Snapshots

DISASTER REDUCTION PROGRAMME

Snapshot 73 November 2011

The Applied Geoscience and Technology Division (SOPAC) through the Disaster Reduction Programme is committed to working with officials and communities around the Pacific to strengthen the ability of countries to protect people as much as possible from the impact of natural and manmade disasters

SPC Secretariat of the Pacific Community
Applied Geoscience and Technology Division (SOPAC)

From the Managers Desk

Mosese Sikivou

We get ever closer to the end of the year but as we do there are no signs of the DRM activity abating. All our teams in the Disaster Reduction Programme (DRP) here in SOPAC/SPC are knuckling down trying to get as much in before they take a well deserved break over Christmas and New Year.

After a long period we've finally been able to engage again with Nauru on a broader front and in addition to the EU-funded B Envelope Project, are now providing support to strengthen the capacity of the National DRM Office and will in 2012, be working closely with all stakeholders on a Joint National Action Plan for DRM and Climate Change Adaptation.

The Solomon Islands has also decided to develop a Joint DRM and Climate Change Adaptation National Action Plan and so combined with Nauru and Fiji, DRP working with partner organisations will have alot to do in mainstreaming work at least within the first six months of 2012.

Shortly we will also begin preparations for the 2012 Pacific Platform for DRM and as referenced in our last issue, will also commence the process of developing an integrated regional strategy for DRM and Climate Change which is to be ready for consideration by Pacific leaders in 2015.

I hope you enjoy reading this issue.

Mosese Sikivou

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Coastal inundation caused by distant storms: extreme swell event (Loka), Coral Coast, Viti Levu, Fiji Islands

On May 20, 2011, the ocean inundated the southern shores of Viti Levu (17.8°S, 178.0°E), Fiji, along a 50 km section commonly known as the Coral Coast. The inundations caused minor damage to infrastructure such as roads, buildings and seawalls, as well as erosion of beaches (and accretion at one survey location). The inundation coincided with spring high tides and no local weather disturbance was experienced. Instead, the inundation occurred as a result of exceptionally energetic surface gravity waves generated by a high pressure system 3-4 thousand kilometres to the southwest over the Tasman Sea. Dissipation of these waves on the fringing reefs along the Coral Coast appears to have led to high wave setup and run-up, which, when coupled with high astronomical tides, resulted in the coastal inundation.

A two-day field survey was undertaken 13 days after the event jointly by a SOPAC/SPC team and Commonwealth Scientific and Industrial Research Organisation (CSIRO). Although evidence of coastal inundation is generally ephemeral, residual accumulations of debris and saltburn of vegetation were identified with the help of eye witnesses. The flotsam levels were used to estimate wave run-up. Shore-perpendicular profiles were surveyed at 9 separate locations along the Coral Coast using an auto-level and standard land survey techniques. Horizontal distances were measured landward from the base of the beach. Vertical control was established by referring local water levels to observations at the Suva tide gauge and reducing elevations to mean sea level. The average inundation was 40.5 m (ranging from 23.3 to 81.0 m), with run-up averaging 3.7 m (2.0 to 5.0 m range). Current regulation for coastal development in Fiji stipulates a setback of 30 m from the high water line.

No in situ ocean surface wave observations are available for Fiji. A 20-year time series of modelled (hindcast) offshore wave data was obtained from the global ERA-interim fields[1] provided by the European Centre of Medium Term Weather Forecasting for a point 150 km south-south west of Viti Levu. The wave data show incident waves with significant wave heights of 4.2 m, mean wave periods of 12.9 s, and a wave energy flux of 0.22 MW/m at the time of inundation. Extreme value analysis on declustered wave energy flux exceeding 0.20 MW/m shows that waves with characteristics similar to those that occurred on 20th May have a return interval of 1.12 years.

While analysis suggests that such waves (called Loka in Fijian) are relatively common, having a 89% chance of occurring in any one year, it is primarily the stage of the tide that modulates the severity of coastal inundation. However, extreme swell wave events and coastal inundation are not restricted to Fiji. An event in early December 2008 caused widespread damage and overtopping, and displaced an estimated 50,000 people across the western equatorial Pacific. These events show that coastal hazards are not limited to tropical cyclones or localised weather phenomena, but may occur as a result of storms thousands of kilometres away. This study helps to understand these extreme swell events and provides baseline information that can underpin coastal planning and guide adaptation responses. The findings have been compiled in a technical report and will be presented to the Fiji NDMO to support their efforts in Disaster Risk Reduction.

