

TSUNAMI WARNING DECISION SUPPORT TOOLS TRAINING
STRENGTHENING TSUNAMI WARNING AND EMERGENCY RESPONSE TRAINING
IMPROVING REAL-TIME EARTHQUAKE MONITORING
NIUATOPUTAPU TSUNAMI ACCOUNTS, KALA'AU TSUNAMI BOULDERS

UNESCO/IOC – NOAA International Tsunami Information Center
 NOAA Pacific Tsunami Warning Center
 Samoa Meteorology Division, Disaster Management Office

FINAL AGENDA

Sessi on	Start Time	End Time		Place, Participants
			23 September, Monday	
1	10:15	11:15	Arrival and transfer to hotel	
2	11:15	12:00	Hotel check-in	
	12:00	13:00	LUNCH	
3	13:00	14:00	Finalizing Week's schedule	TMS: Fa'anunu, Kong, McCreery, Nelson
			Tools Software Install	
4	14:00	17:30	CISN, Tide Tool, other software install	TMS: Kong, McCreery, all
			24 September, Tuesday	
			Tools Training 1	
1	9:00	10:00	Finalize Training Agenda, Tsunami Response Plan progress	NEMO: Fa'anunu, Takai, Kong, Nelson, McCreery
2a	10:00	16:30	Tonga Tsunami Response Plan– working session for improving draft	NEMO: Takai, Fa'anunu, Nelson
2b.1	10:30	11:30	CISN Training	TMS: Kong
2b.2	11:30	13:00	Tide Tool Training	TMS: Kong
2b.3	13:00	14:00	LUNCH	
			Tools Training 2	
2b.4	14:00	15:30	Tsunami Warning Operations - PTWC	TMS: McCreery
2b.5	15:30	16:30	TsuDig Tsunami Historical Database, Tsunami Travel Time Calculation software	TMS: Kong
			25-16 September, Wednesday – Thursday – Tsunami Training Workshop	
			27 September, Friday	
1	9:00	10:00	Niutoputapu tsunami survivor accounts	NEMO: Kong, Masahiro Ando (JICA volunteer)
2	10:00	14:00	Finishing up duplication of training CDs, and other needs	All
3	12:30	15:00	Tonga Seismic Monitoring; install CISN	Geology: Vaiomo'unga, McCreery
3	14:00	15:00	Tonga Broadcasting Company cooperation - Niutoputapu tsunami survivor accounts	Convention Center: General Manager, Fa'anunu, Kong, Ando
3	15:00	16:30	Vava'u Press - Niutoputapu tsunami survivor accounts – editing and finalization	Vava'u Press: Chief Editor, Fa'anunu, Kong, Ando
3	17:00	19:00	Kala'au Tsunami Boulder site visit	Fa'anunu, Takai, Maka, Kong, McCreery, Nelson

Tsunami Training:

STRENGTHENING TSUNAMI WARNING AND EMERGENCY RESPONSE

UNESCO/IOC – NOAA International Tsunami Information Center
NOAA Pacific Tsunami Warning Center
Samoa Meteorology Division, Disaster Management Office
Tonga Meteorological Service
Tonga National Emergency Management Office

Nuku'alofa, Tonga
25-26 August 2010

Tsunamis are hazards that threaten the islands of Tonga. Most tsunamis are generated by major earthquakes in the Pacific, including the nearby Tonga Trench. Depending upon the location of the earthquake, tsunami waves can strike island coasts within minutes to hours. To protect the people of Tonga from this hazard, a warning system must rapidly and effectively provide critical information to those at risk to motivate them to take appropriate actions to save their lives. For local tsunamis, education and awareness, and knowledge of the natural tsunami warning signs, are the keys to saving lives.

An effective tsunami early warning system is achieved when all persons, especially in vulnerable coastal communities, are prepared and respond appropriately and in a timely manner upon recognition that a potential destructive tsunami (local or regional) may be approaching. For this, tsunami hazards and risks must be known, and preparedness activities must be carried out beforehand so that when a warning is issued, it will motivate citizens to move out of harm's way before the tsunami attacks. Natural tsunami warning signs must be recognized by everyone in order to immediately evacuate coastlines.

