



UNESCO/IOC – NOAA ITIC Training Program in Hawaii (ITP-TEWS Hawaii)  
TSUNAMI EARLY WARNING SYSTEMS  
AND THE PACIFIC TSUNAMI WARNING CENTER (PTWC) ENHANCED PRODUCTS  
TSUNAMI EVACUATION PLANNING AND UNESCO IOC TSUNAMI READY PROGRAMME  
15-26 September 2025, Honolulu, Hawaii

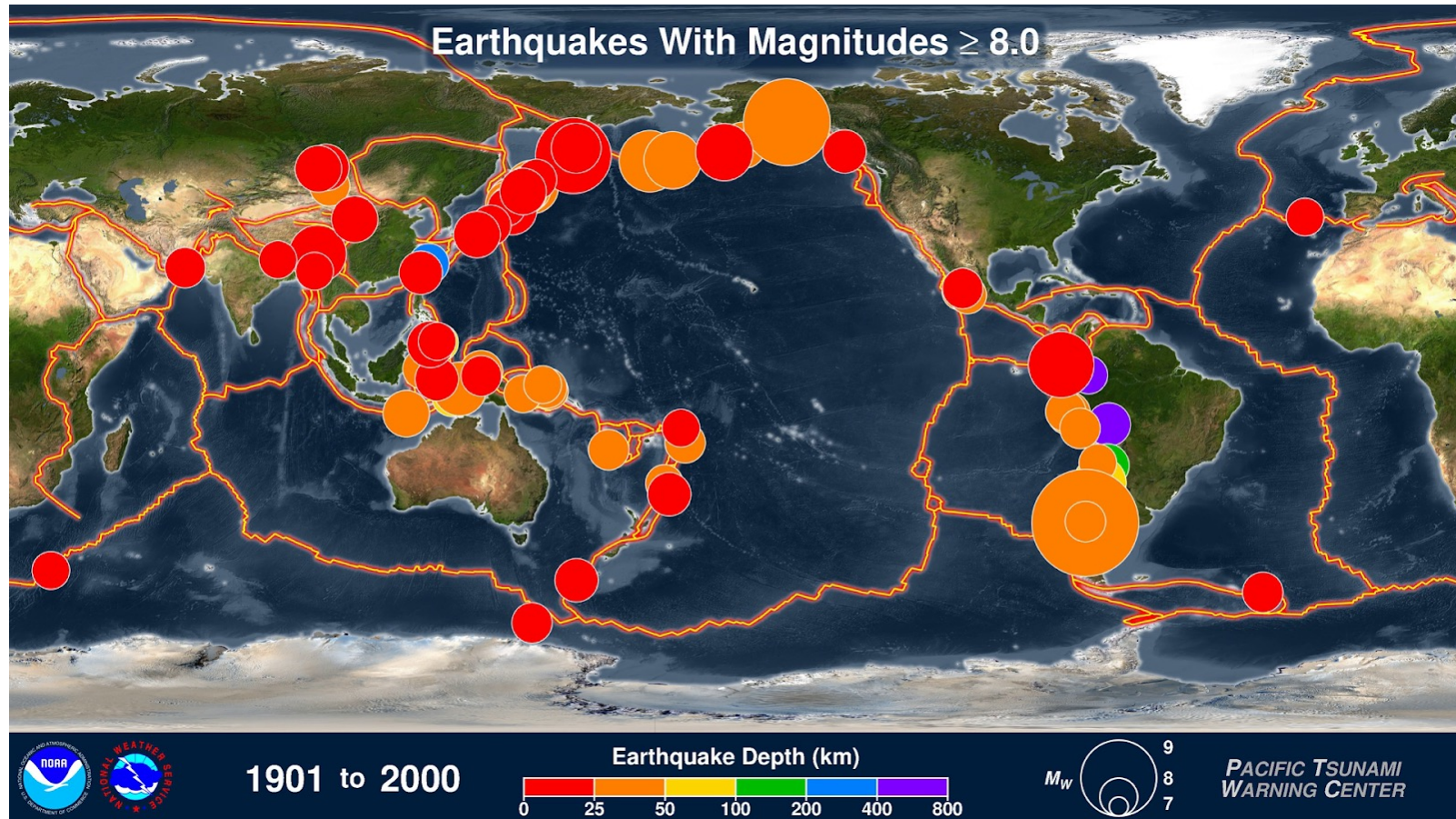
# Exercise Pacific Wave Overview

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Dr. Laura Kong  
Director, ITIC



