – 6 global positioning, computer hardware support for interns;
- e. Development of awareness material; and
- f. Linkages between NSA, NGO and other organisations have been made by the Project

153. The Secretariat then introduced Dr Langi Kavaliku, the leader of the High Level Advocacy team.

154. Dr Kavaliku outlined some of the key achievements his team had made in raising the profile of comprehensive hazard and risk management (CHARM) in the Pacific. He advised that the team has had mixed success following consultation with 6 countries. Meetings with the Prime Ministers and Ministers from these countries have established good dialogue. Several issues have arisen and include the limits on country resources, multiple responsibilities and difficulties in accepting the new comprehensive approach of doing things. Integration of the SOPAC work programmes also needs strengthening, greater collaborative efforts between CROP organisations are needed and more knowledge of the resource economics of disasters is critical for the future success of the advocacy team.

155. Dr Kavaliku appealed to donors to support additional country participation at the upcoming global Disaster Reduction Conference to be convened in Kobe. Papua New Guinea and Fiji will be leading the Pacific team to get recognition of Pacific issues. The presence of other countries will help to visibly raise the profile of Pacific issues. Dr Kavaliku on behalf of the High Level Advocacy team and SOPAC expressed appreciation to all donors including Australia, New Zealand and Asia Foundation for their support.

156. Vanuatu acknowledged the support of SOPAC and Australia in the establishment of disaster management infrastructure and the need to maximise the benefits of this. Vanuatu stressed the need to address risks in Pacific Island countries because of their small size, large surrounding ocean and isolation. It is in view of these that the Community Risk Programme plays an important role in supporting countries efforts to achieve sustainable development. Vanuatu emphasised the need for countries to seriously consider the disaster risk management approach being advocated by SOPAC and ensure that this process runs in parallel with other initiatives.

157. In reinforcing the importance and need for training and capacity strengthening,

Vanuatu acknowledged SOPAC and TAF/OFDA training initiatives and urged for their continuation and support. Focusing on the risks of tsunamis in the Pacific, Vanuatu urged Council to consider recommendations to establish a regional initiative to support early warning. Vanuatu also expressed the continuing need for the High Level Advocacy team, given the changing political climates, and to ensure the fast track integration of CHARM in the region.

158. The Asia Foundation advised Council that in reviewing their training programme for the Pacific the US Government has decided to extend this programme for another 4 years. Programme funding channelled through SOPAC will also provide support for the High Level Advocacy team.

159. Following discussions on the need for greater collaboration SPC reminded Council that it is also active in the area of disaster mitigation. SPC highlighted the cross-cutting nature of disasters that impacted across boundaries demanding the need for more effective collaboration among CROP technical experts.

160. PNG expressed their appreciation for the Community Risk Programme and encouraged SOPAC to continue to prioritise efforts to address the issue of tsunamis in the region. PNG also expressed the need to utilise AMSAT tidal data for tsunami warning systems and urged that this data be readily provided to countries.

161. Noting Council's discussion on the importance of addressing the need for early warnings of potential tsunamis the UNESCO Tsunami programme advised Council of their experience and capacity in this area and offered to partner the region in their efforts to develop a tsunami early warning capability.

162. Dr Kavaliku acknowledged the support from the Asia Foundation for the High Level Advocacy team. He went on to reiterate the importance of the upcoming global conference in Kobe and the need for the Pacific to have greater visibility at the conference to ensure that Pacific issues are given appropriate consideration.

163. The Director advised Council that at the recent Heads of CROP meeting the issue of the need for greater regional organisation collaboration was discussed (AS33/6.2 paragraph 42). SOPAC Council recognised the CROP Heads resolution, "to better coordinate their assistance to member countries in their immediate response activities to extreme natural and human-induced events. Further, that

an early task of the new PIFS unit will be the improved responsiveness of the CROP to such extreme circumstances and acknowledgement of SOPAC's role and responsibilities for disaster risk management, which includes preparedness and mitigation aspects of such events."

164. The Secretariat brought to Council's attention the recommendations of the STAR working group on tsunami warnings and the need for a regional tsunami warning centre and indicated that strong Council support for this recommendation is noted. The Secretariat also recognised STAR comments and recommendations and indicated that these will be factored into future Community Risk Programme planning.

165. Niue expressed its appreciation for the disaster assessment work undertaken by SOPAC following Cyclone Heta, which involved documentation of impacts and development of a model. This model only covered part of the west coast of Niue and requested if it is feasible for SOPAC to extend this model to cover the whole of the west coast of the island. Niue also requested that the report be presented to government as soon as possible as some of the reports recommendations could be useful in the reinstatement programmes underway.