Early detection by the monitoring networks of tsunami warning centers (TWC) will trigger authoritative warnings that must immediately trigger emergency responses by emergency management and first responder agencies. To respond quickly and efficiently, well-known and clear standard operating procedures should be in place and practiced so that stakeholders are familiar with and understand their roles and responsibilities, and the timely actions that must take place for public safety.

At the same time, awareness and preparedness activities that educate and inform citizens about tsunamis and what to do during a tsunami warning have to take place. These educate transient or special needs populations such as tourists staying at beachfront hotels, women, children, and the elderly, as well as government officials and other local community leaders. Including natural hazards and disaster preparedness in school curricula is a long-lived tool for carrying awareness to the next generation.

This Seminar aims to provide an introduction to tsunamis and how to effectively mitigate Tonga's tsunami hazard

FINAL AGENDA

Session	Start Time	End Time		Speaker
	8:30	9:00	Registration	
			25 September, Day 1 Tsunami Awareness	
1	9:00	9:15	Opening	Tonga, ITIC
2	9:15	9:30	Training Workshop Overview	Kong
3	9:30	10:00	Tsunami Science and Hazard Assessment	Kong
4	10:00	10:30	Tonga Tsunami Hazard	Tonga Geology
	10:30	10:45	COFFEE / TEA BREAK	
5	10:45	11:15	Tsunami Warning	McCreery
6	11:15	12:00	Tonga Tsunami Warning	Tonga Met Svc
	12:00	13:00	LUNCH	
7	13:00	13:30	Tsunami Response	Nelson
8	13:30	14:15	Tonga Tsunami Response Plan	Tonga NEMO
9	14:15	14:45	Tsunami Preparedness, Education, and Mitigation	Nelson
	14:45	15:00	COFFEE / TEA BREAK	
10	15:00	15:45	Tonga Preparedness, Education, and Mitigation	Tonga
11	15:45	16:15	End to End Warning - Summary	Kong
12	16:15	16:45	Day 1 Topics - Discussion	All
			26 September, Day 2 - Building Tsunami Preparedness	
	8:00	8:30	Registration	
1	9:00	9:05	Training Workshop Overview	Kong
2	9:05	9:50	Case Study – Samoa: End-to-End Tsunami Warning, Lessons Learned from 29 September 2009	Nelson
3	9:50	10:30	Case Study – Tonga: Lessons Learned from 29 September 2009	Tonga, NTT
	10:30	10:45	COFFEE / TEA BREAK	
4	10:45	11:15	Building Preparedness through Tsunami Exercises	Nelson
5	11:15	11:30	Tonga Tabletop Tsunami Exercise - Setup	Kong
6	11:30	13:00	Tonga Tabletop Tsunami Exercise - injects, discussion, response logging	Tongatapu, NTT groups
	13:00	14:00	LUNCH	
7	14:00	14:30	Exercise Reporting preparation	Tongatapu, NTT groups
8	14:30	16:00	Report back and Post-Exercise Evaluation	Nelson, All
9	16:00	16:30	Presentation of certificates	Instructors, Tonga
10	16:30	16:45	Closing	ITIC, Tonga

TRAINING COURSE OVERVIEW

STRENGTHENING TSUNAMI WARNING AND EMERGENCY RESPONSE

UNESCO/IOC – NOAA International Tsunami Information Center

TONGA, 25-26 August 2010 (2.0 DAYS)

Training:

2-day training course for Stakeholders with Response Responsibility

Summary:

This training provides participants with an understanding of the tsunami hazard, current hazard assessment tools and products, tsunami warning and dissemination systems, effective community response and tsunami risk reduction strategies.

