



UNESCO – IOC / NOAA INTERNATIONAL TSUNAMI INFORMATION CENTER (ITIC) ITIC TRAINING PROGRAMME INTERNATIONAL (ITP-INTL_

ITP-Tonga: Tsunami Warning and Emergency Response Using the PTWC Enhanced Products for National Tsunami Threat Decision-Making Nuku'alofa, Tonga 24-27 August 2015

Trainers

Dr. Ken Gledhill, Chair, ICG/PTWS WG 2 on Tsunami Detection, Warning, and Dissemination; Director, New Zealand GeoNet; Department Head, GeoHazards Monitoring
GNS Science, New Zealand

Dr. Laura Kong, Director, ITIC, Hawaii, USA

Rajendra Prasad, Programme Officer, IOC Tsunami Unit, Fiji

Training Overview

The 4-day training will cover tsunami warning operations and the use of the PTWC Enhanced Products for tsunami threat decision-making. Topics will include warning and response standard operating procedures and challenges, warning decision support tools, evacuation concepts and planning, and awareness strategies. Over the last 10+ years, with improvements in data quality, quantity, and real-time availability, PTWC's response time has dropped significantly from an hour to 5-10 minutes for tsunami events. At the same time, with each great earthquake and tsunami since 26 December 2004 helping to increase scientific understanding, better techniques have been developed to quickly characterize the earthquake and numerically model the tsunami. In 2014, the PTWC implemented Enhanced Products for the PTWS that now include wave amplitude forecasts in both text and graphical formats, and that require each country to explicitly assign Warning / Watch status for their own coasts. In July 2015, the First Pacific Ministerial Meeting on Meteorology adopted the Nuku'alofa Declaration, calling for support to ensure that National Meteorological and Hydrological Services (NMHS) have the necessary capacity to support sustainable development, and specifically for the need to strengthen their tsunami early warning systems. Accordingly, the goal of this training is to increase the capacity of first responder operational staff to efficiently and effectively respond to tsunamis.

FINAL AGENDA

Session	Topic	Speaker
1	DAY 1: Opening, ICG/PTWS-XXV, Tsunami Early Warning Systems, PTWC Enhanced Products	
	Registration	Tonga
1.1	Opening Ceremonies	Tonga, ITIC, IOC
1.2	Logistics and Administrative Items, Introductions, Course Overview	Tonga, Laura Kong, ITIC

1.3	ICG/PTWS-XXVI Outcomes, specifically for the Southwest Pacific	Rajendra Prasad, IOC
1.4	Responding Rapidly and Effectively: Tsunami Warning and Emergency Response Requirements and Timeline-driven SOPs	Kong
1.5	Tonga Tsunami Emergency Response (TER), Overview	Leveni 'Aho, Tonga NEMO
1.6	Pacific Tsunami Warning Center (PTWC) New Enhanced Products - What, Why, SOPs (Criteria, Formats, Staging)	Kong
1.7	PTWC Enhanced Products - Staging and Explanation of Each Product: Text, Forecast Polygon Map, Graphical Deep-Ocean Energy, Coastal Forecast, Forecast Tables, KMZ file	Kong
1.8	Fuamotu Tsunami Warning Center SOPs using PTWC Enhanced Products	Ofa Fa'anunu, Tonga Meteorological Dept
1.9	PANEL: Tonga Tsunami Readiness – status, gaps, needs	Tonga: Gov Office Hapai, Civil Society, Met, FM Radio
2	DAY 2: TWC Operations (Earthquake, Tsunami monitoring and forecasting), Warning Decision Support Tools, Awareness and Preparedness	
2.1	Tsunami Warning Center (TWC) Operations: Real-time Earthquake Detection and Fast Source Characterization - Sparse networks, Magnitudes, W-Phase Centroid Moment Tensors – Techniques, Use, Limitations, Challenges	Gledhill
2.2	TWC Operations: Sea Level Monitoring - Use, Instruments, Limitations, Challenges	Gledhill
2.3	Building Awareness & Community Preparedness, Exercises – strategies and examples	Kong
2.4	What do TERs do with TWC information? Challenges in Alerting, Evacuation, and Safe-to-Return (All-Clear	Kong
2.5	Discussion: Tonga Awareness and Preparedness – status, gaps, needs	Tonga, All
3	DAY 3: NTWC and NDMO SOPs for PTWC Enhanced Products, Evacuation, Awareness, Tsunami Forecasting	
3.1	TWC SOPs: What do TWCs provide to Tsunami Emergency Response (TER) agencies?	Gledhill
3.2	TER SOPs: Overview of Stakeholder Roles and Coordination, Event Operations, Timelines, Checklists, examples	Kong
3.3	TWC Operations - Decision Support Tools of Monitoring, Detection, Assessment – Earthquakes: Real-time Earthquake Display (CISN), USGS web site (CMT, ShakeMap, PAGER), Sea Level Monitoring (IOC web site, TideTool with Tsunami Travel Times) - demo	Gledhill, Kong
3.4	TWC and TER (SOPs) for PTWC Enhanced Products: Guidance, Flow Charts, Criteria Tables, Timeline-driven SOP, Message Templates. Warning (EQ Magnitude and Forecast thresholds), Evacuation (Land and Marine Threats and Public Safety)	Kong
3.5	PANEL: Tonga SOPs – status, gaps, needs	Tonga: Ha'apai Met, HMAF, RFS, MIA, Education
3.6	TWC Operations: Travel Time and Wave Amplitude Forecasting - Techniques, Use, Limitations, Uncertainty, Sensitivity Studies (Location, Depth, Magnitude)	Gledhill
4	DAY 4: Tsunami Hazard Scenarios, Tsunami Exercises on National Threat Decision-making	
4.1	Tsunami Hazard Scenarios around the Pacific - Understanding PTWC Enhanced Products	Kong
4.2	Tsunami Table Top Exercise - Decision-making using PTWC Enhanced Products – Tonga local tsunami scenario	Fa'anunu, Tonga
4.3	Tonga Implementation plan	Tonga, IOC
4.4	Final Discussion: Tonga Readiness - Questions, Answers, Next Steps	Tonga, IOC, ITIC, NZ
4.5	Closing Ceremonies	