

**UNESCO – IOC / NOAA INTERNATIONAL TSUNAMI INFORMATION CENTER (ITIC)  
ITIC TRAINING PROGRAMME INTERNATIONAL**

**Regional Training: Pacific Island Countries (ITP-PIC-2)  
ICG/PTWS Pacific Tsunami Warning Center (PTWC) New Enhanced Tsunami Products**

**Tanoa International Hotel, Nadi Fiji  
22-24 May 2014**

**Trainers**

Dr. Ken Gledhill, Chair, ICG/PTWS; GeoNet Project Director, Dept Head, Geohazards Monitoring, Inst of Geological and Nuclear Sciences (IGNS), New Zealand  
Dr. Laura Kong, Director, ITIC, Hawaii, USA  
Rajendra Prasad, Programme Officer, IOC Tsunami Unit, Fiji  
Dr. Stuart Weinstein, Deputy Director, PTWC, Hawaii, USA

**Training Overview**

The 3-day training will cover the explanation and use of the PTWC New Enhanced Tsunami Forecast Products by National Tsunami Warning Centers and Emergency Response Agencies. Topics will cover the end-to-end warning process, warning center and emergency response operational challenges, advanced topics in tsunami warning center operations, and the methodologies, use, interpretation, and limitations of the PTWC Enhanced Products. 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. This in turn has led to significant improvements in a warning center's ability to accurately forecast coastal wave height and impact, and an ability to provide timely advice to support local tsunami warning decision-making. At the ICG/PTWS-XXV (September 2013), Member States approved the start of the PTWC Enhanced Products on October 1, 2014. These products, the first large-scale modifications in decades, fundamentally change the way in which countries assess their national tsunami threats. The PTWC will cease providing Warnings and Watches, and instead issue advisory tsunami wave forecasts. Public text products will continue to be issued, but the additional graphical and statistical products will only be sent to authorized PTWS Tsunami Warning Focal Points (TWFP).

**AGENDA**

<b>Sessi on</b>	<b>Start Time</b>	<b>End Time</b>	<b>Topic</b>	<b>Speaker</b>
<b>1-4</b>			<b>DAY 1: ICG/PTWS-XXV, Coordinated Warning Systems, Country and PTWC Enhanced Products SOPs</b>	
<b>1-3</b>			<b>MORNING</b>	
			<b>Opening, ICG/PTWS-XXV Outcomes</b>	
	8:00	8:30	Registration	IOC
<b>1.1</b>	8:30	9:00	Opening Ceremonies	IOC, ICG/PTWS, ITIC
<b>1.2</b>	9:00	9:15	Logistics and Administrative Items, Introductions Course Overview	Rajendra Prasad, IOC Laura Kong, ITIC
<b>2.1</b>	9:15	9:35	ICG/PTWS-XXV Outcomes, specifically for PTWS Enhanced Products	Ken Gledhill, NZ
<b>2.2</b>	9:35	10:00	Responding Rapidly and Effectively: Tsunami Warning and Emergency Response Requirements and Timeline-driven SOPs	Kong
	10:00	10:30	COFFEE / TEA BREAK - Group Photo	