# Many Tsunami Sources in Pacific

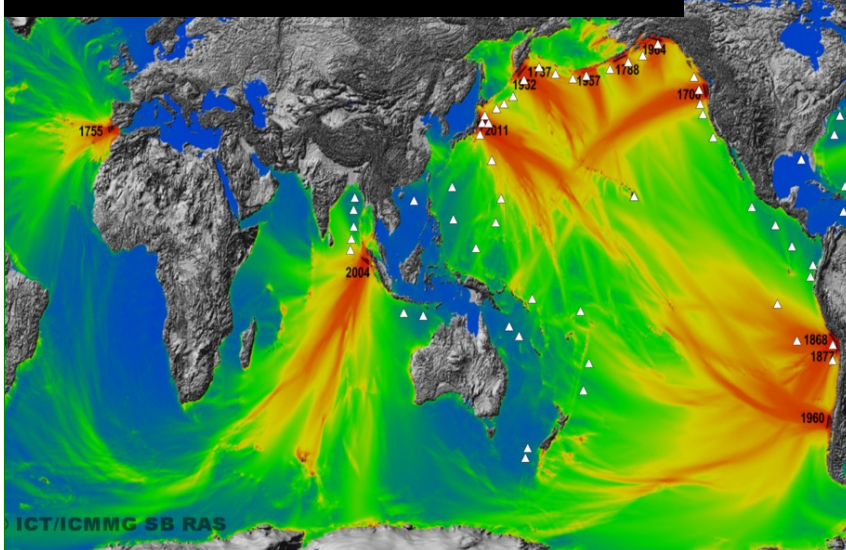




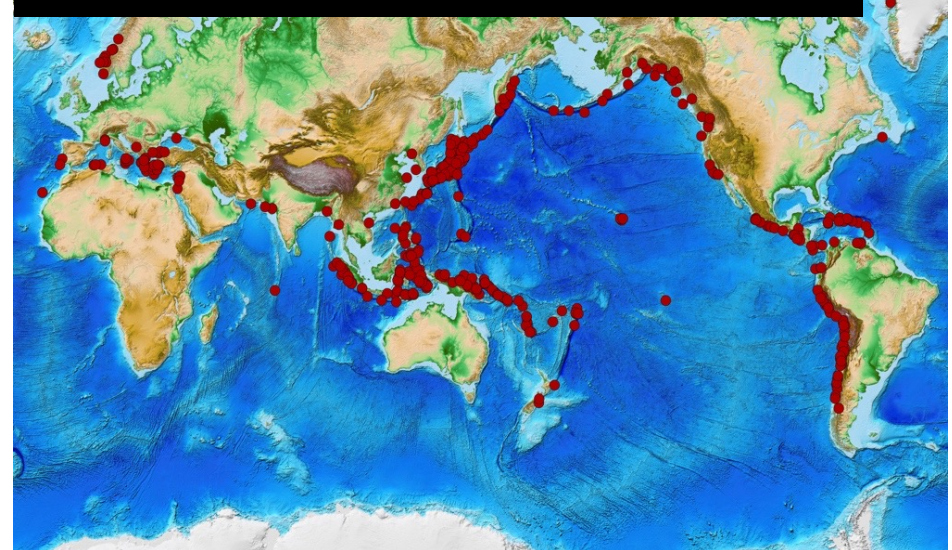
# Most Deadly Tsunamis are Regional / Local



HISTORICAL TRANS-OCEANIC TSUNAMIS



HISTORICAL DEADLY LOCAL / REGIONAL TSUNAMIS



- ❑ ~70% in Pacific Ocean and Marginal Seas, 80% caused by earthquakes
- ❑ Most tsunami are local (< 1 hr) or regional (1-3 hrs). Cause 90% of deaths)
- Communities: Prepare beforehand. Self-evacuate on natural warnings



# IOC Wave Exercises – central web site

<https://tsunami.ioc.unesco.org/en/exercises>



unesco

Tsunami Programme

## Region-wide exercises

These are carried out by ICGs involving Member States in their respective regions.

### PACWAVE

Pacific region tsunami exercise that evaluates PTWS readiness and identifies improvements.

Find out more →

### IOWAVE

Indian Ocean region tsunami exercise that evaluates IOTWMS readiness and identifies improvements.

Find out more →

### NEAMWAVE

NEAM region tsunami exercise that evaluates NEAMTWS readiness and identifies improvements.

Find out more →

### CARIBEWAVE

Caribbean region tsunami exercise that evaluates CARIBE-EWS readiness and identifies improvements.