166. The Secretariat responded indicating it would be visiting Niue in two weeks and will endeavour to make the report available then. Also as the extension of the EU EDF 9 Project includes Niue, SOPAC will endeavour to incorporate the extension of the model in these activities.

167. Tuvalu recognised the significant amount of work undertaken in the development of the EVI culminating in its presentation at a meeting in New York chaired by HE Sopoanga, however, Tuvalu expressed significant concerns with the EVI. Advised that after consultation with experts in Australia and New Zealand, Tuvalu found there were serious problems with rating all vulnerability indicators on the same scaling, as not all were on the same scale of magnitude e.g. fertilisers and cyclones. He noted the problems with the lack of data, some questionable calculations of risk e.g. dry periods, scientific validity of some indicators, e.g. biological isolation and the absence of critical indicators e.g. sea-level rise. Tuvalu noted that the EVI significantly downplays the risk for many Pacific Island countries and that this would have serious implications for those seeking donor funding for adaptation and risk management, e.g.

Niue rated 150 least vulnerable, whereas Singapore rated the second most vulnerable. Because of these serious implications, Tuvalu suggested that the EVI should not be presented at the international meeting on the review of the Barbados Programme of Action in January 2005. He suggested that SOPAC should refocus the work of the EVI to becoming an evaluation tool for individual countries to assess their own risk based on their own scale of vulnerabilities, and that a comparative numerical approach between countries was not appropriate.

168. The Federated States of Micronesia requested assistance from SOPAC with a baseline study for the development of an oil spill pollution contingency plan and procedures for removal of wrecks as well as current shipping movements. In response the Secretariat indicated that SPREP is responsible for addressing this issue and they may wish to pursue this matter directly with SPREP.

169. In response to comments by Tuvalu, the Secretariat highlighted that the development of EVI was initiated in response to calls made in the Barbados Programme of Action. In partnership with New Zealand, United Nations Environment Programme, Ireland, Italy, Norway with Member countries have supported this work since 1998. The EVI represents the first attempt to develop such a tool and as such is not perfect and is open to scientific critique. Advised that to obtain independent scientific review and to ensure the best product possible the Secretariat is convening an Expert Think Tank in early October. The Secretariat urged that the information from Tuvalu's experts be made available to the EVI Think Tank or invited their participation at the upcoming Think Tank.

170. The Secretariat reported that there was a positive response to the EVI when it was presented in New York in April 2004.

171. As a partner in the development of the EVI, the University of the South Pacific highlighted to Council the consultative process involving University scientists and students that had been undertaken by SOPAC. USP underscored the importance of the EVI and its value as a first attempt to develop a tool for providing guidance to countries on environmental vulnerability issues.

172. The Cook Islands supported the comments made by USP and registered their support for the EVI, going on to indicate that the EVI is a valuable starting point and a useful tool.

APPENDIX 5

STAR CHAIR'S REPORT TO COUNCIL 2004

Chair of SOPAC, Excellencies, Distinguished National representatives and Delegation members, representatives of Institutions and Organisations, Ladies and Gentlemen.

I. Introduction

Thank you for this opportunity to formally report on STAR's activities. But before I do so, may I take the opportunity on behalf of STAR to extend our congratulations and best wishes to Cristelle as the new director of SOPAC. I am sure that our working relationship will be as productive as that with her predecessor, Alf Simpson.

As people here for the first time may not be familiar with STAR, I will briefly outline its role.

STAR is SOPAC's Science, Technology and Resources Network and it acts as an interface between the SOPAC Secretariat and its member nations and the international scientific community. It does this in several ways. Every few years, an international scientific workshop or meeting is either convened by STAR, or held under its auspices, on a broad theme relevant to the SOPAC region. STAR members also correspond and tender advice during the intervening periods.

Each year, a meeting at which scientific papers are presented and discussed, and thematic Working Groups meet, is held prior to this Annual Session of the SOPAC Governing Council. This year, the 21st meeting of STAR was held on September 18th and 19th at this hotel. As STAR is celebrating its 21st birthday, I would here like to acknowledge Dr Kazuhiro Kitazawa who is present at this meeting and who was instrumental in setting up STAR originally. That this unique symbiosis of scientists, managers and policymakers still thrives is a tribute to the foresight of Kazu and the others who were involved at the start.