[1] European Centre for Medium-Range Weather Forecasts (ECMWF) has in the past produced three major reanalyses: FGGE, ERA-15 and ERA-40. The last of these consisted of a set of global analyses describing the state of the atmosphere and land and ocean-wave conditions from mid-1957 to mid-2002. ERA-Interim is an 'interim' reanalysis of the period 1989-present in preparation for the next-generation extended reanalysis to replace ERA-40.

Nauru: Significant progress following a 2nd Joint National Action Plan engagement

A Disaster Reduction Programme team visited Nauru from 6th to 16th November to assist the further development of a Joint National Action Plan for Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) for the island nation.

Building on the outcomes of a first round of consultations in July (2011), this engagement focused on the following key action points;

- Delivery of training: the Introduction to Disaster Management (IDM) for selected personnel from key agencies and stakeholders involved with disaster risk management;
- Facilitation of a second round of consultations with key departments, agencies and stakeholders regarding the National DRM Action Plan;
- Agreement on a list of immediate DRM capacity building needs and priority actions for approval by Nauru's National Disaster Risk Management (NDRM) Council;
- Presentation to the NDRM council on national disaster management arrangements and the findings from the first National Action Plan (NAP) engagement carried out in July;
- Signing of Letters of Agreement to enable implementation of key capacity building priorities to take place over the next 6 months.

The IDM training took place the first week of the visit and was crucial to the strengthening of the support to the National Disaster Risk Management Office of Nauru. Twenty-two individuals successfully completed the 3-day course. In his opening speech, the National Disaster Controller and Commissioner of Police, Mr. Richard Britten, stressed the importance of having skilled and like-minded DRM individuals in Nauru to ensure sufficient capacity for Nauru to implement disaster risk management programmes. The island republic established its National Disaster Risk Management Office (NDRMO) in March 2011.

The national response structure of Nauru as presented by National Disaster Risk Management Officer Roy Harris during the Introduction to Disaster Management training course.

Disaster Reduction Programme team present their findings and list of capacity building priorities identified at the National Disaster Risk Management Council meeting on November 15th.

The NDRM Office is managed by the former Fire Chief, Roy Harris. Mr. Britten reiterated that although Roy is experienced in the business of emergency and disaster management, he is only one person. To implement disaster risk management programmes people and resources are needed and the National Disaster Risk Management Office will rely on the support and goodwill of its DRM partners. These partners include government agencies, the private sector and the communities, hence why this training was important. The IDM training provided a base of understanding and looks to strengthening existing frameworks from which NDRMO and others will share much needed knowledge and resources.

The training proved very useful in the overall success of the NAP engagement. As part of the training course, participants discussed hazards, risks and potential disasters that can affect Nauru. It was evident from the exercises and the learning that the key factors contributing to disaster risks on Nauru are very similar to those faced by other countries in the Pacific. Having a National Action Plan will ensure a more focused and joint national effort to reduce disaster risks.

Over the next six months the Disaster Reduction Programme will provide support to the following capacity building initiatives;

1. Support to NDRMO through the purchase of relevant office equipment including computers, office supplies and other needed equipment as well as capacity building/training initiatives for key personnel;
2. Support to the Director of Civil Aviation/Airport control tower with the purchase of computer equipment to enhance meteorology services monitoring capabilities 24/7;
3. Facilitating Emergency Operation Centres (EOC) training for Police/Fire/other Response agencies;
4. Support for the revision of DRM governance arrangements (i.e. legislation and national DRM plan);
5. Development of response plans and arrangements for tsunamis and other identified hazards.

Additionally an action with a longer-term focus is the planning for and development of a Joint National Action Plan (JNAP) for DRM and CCA for Nauru. Endorsement for a JNAP for Nauru was obtained from the NDRM Council and the Secretary for Commerce, Industry and Environment during this visit. SOPAC/SPC will shortly be liaising with partner organisations to provide support for the JNAP planning process which is slated for commencement within the first quarter of 2012.

The 7th International Training Course on Geographic Information System for Disaster Risk Management

In October 2011, the Asian Disaster Preparedness Center (ADPC) hosted an International Training on Geographic Information System (GIS) for Disaster Risk Management, co-organized by The Geoinformatics Center of the Asian Institute of Technology (AIT), The International Institute for Geo-Information Science and Earth Observation, University of Twente Netherlands (ITC) and UNITAR'S Operational Satellite Applications Programme (UNITAR-UNOSAT).

