



INTERNATIONAL TSUNAMI INFORMATION CENTER (ITIC) ITIC TRAINING PROGRAMME - INTERNATIONAL (ITP-INTL)

END-TO-END TSUNAMI EARLY WARNING SYSTEMS AND THE PACIFIC TSUNAMI WARNING CENTER (PTWC) ENHANCED PRODUCTS

Training Workshop on Strengthening Tsunami Warning and Emergency Response and the development of Standard Operating Procedures

5-8 August 2019
Laguna Hotel, Port Moresby, Papua New Guinea

TRAINING OVERVIEW

International Resource Persons:

Dr. Laura Kong, Director, International Tsunami Information Center
Dr. Stuart Weinstein, Deputy Director, Pacific Tsunami Warning Center

The ITIC Training Program on Tsunami Early Warning and Mitigation Systems has focused since 2005 on improving operating procedures for tsunami response as essential for successful tsunami warning. While infrequent, tsunamis can be extremely deadly because of their quick onset and immediate impact in minutes. In order to warn quickly and have the public evacuate when necessary, agencies must pre-plan and have protocols and procedures which are well-known to every stakeholder and to the public, and which are well-exercised and practiced. Communities must know their hazard and risk, and prepare in advance, so that every person can recognize the tsunami danger and know what to do to save their lives.

Over the last 15+ years, with improvements in data quality, quantity, and real-time availability, PTWC's response time has dropped significantly from an hour to 5-7 minutes for tsunami events. Scientific understanding has increased and better techniques have been developed to quickly characterize the earthquake and numerically model the tsunami. In 2014, the PTWC implemented Enhanced Products that include wave forecasts in both text and graphical formats, and that require each country to explicitly assign Warning / Watch status in their own messages to their coasts. In 2019, the Japan Northwest Pacific Tsunami Advisory Center expanded its coverage to include Papua New Guinea and upgraded its services to include enhanced graphical products. Since 2017, UNESCO IOC has piloted Tsunami Ready, a performance-based Community Recognition Program, providing countries in the Pacific a tool to improve the readiness of coastal communities.

The training will focus on the end-to-end tsunami warning and emergency response chain, focusing on the importance of Standard Operating Procedures (SOPs) for enabling consistent and rapid tsunami warning and response. SOP development is a dynamic process, and each event is unique in its generation and impact, and so also in its response. In every event and with every tsunami exercise, we improve our response and learn a little more about the science of tsunamis and how to better mitigate against their impact. At the local level, communities recognized as Tsunami Ready by UNESCO IOC have prepared beforehand by identifying their hazard and risk, developing evacuation maps, conducting regular exercises to practice their plans, sponsoring multiple education and awareness events, and installing reliable methods to receive and issue warnings.

PROVISIONAL AGENDA

Session	Start Time	End Time	Topic	Speaker
1-2			DAY 1, MONDAY, 5 AUGUST 2019	
			Opening, PNG Tsunami Warning System, Tsunami Early Warning, Earthquake and Tsunami Science	
1.1	13:30	13:45	Opening, Welcome	PNG, ITIC
	13:45	14:00	Group Photo	
1.2	14:00	14:15	Introductions, Course Overview	Kong
1.3	14:15	15:00	Papua New Guinea Tsunami Early Warning System - Tsunami Warning and Emergency Response; End user response upon receiving tsunami warning message	PMGO, NDC, PNG NWS
	15:00	15:15	COFFEE / TEA BREAK, Group Photo	
1.4	15:15	16:00	Responding Rapidly and Effectively: Tsunami Warning and Emergency Response Requirements – Stakeholders and their needs, Roles and Responsibilities, Standard Operating Procedures, and their linkages	Kong
2.1	16:00	16:45	What earthquake science you need to know to warn for and respond to tsunami warnings? Earthquake Seismology - what, how, when, and damage earthquake causes, etc	Weinstein
2-3			DAY 2, TUESDAY, 6 AUGUST 2019	
			PNG Hazard, Lessons Learned, TWC Overview	
2.2	9:00	9:45	What tsunami science you need to know to warn for and respond to tsunami warnings? Tsunami generation, propagation, and inundation - what, how, when, impact, damage, and mitigating impact	Weinstein
2.3	9:45	10:30	Pacific and Papua New Guinea Tsunami Hazard	PNG, Kong
	10:30	10:45	COFFEE / TEA BREAK	
2.4	10:45	11:15	Lessons Learned from Past Tsunamis, Papua New Guinea experience: Wewak (2002), Japan (2011), PNG (2018)	PMGO, NDC
2.5	11:15	11:45	Lessons Learned from Past Tsunamis - International experience: Samoa/South Pacific (2009), Chile (2010), Japan (2011), Recent Atypical Tsunamis (Kaikoura 2016, Palu 2018, Krakatau 2018)	Kong, Weinstein
3.1	11:45	12:15	Tsunami Warning Center (TWC) Overview: What do TWCs do? What do TWCs provide to Tsunami Emergency Response (TER) agencies? Challenges in Detection and Tsunami Threat Assessment	Weinstein
	12:15	13:30	LUNCH	
			TWC Operations and SOPs, PTWC and JMA NWPTAC Enhanced Products, NTWC and TER Guidance	
3.2	13:30	13:45	SOPs and Checklists: TWC operations templates - Distant and Local Tsunamis examples for Monitoring, Detection and Evaluation, Communications, Message Dissemination (IOC MG 76)	Kong
3.3	13:45	14:15	Pacific Tsunami Warning Center (PTWC): Crisis Event SOPs: Earthquake and Sea Level Monitoring (Data networks and acquisition, quality-control/health status), Earthquake Analysis Methods, Threat Analysis, Forecasting, Products, Dissemination; Routine Operations SOPs: Quality Control and redundancy, contingency and backup (PTWC Operations, Systems and Procedures Manual)	Weinstein