II. STAR Presentations

As the Chair of SOPAC outlined this morning, the themes of this year's STAR meeting were:

- Mineral policy, plate tectonics and offshore mining,
- Hazard assessment and risk management, and
- Water, sanitation and human settlement.

These themes were well developed and, as is customary with STAR, there were a range of other papers on topics relevant to the region. During the meeting, 54 scientific papers and two longer general talks were presented orally and 26 others by the posters displaying research results you see displayed at the back of this room. Abstracts of these are published in SOPAC Miscellaneous Report 576. As is always the case for STAR meetings, the information presented covered a broad range and participants included representatives from disciplines other than earth science. I recommend the volume of abstracts as a guide to the range of material covered and as a source of much useful information.

Let me briefly outline the scope of the presentations for you, to indicate the variety. During the Geology & Geophysics session, papers covered aspects of the geology of tectonic plate boundaries and of other onshore and offshore structural features. Oceans & Coastal papers looked at data collection and application from several viewpoints, coastal and lagoonal change, and policy issues. Hazards & Risk Management presentations covered a wide range of topics, including case studies in Australia, New Zealand and Fiji, and the conclusions to be drawn from them. Three presentations devoted to the effects of tropical cyclone Heta were of particular interest as last year's STAR/Annual Session meetings were held on that island.

Tsunami papers partly inspired by the South Pacific Tsunami Awareness Workshop in July filled three sessions, and covered many aspects of this hazard. Papers associated with community lifelines covered issues related to water, sanitation and capacity building, as well as discussions on societal development in the Solomon Islands and cost-benefit analyses of black pearl farming.

The final session looked at several renewable

into increased capacity for national programs, among both public and private sector institutions; and

- review the appropriateness of risk management models and their implementation among different communities and sector groups.

The second objective is collaboration in geological, geochemical, meteorological and climatological hazard monitoring, to achieve effective minimum surveillance of SW Pacific hazards.

Recommendation; that Governing Council:

- note that, without the ability to detect hazards and evaluate trends, the risk management process has no adequate basis;
- note that timely pre-and post-disaster data collection is an effective means of establishing the cost-benefits for long-term mitigation planning;
- agree to create a framework for pre- and post-disaster assessment, with open sharing of information and appropriate use of regional capabilities in association with development of a Spatial Data Infrastructure (SDI); and
- agree to commission a feasibility study to determine the prerequisite capabilities (infrastructural, organisational, financial and political) for minimum, effective hazard detection, alerts and warnings.

The *Tsunami Working Group* considered the recommendations of the South Pacific Tsunami Awareness Workshop July 1 – 3, 2004 and several other meetings, as well as the presentations of the STAR. They presented the following recommendations for Council endorsement:

1. Support for the South Pacific Tsunami Awareness Workshop's proposed work programme for 2 years as agreed in July 2004 and specifically to:
 - Finalise the Terms of Reference and establish a SOPAC Tsunami Working Group, which is to produce a work schedule within two months;
 - Coordinate the investigation and development of a Regional Tsunami Information and Warning System within the SOPAC region;
 - Finalise the Terms of Reference for the recommended Feasibility Study;
 - Seek resources to conduct the Feasibility Study for the Regional Tsunami Information and Warning System.

2. Consider the inclusion of the South Pacific Tsunami Awareness Workshop's proposed work programme in the Draft Pacific Regional Position Paper for the 2nd World Conference on Disaster Reduction.

The members of the *Water, Sanitation & Hygiene Working Group* (WASH WG) present the following recommendations:

1. They recommend that the Community Lifelines Programme continues to build its Water Sector programme upon the Regional Action Plan on Sustainable Water Management (Pacific RAP).
2. They recommend the CLP continues to host the Coordination Unit and facilitate the Pacific Partnership on Sustainable Water Management as a modality for the implementation of the Pacific RAP.
3. The WASH WG recommends SOPAC Member Countries use the Pacific RAP to develop and implement National Water Action Plans for Sustainable Water Management.
4. The WASH WG recommends CLP assist in improving the availability and access to information on water and sanitation on national and regional levels through the development of databases and GIS/GPS.

With reference to the six thematic areas of the Pacific RAP the WASH WG specifically recommends CLP to provide contributions specifically to the following programmes:

- I. Water Resources Management,
- II. Island Vulnerability,
- III. Awareness,
- IV. Technology,
- V. Institutional Arrangements, and
- VI. Financing.