			<b>Coordinated Warning and Response – What is Available and What is Wanted?</b>	
<b>2.3</b>	10:30	10:50	What will Tsunami Warning Centers (TWCs) provide to Tsunami Emergency Response (TER) agencies? TWC Operations Challenges and Limitations in real-time Monitoring, Detection, and Forecasting	Stuart Weinstein, PTWC
<b>2.4</b>	10:50	11:10	What do TERs want from TWCs? TER Operations Challenges and Limitations in Alerting, Evacuation, and Safe-to-Return (All-Clear)	Gledhill
<b>3.1</b>	11:10	12:00	Country SOPs using PTWC Enhanced Products - 10 min/country (4 countries: Cook Islands, FSM, Fiji, Kiribati)	Prasad, Countries
	12:00	13:30	LUNCH	
<b>3-4</b>			<b>AFTERNOON - Country and PTWC Enhanced Products SOPs</b>	
<b>3.1</b>	13:30	15:00	Country SOPs using PTWC Enhanced Products - 10 min/country (8 countries: Nauru, Niue, Palau, PNG, RMI, Samoa, Solomon Islands, Tonga)	Prasad, Countries
	15:00	15:15	COFFEE / TEA BREAK	
	15:15	15:45	Country SOPs using PTWC Enhanced Products - 10 min/country (2 countries: Tuvalu, Vanuatu)	Prasad, Countries
<b>3.2</b>	15:45	16:10	Discussion: Challenges for Country Readiness for Changeover – What is left to do, gaps, needs?	Kong. Gledhill
<b>4.1</b>	16:10	17:00	Pacific Tsunami Warning Center (PTWC) New Enhanced Products SOPs - Why, What, Criteria, Staging of Products	Weinstein
<b>4-6</b>			<b>DAY 2: TWC Operations, PTWC Enhanced Products, Country Guidance, Tsunami Scenarios</b>	
<b>4</b>			<b>MORNING - TWC Operations Advanced Topics, PTWC Enhanced Products</b>	
<b>4.2</b>	8:30	9:30	TWC Operations: Real-time Earthquake Detection and Fast Source Characterization - Sparse networks, Magnitudes, W-Phase Centroid Moment Tensors – Techniques, Use, and Limitations	Weinstein
<b>4.3</b>	9:30	10:00	TWC Operations: Travel Time and Wave Forecasting - Techniques, Use and Limitations, Sensitivity Studies (Location, Depth, Magnitude)	Gledhill
	10:00	10:30	COFFEE / TEA BREAK	
	10:30	11:00	TWC Operations: Travel Time and Wave Forecasting – Techniques, Use and Limitations, Sensitivity Studies (Location, Depth, Magnitude)	Gledhill
	11:00	11:30	PTWC TWC Operational Forecasting – Limitations and Uncertainties	Weinstein
<b>4.4</b>	11:30	12:00	PTWC Enhanced Products - Explanation of Each Product: Public Text, Graphical Deep-Ocean Tsunami Amplitude (Energy), Coastal Tsunami Amplitude, Coastal Tsunami Amplitude Polygons, Tsunami Amplitude Statistics, Coastal Tsunami Amplitude KMZ file	Kong
	12:00	13:30	LUNCH	
<b>4-6</b>			<b>AFTERNOON - NTWC SOPs for PTWC Enhanced Products: Guidance and Templates, Tsunami Decision Support Tools, Distant Tsunami Scenarios</b>	
<b>4.4</b>	13:30	14:00	PTWC Enhanced Products - Explanation of Each Product (continued)	Weinstein
<b>5.1</b>	14:00	14:30	National Tsunami Warning Center SOP for PTWC Enhanced Products - Guidance and Examples: Flow Charts, Criteria Tables, Warning/Watch/Information Message Templates	Kong
<b>5.2</b>	14:30	15:00	Using Tsunami Warning Decision Support Tools for Monitoring, Detection, Assessment, Warning, Cancellation	Weinstein, Kong
	15:00	15:15	COFFEE / TEA BREAK	
<b>5.3</b>	15:00	15:30	PTWC Enhanced Products Guidance for National Warnings and Evacuation – Land and Marine Threats and Public Safety	Gledhill
<b>5.4</b>	15:30	16:00	Timeline-driven SOPs – Intl TWCs, NTWC, NDMO/DMO actions	Kong
<b>6.1</b>	16:00	17:00	Understanding PTWC Enhanced Products – Distant Tsunami Hazard Scenarios	Gledhill

<b>6-7</b>			<b>DAY 3: Tsunami Scenarios, Tsunami Exercise, TWTools, Country SOPs</b>	
			<b>MORNING – Scenarios, Exercise</b>	
<b>6.2</b>	8:30	9:15	Understanding PTWC Enhanced Products – Regional and Local Tsunami Hazard Scenarios	Weinstein, Groups
	9:15	10:00	Understanding PTWC Enhanced Products – Regional and Local Tsunami Hazard Scenarios	Gledhill, Groups
	10:00	10:30	COFFEE / TEA BREAK	
<b>6.3</b>	10:30	12:00	Decision-making using PTWC Enhanced Products: Local Tsunami Table Top Exercise	Exer Controller (Kong), Groups
<b>6.4</b>	12:00	12:30	Summary Discussion and Closing: Country Readiness for PTWS Enhanced Products	All, PTWC, ITIC, IOC
	12:30	14:00	LUNCH	
<b>7</b>			<b>AFTERNOON – Hands-on One-on-One Sessions: TW Software Tools, Country Enhanced Products SOPs</b>	
	14:00	16:30	Using Tsunami Warning Decision Support Tools – Installation, Training	Weinstein, Kong
	14:00	16:30	Country Enhanced Products SOPs – Questions and Answers, Review and Recommendation of available planned procedures, etc	Gledhill, Kong