



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

Regional Training Workshop: Strengthening Tsunami Warning and Emergency Response Standard Operating Procedures ICG/PTWS Pacific Tsunami Warning Center (PTWC) New Enhanced Tsunami Products

**16-20 December 2013
Hubei Hotel-Beijing, Beijing, China**

**Hosted by National Marine Environmental Forecasting Center (NMEFC)
China State Oceanic Administration (SOA)**

Trainers

Bernardo Aliaga, Technical Secretary, ICG/PTWS and ICG/CARIBE-EWS, UNESCO IOC Tsunami Unit, Paris, France
 Tony Elliott, Head, ICG/IOTWS Secretariat, UNESCO IOC Tsunami Unit, Perth, Australia
 Yohko Igarashi, Chief, International Tsunami Information Section, Earthquake and Tsunami Observations Division, Seismological and Volcanological Department, Japan Meteorological Agency (JMA)
 Dr. Laura Kong, Director, ITIC, Hawaii, USA
 Dr. Dailin Wang, Senior Oceanographer, Pacific Tsunami Warning Center, NOAA, Hawaii, USA

Training Overview

This 1-week training workshop will cover essential topics involved in end-to-end tsunami warning. In event time, the topics include event monitoring and detection, threat evaluation and warning, alert dissemination, emergency response, evacuation, and public action. An effective tsunami warning system is achieved when all people in vulnerable coastal communities are prepared to respond appropriately and in a timely manner upon recognizing that a potential destructive tsunami may be approaching. Meeting this challenge requires round the-clock monitoring with real-time data streams and rapid alerting, as well as prepared communities, a strong emergency management system, and close and effective cooperation between all stakeholders. Stakeholders must be able to work in coordination and with good understanding of each other's roles, responsibilities, authorities, procedures, and action during a tsunami event. Planning and preparedness, and practicing in advance of the real event, are important to familiarize agency staff with the steps and decision-making that will need to be carried out without hesitation in a real emergency. In this context, the Training emphasizes the development of sound tsunami warning and emergency response standard operating procedures (SOPs) as a key requirement for successful end-to-end warning. The Training will focus on understanding and interpreting the new PTWC Enhanced Tsunami Products and the Japan Meteorological Agency products for national use. The new PTWC products were approved by the ICG/PTWS-XXV (September 2013) for changeover on 1 October 2014.

FINAL AGENDA

Ses sion	Start Time	End Time	T W C	T E R	Topic	Speaker
1-4					DAY 1: SESSIONS 1-4	
1-3					MORNING	
					Opening, Introductions	
	8:30	9:00			Registration	IOC, China
1.1	9:00	9:40			Opening Ceremonies	IOC, USA, Japan, China
	9:40	10:00			COFFEE / TEA BREAK - Group Photo	NMEFC
2.1	10:00	10:05			Logistics and Administrative Items	NMEFC
2.2	10:05	10:15			Trainer and Participant Self-Introductions	IOC - Aliaga
					Course Overview, Tsunami Warning and Emergency Response	
3.1	10:15	10:30			ICG/PTWS-XXV Outcomes, specifically for the PTWS Enhanced Products and progress for South China Sea Region, and Course Overview	Aliaga
3.2	10:30	11:15			Timeline-driven SOPs for Effective End-to-End Warning and Emergency Response - Overview including Stakeholders and their linkages	ITIC - Kong
3.3	11:15	12:00			Lessons Learned from Past Tsunamis - Warning and Emergency Response	JMA - Igarashi, Kong
	12:00	13:30			LUNCH	
3-4					AFTERNOON	
					Country Presentations - Present SOPs and Planned Modifications for PTWC New Products	
3.4	13:30	15:15			Country Presentations (China, Brunei, Indonesia, Malaysia, Mexico, Philippines, Russia) - 10-15 min/country	PTWC - Wang
	15:15	15:30			COFFEE / TEA BREAK	
	15:30	16:00			Country Presentations (Thailand, Vietnam) - 10-15 min/country	IOC-Elliott
					Tsunami Standard Operating Procedures (SOPs), Information Sources	
4.1	16:00	16:30			Tsunami Warning Centre Standard Operating Procedures – Concept of Operations, Overview on Routine and Event Operations, Flow Charts, Timelines, Checklists, including available Tsunami Warning Decision Support Tools	Kong
4.2	16:30	17:00			Learning Activity (individual followed by group discussion) – Official and Unofficial Information	Elliott
4.3	17:00	18:00			Visit to China SOA National Environmental Forecast Center (NMEFC)	NMEFC
4					DAY 2: SESSION 4	
					MORNING	
					International TWC SOPs - JMA, PTWC, Emergency Response SOPs	
4.4	9:00	9:45			Japan Meteorological Agency Northwest Pacific Tsunami Advisory Center (NWPTAC)	Igarashi
4.5	9:45	10:30			US Pacific Tsunami Warning Center (PTWC)	Wang
	10:30	11:00			COFFEE / TEA BREAK - Group Photo	
4.6	11:00	11:30			TWC Operations Challenges and Limitations: Real-time earthquake source characterization and Tsunami Assessment	Elliott, Kong
4.7	11:30	12:00			Tsunami Emergency Response Standard Operating Procedures - Overview on Stakeholder Roles and Coordination, Event Operations, Timelines, Checklists; Examples	Aliaga, Elliott
	12:00	13:30			LUNCH	

