



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 Pacific Tsunami Warning Center (PTWC) New International Tsunami Products

11-15 February 2013

San Salvador, El Salvador

Hosted by El Salvador Ministerio de Medio Ambiente y Recursos Naturales (MARN)

Trainers:

Bernardo Aliaga, Technical Secretary, ICG/PTWS and ICG/CARIBE-EWS, IOC Tsunami Unit

Nicolás Arcos, Tsunami Information Specialist, ITIC

Dr. Laura Kong, Director, ITIC

Dr. Charles McCreery, Director, NOAA

Dr. Walter Mooney, Senior Seismologist, USGS

Rosario Alfaro, JOSS/UCAR

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.

AGENDA

Session	Start Time	End Time	TWC	TER	Topic	Speaker
1-3					DAY 1: SESSIONS 1, 2, 3	
					MORNING: PLENARY	
	8:30	9:00			Registration	El Salvador
1.1	9:00	10:00			Opening Ceremonies	El Salvador, USAID, IOC, ITIC, PTWC
	10:00	10:30			COFFEE / TEA BREAK - Group Photo	
1.2	10:30	10:35			Logistics and other administrative items	El Salvador
1.3	10:35	10:45			Course Overview	ITIC - Kong

2				Tsunami Warning and Emergency Response – Overview	
2.1	10:45	11:30		End-to-End Tsunami Warning and Emergency Response – Overview	Kong
2.2	11:30	12:30		Lessons Learned from Past Tsunamis - Warning and Response	PTWC - McCreery, Kong
2.3	12:30	13:00		End-to-end Tsunami Warning – Stakeholders, Roles and Responsibilities, Standard Operating Procedures, and their linkages	ITIC - Arcos
2.4	13:00	13:15		Satellite communication technologies for the transmission of warnings to governments – WMO GTS, GEONETcast, EMWIN	JOSS/UCAR - Alfaro
	13:15	14:15		LUNCH	
				AFTERNOON: PLENARY	
3				Country Presentations - Tsunami Standard Operating Procedures	
3.1	14:15	15:30		Country Presentations (Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama) - 15 min/country	IOC - Aliaga, Countries
	15:30	15:45		COFFEE / TEA BREAK	
	15:45	16:15		Country Presentations (cont'd)	Aliaga, Countries
3.2	16:15	16:45		Discussion: Challenges for achieving end-to-end TWS: Data, Resources, Communication, Stakeholders, Coordination	Aliaga, Countries
3.3	16:45	18:15		Visit El Salvador MARN Tsunami Warning Center	El Salvador
4				DAY 2: SESSION 4	
				MORNING: PLENARY	
4				Science, Tsunami Standard Operating Procedures, Warning Dissemination	
4.1	8:30	9:10		Earthquake and Tsunami Science - generation, propagation, impact	McCreery
4.2	9:10	9:30		Pacific and Central America Tsunami Hazards	Kong
4.3	9:30	10:00		IOC Pacific Tsunami Warning and Mitigation System	Aliaga
	10:00	10:30		COFFEE / TEA BREAK	
4.4	10:30	11:15		National Tsunami Warning Centres Standard Operating Procedures - Overview on Routine and Event Operations, Flow Charts, Timelines, Checklists	Kong
4.5	11:15	12:00		Tsunami Emergency Response Standard Operating Procedures - Overview on Stakeholder Roles and Coordination, Event Operations, Timelines, Checklists	Arcos
4.6	12:00	12:30		Emergency communication considerations – robustness, reliability, redundancy	McCreery
	12:30	13:30		LUNCH	
				AFTERNOON: PLENARY	
4				Warning Dissemination, Public Information Flow SOPs	
4.7	13:30	14:00		Warning Dissemination and Public Alerts – Responsibilities to decision-makers, media, and the public – US Emergency Alert System	Arcos
4.8	14:00	14:30		Warning Dissemination and Public Alerts – Responsibilities to decision-makers, media, and the public. – JMA-NHK Warning Dissemination	Aliaga
4.9	14:30	15:15		Emergency communication technologies for the transmission of warnings to governments and communities – WMO GTS, EMWIN, TV / FM / HF / Radio, Sirens, Mobile Phones / SMS, Internet email/web, Social Media, etc	Kong
	15:15	15:45		COFFEE / TEA BREAK	
4.10	15:45	16:30		Breakout Groups: Information Flow SOPs - Media and Public Information, and Frequently-asked questions during a tsunami event	Arcos, Small Groups
4.11	16:30	17:00		Report Out: Information Flow SOPs - Media and Public Information	Small Groups