Participants came from several organizations including World Health Organization (WHO), Federal Institute for Geosciences and Natural Resources (BGR), World Meteorological Organization (WMO), World Food Programme (WFP), UNICEF, UNOCHA, Kindernothilfe, AON Benfield, Federal Ministry of Health for Sudan, National Institute for Disaster Management for Mozambique and, National Emergency Coordination Center for Cambodia. Joy Papao, Risk Information Systems Officer from the Disaster Reduction Programme participated on behalf of SOPAC.

The training focused on the use of spatial information in disaster risk assessment and management. It emphasised the use of such spatial data during pre and post disaster management which was clearly illustrated in the different case studies developed such as the Haiti Earthquake of January 2010, Pakistan flooding in July 2010 and also the Thailand flooding in October 2011. These applications can also be adapted in Pacific Island Countries to be used for disaster response and planning and further discussions along these lines will be carried out by SOPAC/SPC.

Group photo GIS4DRM-7: Bangkok, Thailand 2011.

More Water Tanks for Tuvalu

The Disaster Risk Reduction Project (B-Envelope) funded by the European Union and implemented by the Applied Geoscience and Technology Division (SOPAC) of the Secretariat of the Pacific Community (SPC) is supporting the Government of Tuvalu with more rainwater tanks. A total of Euro 700,000 is allocated under the project to addressing water security in Tuvalu. Tuvalu recently went through a period of dry weather during which the Government declared a State of Emergency and rationed the distribution of fresh water from the national reserve.

Newly installed water tank in Tuvalu.

SOPAC signed a new contract with Rotomould (Tuvalu) Ltd to supply twenty five rainwater tanks with 10,000 litre capacity. The Project Manager of the B-Envelope Project, George Beck, stated that this is additional to the 310 rainwater tanks already supplied and installed by the project. The Government of Tuvalu indicated that the priority is in providing more tanks for houses on Funafuti with balances remaining in the project. The Water Programme of SOPAC is working very closely with the Government of Tuvalu and other development partners to address the immediate needs in providing fresh water to Tuvalu. The additional tanks will increase storage capacity for households on Funafuti and ensure that the people have access to fresh water during dry periods.

“While it is important that we increase the storage capacity for residents in Tuvalu it is equally important to address water management issues particularly in keeping water catchments clean” said George Beck. The B-Envelope project is planning to launch a major training and awareness programme in Tuvalu in the first quarter 2012, with the Government of Tuvalu and key stakeholders to address water quality.

Biggest Tsunami Preparedness Exercise Conducted in the Pacific

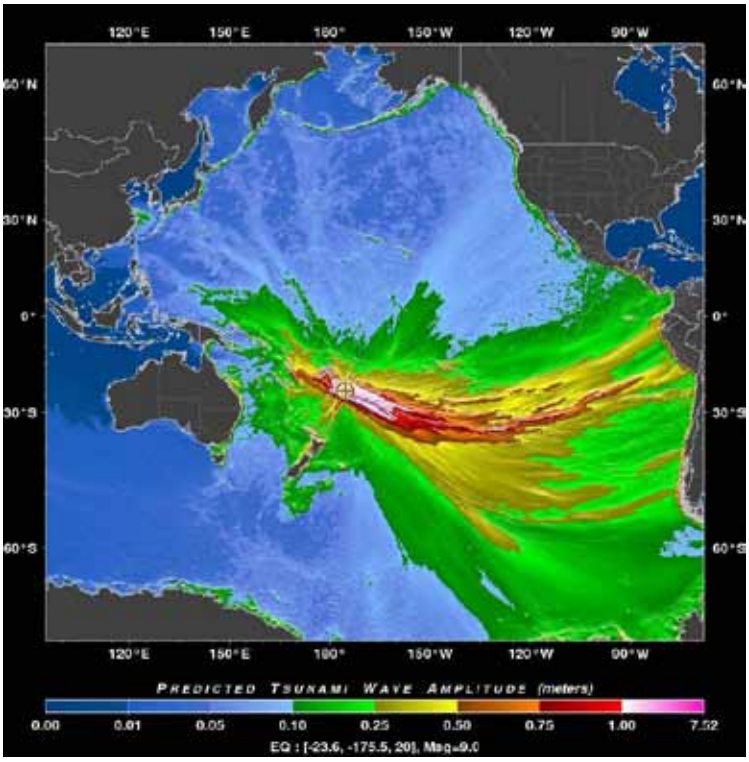
The Pacific Wave 2011 Exercise (PacWave11) turned out to be the biggest since the Pacific started its international warning and communication exercises in 2006. A total of 38 countries confirmed their participation in this year's exercise, the highest number to date!