IV. General Comments from Chair of STAR

At this point, I would appreciate the opportunity to convey some personal impressions of this STAR meeting. The first is that the clearly applied direction to much of the research that has always been a particular feature of STAR continues and is increasingly directed towards the provision of quality technical advice to member governments. As just two examples of practical studies, we heard details of the processes of deep ocean mining and of the use of copra oil as a transport fuel. A second point that impressed me is that large volumes of quantitative data are coming available rapidly now from

formation and appropriate use of regional capabilities in association with development of a Spatial Data Infrastructure (SDI)

Agree, to commission a feasibility study to determine the prerequisite capabilities (infrastructural, organisational, financial and political) for minimum, effective hazard detection, alerts and warnings

IV. Tsunami Working Group

Members of Group: Lawrence Anton [Chair], Atu Kaloumaira, Michael Bonte-Graptin, Noud Leenders, Job Esau, Laura Kong, Loren Kroenke, Wally Johnson, Dave Tappin, Doug Ramsay, Chalapan Kaluwin, Chip McCreery, Bernard Pelletier, Kazuhara Kitazawa, and Kata Duaibe

Recommendation to Council: Upon considering the recommendations of the South Pacific Tsunami Awareness Workshop July 1 – 3, 2004, the presentations of the STAR session and the discussions of the STAR Tsunami Working Group; and

Recognizing the long experiences of the UNESCO/IOC International Coordination Group for the Tsunami Warning System in the Pacific (ITSU) and its efforts to promote the development of regional tsunami warning systems in the Pacific for more effective tsunami mitigation; and

Noting the Draft Pacific Regional Position Paper for the 2nd World Conference on Disaster Reduction;

We present the following **recommendations** for Council endorsement:

1. Support the South Pacific Tsunami Awareness Workshop's proposed work programme for 2 years as agreed in July 2004 and specifically to:

- Finalise the Terms of Reference and establish a SOPAC Tsunami Working Group, which is to produce a work schedule within two months;
- Coordinate the investigation and development of a Regional Tsunami Information and Warning System within the SOPAC region;
- Finalise the Terms of Reference for the recommended Feasibility Study;

Seek resources to conduct the Feasibility Study for the Regional Tsunami Information and Warning System.

2. Consider the inclusion of the South Pacific Tsunami Awareness Workshop's proposed work programme in the Draft Pacific Regional Position Paper for the 2nd World Conference on Disaster Reduction.

V. Water, Sanitation And Hygiene Working Group

Working Group Members: Tevita Fatai, (Tonga); Isaac Lekelalu, (Sol.Is); Andrew Matthews, (NIWA); Alex Malahoff, (GNS, NZ); Paula Wilisoni (Fiji); Andre Siohane (Niue); Ben Parakoti (Cook Is); Tamara Tait, (GNS, NZ); Petero Lafaele (ASPA, Am. Samoa); Esmond Moses (PUC, Pohnpei); David Dengokl (BPW, Palau); Anthony Chargualaf (Guam Waterworks Authority); George Laman, (Yap Water Authority); Lameko Talia, (Met. Samoa); Malakai Finau, (MRD, Fiji); Amataga Penaia, (SWA, Samoa); Moefaaau Taputoa Titimaea, (SWA, Samoa); Amo Mark, (PNG Waterboard); Taboia Metutera, (PUB, Kiribati); Lucio Haller, (CPUC, Chuuk); Eita Metai, (PUB, Kiribati); Ian Fry, Env. Division, Tuvalu). Alena Lawedrau-Moroca, (SOPAC); Rhonda Bower, (SOPAC); Marc Overmars, (SOPAC); Sarabjeet Singh, (SOPAC); Sarah Davies, (SOPAC); Stephen Booth, (SOPAC).

Facilitator/Rapporteur: Mike Dworksy (PWA)

Working Group Report & Recommendations:

The members of the Water, Sanitation & Hygiene Working Group (WASH WG) agreed the following recommendations should be submitted to Governing Council for the benefit of the Community Lifelines Programme (CLP) and individual Member Countries:

The WASH WG recommends the CLP continues to build its Water Sector programme upon the Regional Action Plan on Sustainable Water Management (Pacific RAP).

The WASH WG recommends the CLP continues to host the Coordination Unit and facilitate the Pacific Partnership on Sustainable Water Management as a modality for the implementation of the Pacific RAP.

The WASH WG recommends SOPAC Member Countries to use the Pacific RAP to develop and implement National Water Action Plans for Sustainable Water Management.

The WASH WG recommends CLP to assist in improving the availability and access to information on water and sanitation on national an