Meteorological Service Singapore

National Progress Report
Singapore

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Thirteenth Meeting of ICG/PTWS WG-SCS

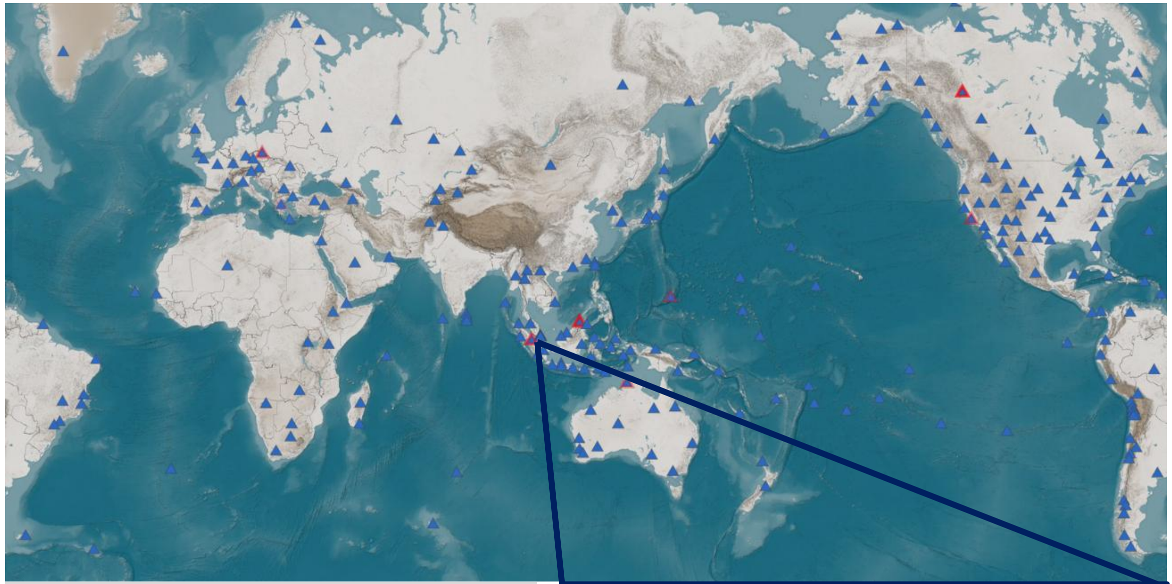
18-19 Nov 2025

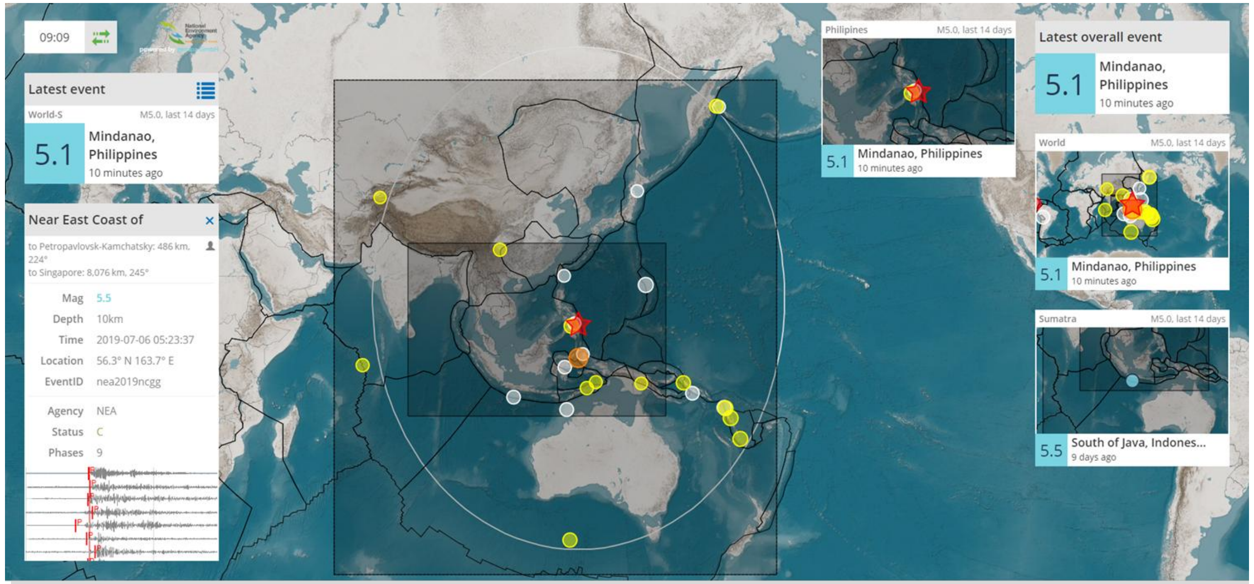
Outline

- Monitoring Systems
  - Seismic (SeisComP)
  - Tsunami (TOAST)
- Standard Operating Procedures
- Participation in tsunami exercises
- Tsunami study

Seismic Monitoring System

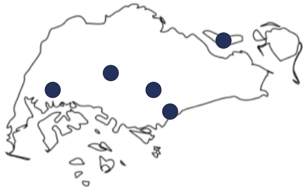
SeisComP system





SeisComP
Wide network of seismic stations comprising 5 local stations and >250 international stations