The exercise was carried out during 9-10 November 2011 to allow countries to test their tsunami early warning system procedures, communications as well as national and local coordination. It was specifically aimed to assist countries in strengthening their preparedness and response to local and regional tsunamis, which we saw wreak havoc in minutes in the 2009 Samoa, 2010 Chile, and 2011 Japan tsunami disasters.

During PacWave11, the regional Tsunami Warning Centres (TWCs) based in Alaska, Hawaii and Japan issued tsunami test messages for their respective areas for altogether 10 tsunami source scenarios from around the Pacific. Countries were given option to choose one or more of the scenarios for their national exercise. Upon receipt of these messages at the country level, the national centres were expected to exercise their decision-making protocols to issue warnings and advice to their stakeholders and people selected to participate in the exercise. In some countries, exercises continued down to the local levels and included community and school evacuations. For example, in Samoa residents from eight villages in the southern coastal areas of Upolu and Savaii participated in the evacuation drill, and in Fiji, PacWave11 was conducted in two stages with a tabletop exercise on one day and school tsunami drills on the second day. Most Pacific Island countries conducted tabletop or functional exercises aimed at testing their communications modes and decision-making procedures for tsunami warnings.

PacWave 11 Evacuation Exercise in Poutasi, Samoa

PacWave 11 Evacuation Exercise in Muliatele, Samoa



Deep Ocean Forecast Map Tonga trench.

The Pacific Tsunami Warning Centre (PTWC), which is responsible for providing warnings and advisories for the Pacific, introduced new experimental tsunami forecast products as part of PacWave11, which included maps indicating the level(s) of threat for each country based on the five threat levels being trialled for the Pacific region. During the post-exercise phase, each country will be submitting an evaluation questionnaire to report on their exercise and feedback to the new products. A summary report assessing the performance of the PTWS is expected to be available by June 2012.

PacWave11 was organized by UNESCO IOC's Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) through its PacWave11 Exercise Task Team chaired by the Hawaii-based International Tsunami Information Centre and New Zealand Ministry of Civil Defence and Emergency Management. The SOPAC Division of SPC assisted Pacific Island countries in preparing for the exercise and will also help in the evaluation process.

Solomon Islands integrate Disaster Risk Management and Climate Change Adaptation in Joint NAP

The SPC/SOPAC Mission to the Solomon Islands involving Mosese Sikivou and Waisale Naqiolevu from the Disaster Reduction Programme laid the foundation for the development of a Joint National Action Plan (JNAP) for Disaster Risk Management (DRM) and Climate Change Adaptation (CCA). The JNAP for the Solomon Islands validates the drive toward DRM/CCA integration being pursued by PIC's including Nauru, Fiji, Tonga, Tuvalu and Niue. The integration of the Solomon Islands NDMO into the Solomon Islands Government, Ministry responsible for Climate Change, Meteorology and Environment provides an opportunity for a risk-based approach to development planning. The proposed Solomon Islands JNAP is seen as a vital document to bring the CCA and DRM communities together and for mainstreaming disaster/climate risk into the Solomon Islands sustainable development strategies, plans and actions.

The November Solomon Islands mission was successful in gaining endorsement, in-principle, by the Permanent Secretary for the Ministry for Environment, Climate Change, Disaster Management, and Meteorology, of a 2 stage process in the development and implementation of a Joint National Action Plan for DRM/CCA. The proposed 2 stage process involves the identification and implementation of priority DRM/CCA activities running along side a comprehensive JNAP planning and development process. Stage 1 of the Solomon Islands JNAP development will begin with the implementation of priority actions identified by SPC/SOPAC and the Solomon Islands NDMO. These actions include procurement of equipment for the NDMO and Provincial Disaster Centres, Intra-Regional exchange and sharing of experiences. .

It is anticipated that the Pacific Disaster Risk Management Partnership Network will provide technical support in the JNAP development and implementation with process to begin in the first quarter of 2012.

Delegates from Pacific French Territories and Pitcairn Island in Fiji to exchange ideas on disaster risk management, water and sanitation

A delegation of 15 representatives from four Pacific Overseas Countries/Territories (OCTs) came to Nadi, Fiji from 15–19 November, to exchange ideas and experience on issues around disaster risk management, water and sanitation.