Find out more →







# Exercise Pacific Wave (PacWave)

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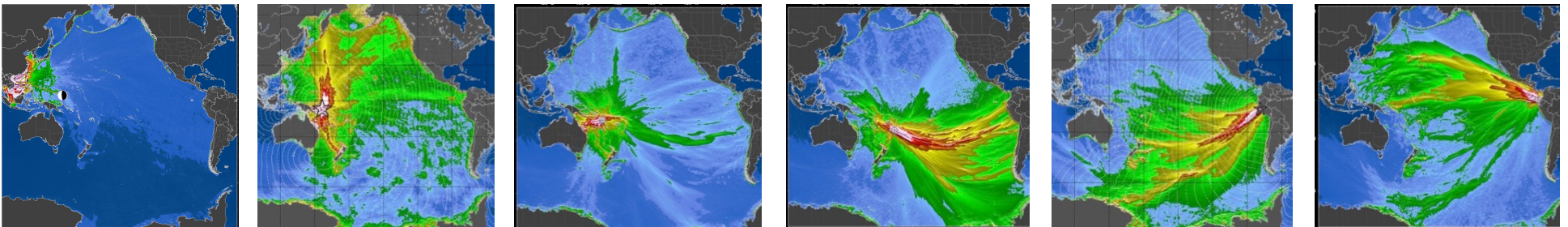
- ❑ **IOC-coordinated international tsunami exercises**
- ❑ **Started 2006 to test readiness of Pacific countries – 2006, 2008, 2011, 2013, 2015, 2016, 2017, 2018, 2020, 2022, 2024**
- ❑ **Introduce and Test new TSP Products**
  - PacWave11, 13, 15 - PTWC new enhanced products (start 2014)
  - PacWave 16, 17 - JMA NWPTAC new enhanced products (start 2018)
  - PacWave 17, 18 – China SCSTAC new TSP service (start 2019)
  - PacWave 20+ - Nicaragua CATAC new TSP – Pacific and Caribbean (ongoing trail 2025)

# PacWave Past Scenarios - many

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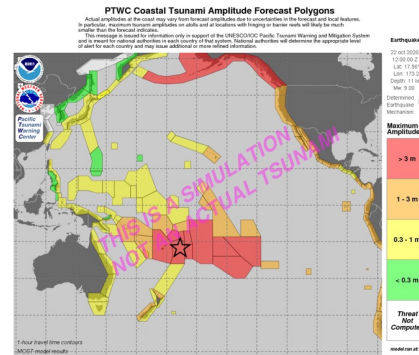
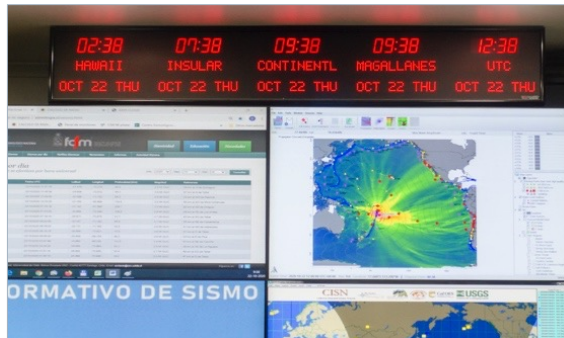
All scenarios: Magnitude: M9.0, Depth 20 km (except Manila)

- ❑ Manila Trench (Depth 35 km)
- ❑ New Britain-San Cristobal Trench (PacWave16)
- ❑ New Hebrides Trench (PacWave11)
- ❑ Tonga Trench (PacWave11, 15)
- ❑ Peru-Chile Trench (PacWave11)
- ❑ Colombia-Ecuador Trench (PacWave11)





# Regional Exercise Focus - SEP WG: 22 Oct 2020



- NTWCs for Chile, Colombia, Ecuador, Peru
- Improve regional coordination procedures
- M8.8 north of Tonga
- 0900, lasting 6 hrs, simulating bulletins, monitoring of sea level / DART stations
- PTWC played by Peru
- Tsunami Coastal Assessment Tool (TsuCAT) used for PTWC message. SEP WG choose scenario
- Total Messages:  
Colombia (09), Ecuador (08), Perú (11), Chile (19)