Local stations

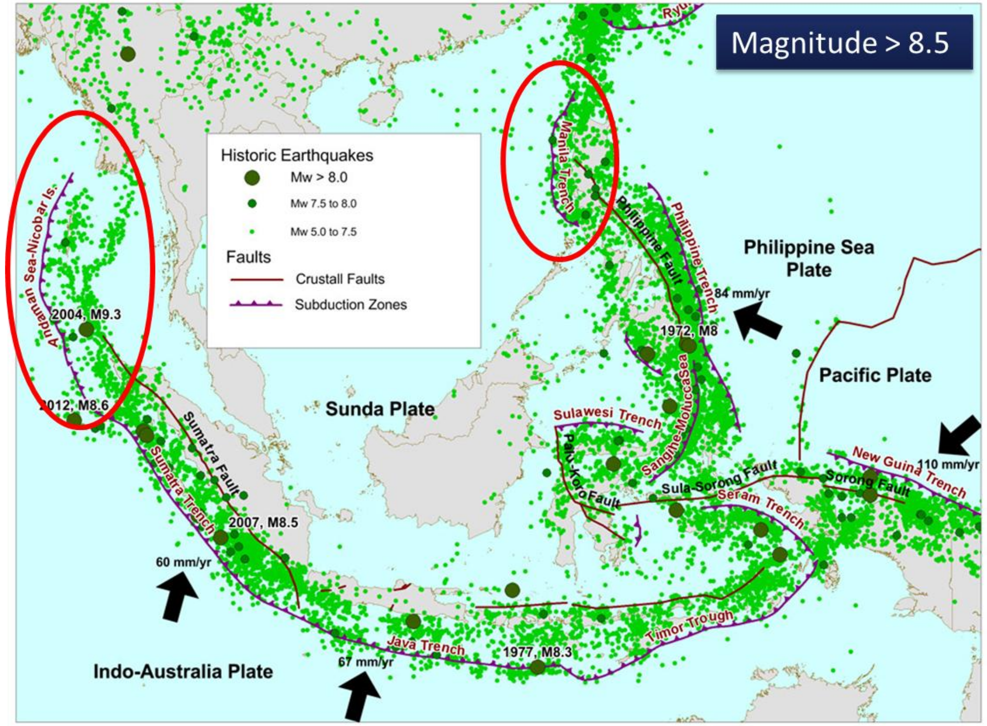


GAPS/EQView

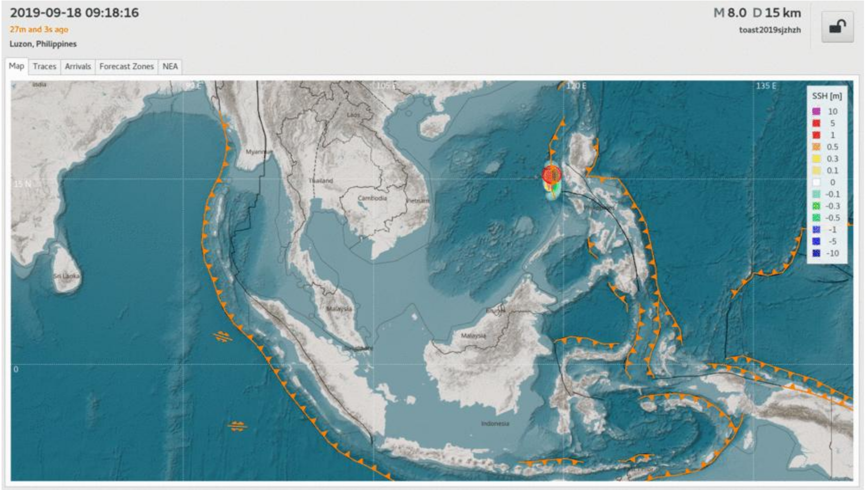
- Web-based interface
- Audio alert for new earthquake event
- Display information on earthquake parameters, and distance from nearest city and Singapore

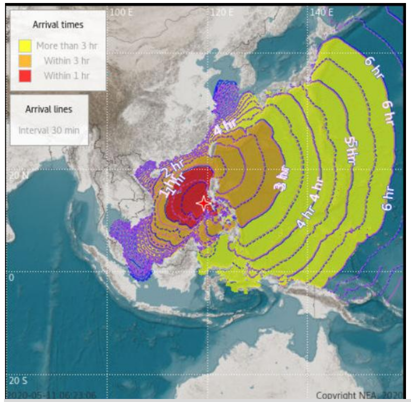
Tsunami Monitoring System

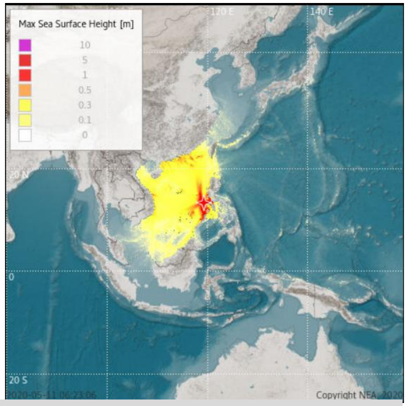
TOAST: Tsunami Observation And Simulation Terminal



<u>Watch Area</u>
Two main areas of concern Andaman-Sunda Trench and Manila Trench







<u>TOAST Tsunami Simulation Tool</u>
Arrival times and max sea surface height of Tsunami Wave

National Tsunami Response Plan (TRP)

Objectives:

a) Mitigate the impact of a tsunami on Singapore

- By monitoring and providing early alerts and warnings to all response agencies under TTF
- For respective agencies to take early preventive and necessary action;

b) Manage the consequences of a tsunami affecting Singapore

- Whole-of-government coordinated response and recovery in the event of a tsunami affecting Singapore

Tsunami Task Force (TTF):

- Chaired by the Deputy CEO of the Public Utilities Board (PUB), Singapore
- Includes members from National Ministries and Agencies:

Update:

The TRP is being aligned to national response plans for coastal flooding/inundation and updates are in progress