This training will (1) help fill existing educational gaps, (2) support pre-disaster mitigation efforts and (3) contribute to effective response. On Day 2, students will participate in tabletop tsunami exercise that challenges them to respond to a tsunami warning that will impact their communities. Participants apply their knowledge of the presented materials and share their experiences in conducting tsunami preparedness, mitigation, and response. This training helps participants understand how agency preparedness and community-level pre-event planning, education, and awareness is critical to saving lives.

Instructors will provide an overview of the important processes and components of tsunami early warning, and most importantly, instruct and inform participants on Tonga's tsunami hazard, and the tsunami warning and response processes in effect for Tonga. Discussion questions within modules are designed to allow participants to apply knowledge gained, and to allow time for discussion and questions and answers.

Instructors will be from the Tonga Meteorological Service, Emergency Management Office, and Geological Unit, Pacific Tsunami Warning Center, International Tsunami Information Center, and the Samoa Disaster Management Office.

Module: Tsunami Science and Hazard Assessment

Learning Objective

Participants will learn the basics of tsunami science and the tools for tsunami hazard assessment, and about Tonga's tsunami hazard and vulnerability.

Scope

Tsunami hazard assessment includes several components. This module introduces the tsunami science and hazard assessment tools that are used to lay the foundation for building tsunami resilient communities. Participants will learn about tsunami generation, tsunami characteristics, and scientific tools such as tsunami inundation maps that help at-risk communities understand their risk and exposure to better prepare for a tsunami hazard. Tonga's tsunami hazard and vulnerability to tsunamis will be informed to participants.

Module: Tsunami Warning and Emergency Response

Learning Objective

Participants will be able to describe the end-to-end tsunami warning process.

Scope

In the Hazard Assessment module, participants gain an understanding of the tsunami hazard and hazard mitigation tools available for identifying tsunami exposure in the community. The Warning and Response module summarizes the end-to-end tsunami

warning system. The module identifies how tsunamis are detected and describes the process and products used to warn all levels of government down to the “*last kilometer*” including evacuation/safe all-clear actions. Participants are informed on the general activities that take place in a tsunami warning system before, during, and after a tsunami event, and the specific activities of the Tonga Meteorological Service and National Emergency Management Officer for tsunamis.

Module: Tsunami Preparedness, Education and Awareness, Mitigation

Learning Objective

Participants will understand and be able to apply tsunami preparedness, education and awareness, and mitigation activities that will support to organizational preparedness and response efforts.

Scope

This module provides participants with an understanding of tsunami preparedness, education and awareness, and mitigation and its role in timely tsunami response for at-risk tsunami communities. Topics such as evacuation planning, the need for exercises and drills, and public education provide the basic foundation for building organizational preparedness and for communities to become tsunami-resilient and participate in a community-based ‘TsunamiReady’ Program. Instructors will lead facilitated discussions in which participants share their experiences and discuss potential preparedness activities that can be implemented to help reduce the loss of life and property from tsunamis. Tonga’s effort at preparedness, education and awareness, and mitigation against tsunami will be informed to participants.

Module: Case Studies and Lessons Learned

Learning Objective

Participants will understand how the 2009 tsunami affected Samoa and Tonga

Scope

This module summarizes how the 2009 tsunami affected the two countries and the lessons learned that are now being used to strengthen their tsunami early warning system and improve preparedness.

Module: Exercise Scenario

Learning Objective

Participants will apply their knowledge gained in a practical exercise scenario in which at-risk tsunami communities are impacted by a tsunami event.

Scope

Based on an understanding of the tsunami hazard, hazard assessment tools, warning processes and products, and preparedness and response activities, participants will analyze and discuss a tsunami exercise scenario. Participants apply their knowledge of the presented materials to actual tsunami preparedness, mitigation, and response issues. The scenario exercise is intended to help participants understand how organizational preparedness and community-level planning tools aid in tsunami risk reduction. For this activity, participants will be assigned to groups to answer exercise injects based on the module scenario, Tsunami Warning Center exercise messages, and materials covered in the instruction. Each group will discuss each question presented in the scenario and develop solutions for each, and then a group leader will present these to the class.