GTATPS – CHILE



GTATPS – COLOMBIA



GTATPS – ECUADOR

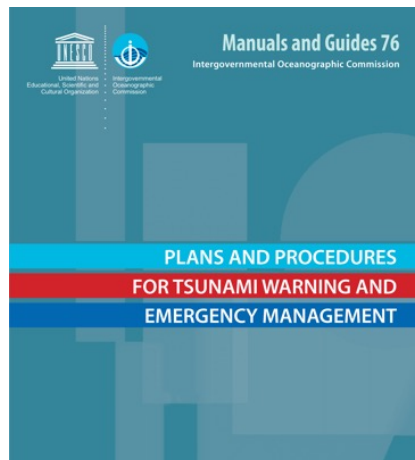


GTAPS - PERU





# System Needs: Warning, Evacuation Exercises

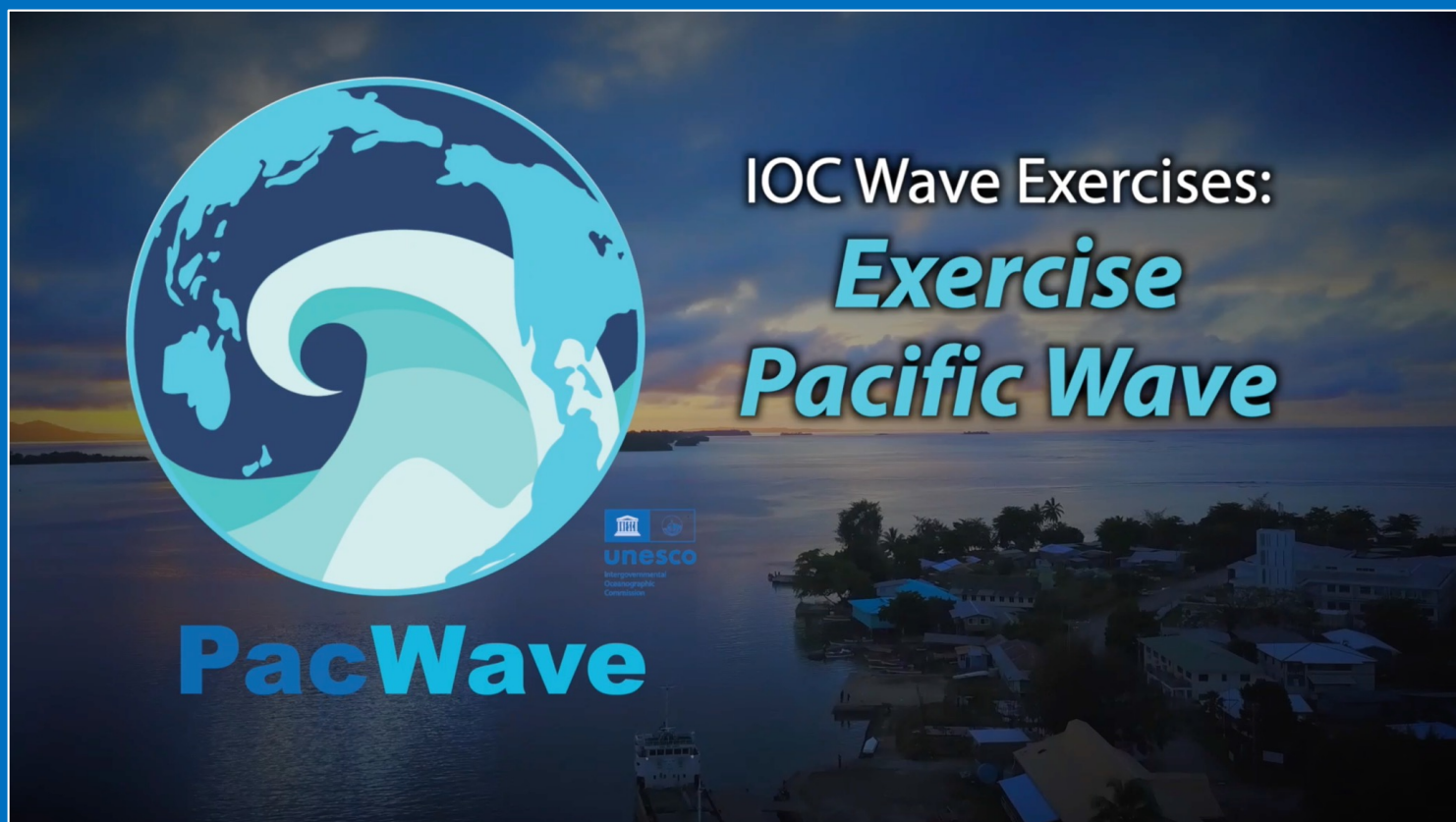


**Preparing for Community Tsunami Evacuations**  
From Inundation to Evacuation Maps, Response Plans,  
and Exercises ... communities knowing what to do and where to go

IOC ITC Tsunami Evacuation Maps, Plans, and Procedures (TEMPP) Pilot  
Capacity Building, Honduras and Central America, 2015-17



# Pacific Wave Exercises since 2006



Click for  
video



Produced by  
NOAA, in collaboration with UNESCO IOC, Chile,  
and countries of Pacific