The exchange between French Polynesia, New Caledonia, Wallis & Futuna, Pitcairn Island and Fiji reflects the growing interaction and increased closeness between Pacific OCTs and other Pacific Island Countries (PICS). The exchange was facilitated by a European Union (EU) funded project run through the Secretariat of the Pacific Community's (SPC) Applied Geoscience and Technology Division's (SOPAC) Disaster Reduction Programme.

Frederique Lehoux, the project Team Leader at SOPAC said that while this exchange was a first, she hoped that there would be many more to follow. "All of us in the Pacific face very similar risks and challenges that are not defined by national boundaries; by sharing our experiences, fostering new relationships and working together we have a much better chance of success."

Following a two-day project partners' meeting, the 15 delegates toured key areas around the Nadi region to learn more about local activities and techniques to improve disaster preparedness and the management of water and sanitation.

In the Nadi Basin, the delegation was invited to see the effects of the 2009 floods and to visit sites that are part of a Global Environment Facility (GEF) demonstration project, which aims to use Integrated Water Resources Management (IWRM) to reduce the impact of flooding in the area. Vinesh Kumar, Nadi GEF Demonstration Project manager, said he believed the exchange benefited all parties. "We hope that by highlighting the holistic approaches we are using to lessen the impacts of flooding, our OCT friends will take home some new ideas on how to deal with their local issues," Mr Kumar said. "We also see this as the start of a close relationship where we can also learn from some of the activities in the territories."

Delegates from French Polynesia, New Caledonia, Pitcairn Islands and Wallis and Futuna, with the Director of the SOPAC Division, Russell Howorth and the EU/ SOPAC project team.

Demonstrating techniques for managing wastewater and increasing water storage.

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Following this visit, Eric Duverger, Deputy Director of French Polynesia's Defense and Civil Protection Office, expressed his interest in adapting the techniques learnt in Fiji to set up an early warning system near rivers particularly at risk of recurrent and seasonal flooding. Contacts between Mr. Kumar and Mr. Duverger are ongoing.

On another day, delegates toured the Western District Disaster Management Office and were shown the emergency operations centre. They also met with communities at risk of flooding to learn about flood monitoring and early warning systems.

The final visit took place at Votua village near Sigatoka where delegates were shown rural water and sanitation solutions put in place to improve water storage and the management of wastewater.

Russell Howorth, Director of SPC's SOPAC Division recognised the rich and varied experience and knowledge brought by the territories : "To the delegates from the territories I know you have much to contribute to the region when it comes to managing disaster risk and public health risk," he said. "Do not let the language barrier hinder us; rather with the assistance of our interpreters let it enrich the discussions."

SOPAC will continue to foster south-south intraregional exchanges so that communities at risk can benefit from the rich and vast knowledge and solutions existing in the Pacific region.

BACKGROUND

SOPAC is helping the Pacific OCTs reduce natural disaster and water-borne public health risks by generating scientific & technical data for better planning and development, providing solutions to mitigate disasters before they happen, and through cross-learning within OCTs, and between OCTs and PICs.

The delegation was invited into the village chief's house for a presentation on water and sanitation solutions in the coastal village of Votua, near Sigatoka.

Rodrigue Tiavouane (right), Chargé de Mission at the Office of the President of New Caledonia's Northern Province, exchanges with village leaders.

Under this initiative, French Polynesia is working to reduce two types of risks faced by the country: tsunamis in the Marquesas archipelago and cyclonic waves in the Tuamotus. Both initiatives will seek to reinforce the safety of populations. In the Marquesas this will be done by repairing sirens and developing local capacity to maintain them, and in the Tuamotus by identifying precise zones at risk and refining building codes.

Wallis and Futuna, also highly exposed to tsunamis, is looking to enhance the safety of its people and infrastructure in the face of natural disasters.

New Caledonia is engaged in reducing public health risks resulting from contaminated drinking water, inadequate sanitation and drought. The country-wide project seeks to enhance the safety of drinking water and bridge the sanitation gap which puts the population and surrounding lagoons at risk.

Pitcairn Islanders are experiencing longer, more severe periods of drought whose effects can be devastating on many fronts, including crop production, and drinking water consumption. Pitcairn will be closely monitoring its climate, weather and water resources and use this information to bolster the island's water catchment, storage, treatment and distribution capacity. Pitcairn is also enhancing its water and meteorology governance arrangements.

Upcoming Events

- 5 – 9 December: 6th Caribbean Conference on Comprehensive Disaster Management, Trinidad.
- 5 – 9 December Joint SOPAC/ UNISDR mission on Samoa DRM National Action Plan, Samoa.

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