3.4	14:15	15:00	PTWC Enhanced Products - Why, What, Criteria, Staging of Products; Explanation of Each Product: Public Text, Graphical Deep-Ocean Tsunami Amplitude, Coastal Tsunami Amplitude, Coastal Tsunami Amplitude Polygons, Tsunami Amplitude Statistics, Coastal Tsunami Amplitude KMZ file (IOC TS 105, rev 2)	Weinstein
	15:00	15:15	COFFEE / TEA BREAK	
3.5	15:15	15:30	Tsunami Hazard Scenarios around the Pacific - Understanding PTWC Enhanced Products	Weinstein
3.6	15:30	16:00	JMA NWPTAC Enhanced Products - Why, What, Criteria, Staging of Products; Explanation of Each Product (IOC TS 142)	Kong
3.7	16:00	16:30	NTWC and TER Guidance on how to use PTWC and JMA Enhanced Products for National Warnings and Evacuation - Land and Marine Threats and Public Safety: Flow Charts, Criteria Tables, Timeline-driven SOPs, Message Templates (IOC MG 76)	Kong
4-5			DAY 3, WEDNESDAY, 7 AUGUST 2019	
			TER Overview, Emergency Communications, Local Source Response, Learning Activities (SOPs)	
4.1	9:00	9:30	Tsunami Emergency Response (TER) Overview: What do TER agencies provide to the Public? Challenges in Alerting, Evacuation, Safe-to-Return (All-Clear), and Preparedness	Kong
4.2	9:30	10:00	Emergency communications - Robustness, reliability, redundancy. Technologies for the downstream transmission of warnings to communities. PNG Communications and Challenges (discussion)	Weinstein, PNG
4.3	10:00	10:30	Local-Source Tsunami Response Best Practice (approved at ICG/PTWS-XXVIII, 2019)	Weinstein
	10:30	10:45	COFFEE / TEA BREAK	
4.4	10:45	11:05	SOPs and Checklists: TER operations - Example Warning Plans for Coordination of Information Flow and Evacuation (IOC MG 76)	Kong
4.5	11:05	11:35	Learning Activity - Timeline-driven SOPs - Who does What, and When (Roles and Responsibilities)? (break out groups)	Kong, Groups
	11:35	12:05	Learning Activity - Timeline-driven SOPs - Who does What, and When (Roles and Responsibilities)? (report back and discussion)	Kong, Weinstein, Groups
4.6	12:05	12:15	Learning Activity - Tsunami Warning and Emergency Response - What happens during an event? (individual, discuss after lunch)	Weinstein, All
	12:15	13:30	LUNCH	
			Learning Activities (SOPs), Community Preparedness - Tsunami Ready, Evacuation Planning, School Drills	
	13:30	13:50	Learning Activity - Tsunami Warning and Emergency Response - What happens during an event? (individual)	Weinstein, All
	13:50	14:30	Learning Activity - Tsunami Warning and Emergency Response Timeline - What happens when? (discussion)	Weinstein, Kong, All
5.1	14:30	14:45	Implementing Tsunami Ready (TR) programs to recognize community readiness - Pacific guidelines	Kong
5.2	14:45	15:00	Tsunami Evacuation Planning: Inundation and Evacuation Maps (IOC MG 82)	Kong
	15:00	15:15	COFFEE / TEA BREAK	
5.3	15:15	15:45	Tsunami Evacuation Planning: Response Plans, Awareness/Education and Exercises (IOC MG 82, IOC MG 58 rev 2)	Kong
5.4	15:45	16:30	Building preparedness: Tsunami Education and Drills in Schools	PNG Dept of Education, UNDP

6-7			DAY 4, THURSDAY, 8 AUGUST 2019	
			Exercise PNG 2018, Next Steps and Way Forward	
6.1	9:00	9:45	Exercise PNG 2018 - Overview and Format, Setup	Kong
	9:45	10:00	COFFEE / TEA BREAK	
6.2	10:00	12:15	Conduct Table Top Exercise	Kong, Weinstein, All
	12:15	13:30	LUNCH	
6.3	13:30	14:15	Post-Exercise Evaluation	All
6.4	14:15	15:00	Summary Recommendations - Next Steps and Way Forward	All
			Closing	
	15:00	15:30	COFFEE / TEA BREAK	
7.1	15:30	16:30	Closing and Presentation of Certificates	PNG, US Embassy, ITIC, PTWC