					AFTERNOON	
					Warning Dissemination, Evacuation, What Happens When?	
4.8	13:30	14:15			Case Studies: Warning Dissemination and Public Alerting – US Hawaii Emergency Alert System; JMA-NHK Broadcasting	Kong, Igarashi
4.9	14:15	14:45			Emergency communications - Robustness, reliability, redundancy. Technologies for the downstream transmission of warnings to communities	Elliott
4.10	14:45	15:15			Public Coastal Evacuations: Inundation Modeling, Evacuation Maps, Routes and Signage, Safe Return	Aliaga
	15:15	15:30			COFFEE / TEA BREAK	
4.11	15:30	16:00			Vertical Evacuation and Refuge: Progress in Designing Tsunami-Resistant Structures	Kong
4.12	16:00	16:30			TER Operations Challenges and Limitations: Alerting and Evacuation Discussion: What does TER want from TWCs?	Aliaga
4.13	16:30	17:00			Learning Activity (individual followed by group discussion) – Tsunami Warning and Emergency Response Timeline – What happens when?	Elliott
5-6					DAY 3: SESSIONS 5-6 SEPARATE MORNING SESSIONS FOR TWC AND TER	
TWS-5					MORNING: TWC - Advanced Topics	
TWC-5.1	9:00	9:45			Real-time Earthquake Detection and Fast Source Characterization (Hypocenter and Magnitude / Seismic Intensity Estimation), W-Phase Centroid Moment Tensors, Finite Fault Rupture	Igarashi
TWC-5.2	9:45	10:30			PTWC Tsunami Assessment -Travel Time and Wave Forecasting including Techniques, Use and Limitations	Wang
	10:30	11:00			COFFEE / TEA BREAK	
	11:00	11:30			PTWC Tsunami Assessment -Travel Time and Wave Forecasting including Techniques, Use and Limitations (cont'd)	Wang
TWC-5.3	11:30	12:00			JMA Tsunami Assessment -Travel Time and Wave Forecasting including Techniques, Use and Limitations	Igarashi
	12:00	13:30			LUNCH	
TER-5					MORNING: TER - Building Preparedness	
TER-5.1	9:00	9:45			Community-level preparedness and education – Schools, Businesses, Special Needs Populations, Tourism Sector, Ports and Harbors	Aliaga
TER-5.2	9:45	10:30			Media as a partner in warning and preparedness - Requirements and Examples	Elliott
	10:30	11:00			COFFEE / TEA BREAK	
TER-5.3	11:00	11:15			Learning Activity (outside class): Town Planning for Tsunamis - Using ISDR Stop Disasters! simulation tool	Elliott
TER-5.4	11:15	12:15			Learning Activity: Evacuation Planning for Tsunamis – Creating an Evacuation Map	Aliaga
	12:15	13:30			LUNCH	
6					AFTERNOON: PTWC Enhanced Products, Warning Guidance, Scenarios - PTWC and JMA Products	
6.1	13:30	14:00			PTWS PTWC Enhanced Products: Overview - Why, What, When and How to Use, Limitations	Kong
6.2	14:00	15:15			PTWC Enhanced Products - Explanation of Each Product: Text, Graphical Deep-Ocean Energy, Coastal Forecast, Forecast Tables, KMZ file, Forecast Polygon Map - Distant Tsunami example	Wang
6.3	15:15	15:30			COFFEE / TEA BREAK	
6.4	15:30	16:15			Guidance on how to use PTWC New Products for National Warnings and Evacuation – Land and Marine Threats and Public Safety	Kong
6.5	16:15	17:00			Use of PTWC and JMA Products - Regional and Local Tsunami Hazard Scenarios - Southern Ryukyus	Kong, Small Groups, Wang, Igarashi

6-8					DAY 4: SESSIONS 6-8	
6-7					MORNING: Scenarios - PTWC and JMA products, Tsunami Exercises	
6.5	9:00	9:45			Use of PTWC and JMA Products - Regional and Local Tsunami Hazard Scenarios - Manila Trench	Elliott, Small Groups, Wang, Igarashi
6.5	9:45	10:30			Use of PTWC and JMA Products - Regional and Local Tsunami Hazard Scenarios - Marginal Seas	Aliaga Small Groups, Wang, Igarashi
	10:30	11:00			COFFEE / TEA BREAK	
6.6	11:00	11:30			Building Readiness - Tsunami Exercises: IOC Guidance, Examples	Aliaga
7.1	11:30	12:00			Tabletop Exercise SCS-13: Objective, Format, Ground Rules	Exercise Controllers: Elliott, Kong
	12:00	13:30			LUNCH	
7-8					AFTERNOON	
					Table Top Exercise SCS-13	
7.2	13:30	13:45			Exercise Setup and Ground Rules	Exercise Controllers
7.3	13:45	15:15			Exercise SCS-13 - Local Tsunami Scenario	Controllers, Small Groups, Observers
	15:15	15:30			COFFEE / TEA BREAK	
					Next Steps, Closing	
7.4	15:30	16:15			Summary Discussion and Next Steps: Country Readiness for PTWS Enhanced Products. Challenges for achieving end-to-end TWS: Data, Communications, Stakeholders, Evacuation, and other gaps	Aliaga, Elliott, Kong
8.1	16:15	16:30			Final Remarks by Trainers	Trainers
8.2	16:30	17:00			Presentation of Certificates, Closing	ITIC, IOC, China
					DAY 5: SITE VISITS ORGANIZED BY NMEFC	
					China Earthquake Networks Center, China Earthquake Administration	NMEFC
					Great Wall	NMEFC