4				DAY 3: SESSIONS 4, 5-TWC / 5-TER	
				MORNING: PLENARY	
4.11	8:30	9:15		Use of Exercises in Tsunami Preparedness: International / National / Local Exercises, Types, and Post-Exercise Evaluations, Exercise Pacific Wave,	Aliaga
4.12	9:15	10:00		Tsunami Preparedness - Education and Awareness	Arcos
	10:00	10:30		COFFEE / TEA BREAK	
4.13	10:30	11:15		PTWC Concept of Operation and Standard Operating Procedures (SOP) for Distant, Regional, and Local Tsunamis: Monitoring, Detection and Evaluation, Instrumentation and Methodologies (seismic, sea level, forecasts (travel time, wave height, etc), Data communications, Messages, and Message Dissemination.	McCreery
4.14	11:15	11:45		PTWC New International Products - Overview - Why, What, When, How	McCreery
4.15	11:45	12:30		Tsunami Warning Decision Support Tools: Earthquake and Sea Level Monitoring, PTWC SMS Alerts, Historical Databases, Tsunami Travel Time Calculation	Kong
	12:30	13:30		LUNCH	
				DAYS 3 and 4: TWC and TER (DMO) MEET SEPARATELY FOR SPECIFIC TOPICAL AND TECHNICAL DISCUSSIONS	
5-TWC				DAY 3: SESSION 5-TWC	
				AFTERNOON: TWC SESSION	
5.1	13:30	14:00		Earthquake Seismology - Magnitudes, Centroid Moment Tensors, Finite Fault Rupture	Mooney
5.2	14:00	14:30		Earthquake Seismology - Slow Earthquakes, Great and Mega-Earthquakes and/or paleoseismic or probabilistic seismic hazards	Mooney
5.3	14:30	15:15		TWC Operations: Real-time seismic monitoring and earthquake source characterization - Techniques - 'Tricks of the Trade', Challenges and Limitations	McCreery
	15:15	15:45		COFFEE / TEA BREAK	
5.4	15:45	16:30		TWC Operations: Sea level monitoring, tsunami confirmation - Techniques - 'Tricks of the Trade, Challenges and Limitations	McCreery
5.5	16:30	17:15		TWC Operations: Wave forecasting - Techniques - 'Tricks of the Trade, Challenges and Limitations	McCreery
5-TWC, 6				DAY 4: SESSIONS 5-TWC, 6	
				MORNING: TWC SESSION	
5.6	8:30	9:00		TWC Operations: Discussion and Questions	McCreery
5.7	9:00	10:00		PTWC New Products: TWC Understanding - Use and Limitations	McCreery
	10:00	10:30		COFFEE / TEA BREAK	
5.8	10:30	11:15		SOP Guidance - How to Guidance, including Analysis Processes, Flow Charts and Checklists. Fundamental TWC SOPs for a Timely Tsunami Warning: TWC Operations - Tsunami Event Activity Timelines: Cases 1-4 – Centres with / without real-time seismic processing	Kong
5.9	11:15	11:30		Creating SOPs - Breakout Group Instructions	Mooney
5.10	11:30	12:30		Breakout Groups: Using Templates to Develop Timeline of Processes and Actions as SOPs (Messages, Checklists, Information Dissemination)	Small Groups
	12:30	13:30		LUNCH	

				AFTERNOON: TWC SESSION, PLENARY	
	13:30	15:00		Break out Groups: (cont'd)	Small Groups
	15:00	15:30		COFFEE / TEA BREAK	
5.11	15:30	16:15		Presentation of Break out Group SOPs	Mooney, Small Groups
6.1	16:15	17:00		Table Top Exercise – Background and Scenarios for Day 5	Exercise Controllers - Kong, Mooney, McCreery
5-TER				DAY 3: SESSION 5-TER	
				AFTERNOON: TER SESSION	
5.1	13:30	14:15		Lessons Learned from Recent Tsunamis - Emergency Response	Kong, Aliaga
5.2	14:15	14:45		10 Steps to Successful Tsunami Emergency Response	Arcos
5.3	14:45	15:15		Community-level preparedness and response - International Perspectives, including TsunamiSmart and TsunamiReady, Special Needs Populations, Tourism Sector	Arcos
	15:15	15:45		COFFEE / TEA BREAK	
5.4	15:45	16:45		Public Coastal Evacuations: Alerting and Moving People, Inundation maps, Evacuation Routes and Signage, Safe Return	Aliaga
5.5	16:45	17:15		Tsunami Mitigation - Hard & Soft Countermeasures, Vertical Evacuation	Arcos
5-TER, 6				DAY 4: SESSIONS 5-TER, 6	
				MORNING: TER SESSION	
5.6	8:30	9:00		Understanding and acting on TWC Messages, DMO Actions and Use of Timelines in Emergency Response	Arcos
5.7	9:00	9:30		New PTWC Products: TER understanding and interpretation - Use and Limitation	Kong
5.8	9:30	10:00		Tsunami Emergency Response – Distant and Local Tsunami Threat – Wakayama, Japan Case Study	Aliaga
	10:00	10:30		COFFEE / TEA BREAK	
5.9	10:30	11:15		Creating SOPs - How to Guidance, Explanation of Templates, Distant and Local Threats including Response Processes, Flow Charts and Checklists in SOPs	Arcos
5.10	11:15	11:30		Creating SOPs - Breakout Group Instructions	Aliaga
5.11	11:30	12:30		Breakout Groups: Using Templates to Create General Roles and Responsibilities for SOPs	Small Groups
	12:30	13:30		LUNCH	
				AFTERNOON: TER SESSION, PLENARY	
5.11	13:30	14:00		Breakout Groups: Using Templates to Create Evacuation Checklists for SOPs	Small Groups
5.11	14:00	15:00		Breakout Groups: Using Templates to Develop Timeline of Processes and Actions as SOPs	Small Groups
	15:00	15:30		COFFEE / TEA BREAK	
5.12	15:30	16:15		Presentation of Breakout Group SOPs	Arcos, Small Groups
6.1	16:15	17:00		Table Top Exercise – Background and Scenarios for Day 5	Exercise Controllers - Kong, Mooney, McCreery

6-7					DAY 5: SESSIONS 6, 7	
					MORNING: PLENARY	
					Table Top Exercise and Summary	
6.2	8:30	9:15			Table Top Exercise Set-up according to Stakeholder Warning and Response Groups	Exercise Controllers
	9:15	9:30			COFFEE / TEA BREAK	
6.3	9:30	12:00			Tsunami Table Top Exercise	Exercise Controllers, Small Groups
	12:00	13:00			LUNCH	
					AFTERNOON: PLENARY	
					Post-Exercise Evaluation	
6.4	13:00	13:30			Post-Exercise Evaluation Preparation	Small Groups
6.5	13:30	14:30			Post-Exercise Evaluation – Comments, Problems, Improvements	Arcos, All
6.6	14:30	15:15			Toward Building National and Regional Capabilities - Summary Discussion and Next Steps	USAID,ITIC, IOC, All
	15:15	15:30			COFFEE / TEA BREAK	
					Summary Next Steps, Closing Ceremony	
7	15:30	16:30			Presentation of Certificates, Closing Ceremony	IOC, USAID/ITIC, El Salvador