MCI	MFA	MHA	MINDEF	MOE
MSE	MOT	MPA	NEA	NPARKS
PA	PUB	SAF	SDC	JTC
LTA	IMDA	SCDF	SPF	NYC/OBS

Ministries

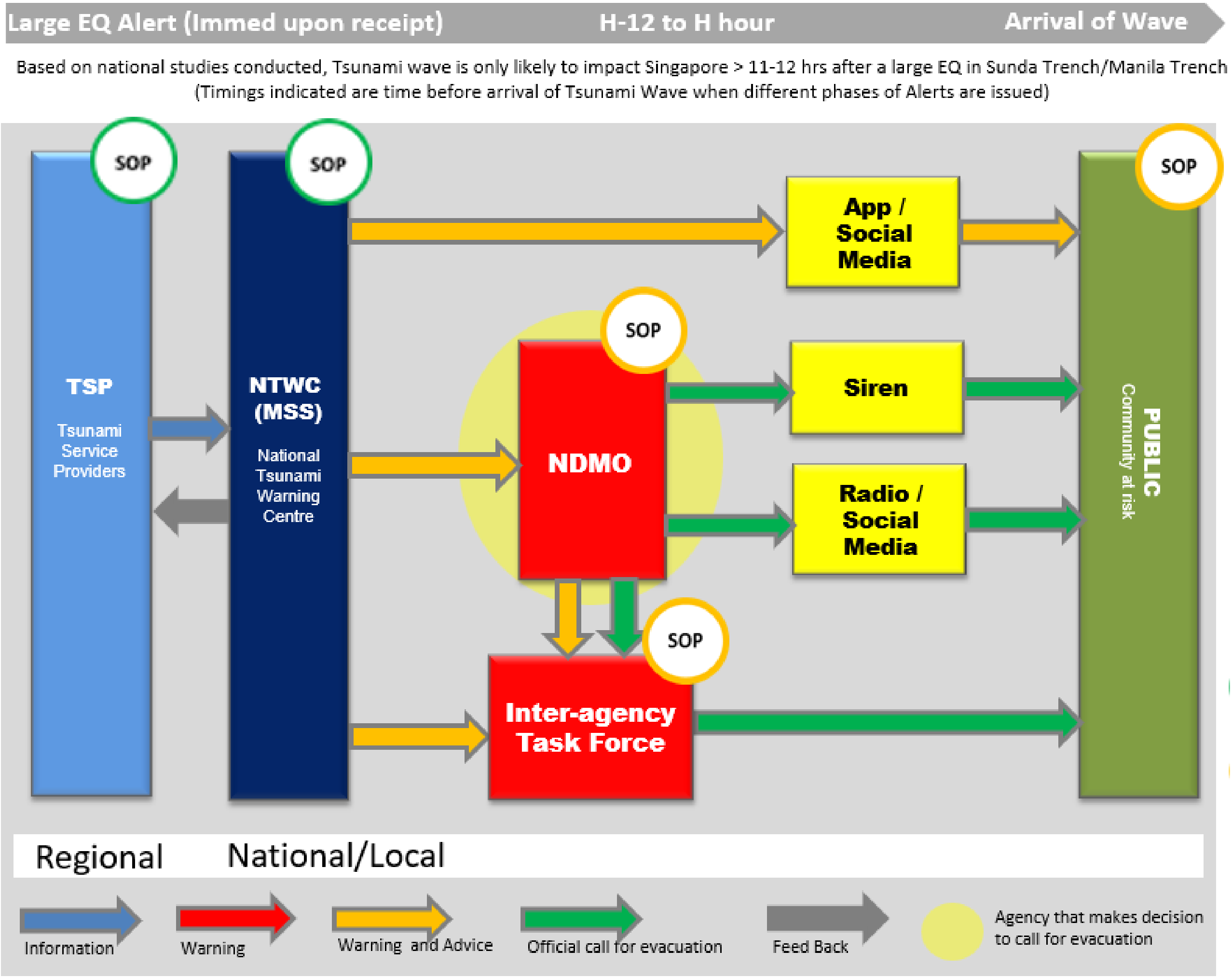
Agencies

Tsunami Response Plan – Activation Alerts

Phases	Description	Time
-	Detection of potentially tsunami-genic Earthquake or Volcanic Eruption/Landslide and initial alert	-
Phase 1 *Warning*	Tsunami is expected to affect Singapore	H-12 to H hour
Phase 2 *Public Safety*	Tsunami hits Singapore	H hour
Phase 3 *Recovery*	All clear, stand down	H+6 hour onwards

* The phases of operations may not progress sequentially. At any of the phases, a standdown is possible when tsunami is assessed to no longer be a threat to Singapore.

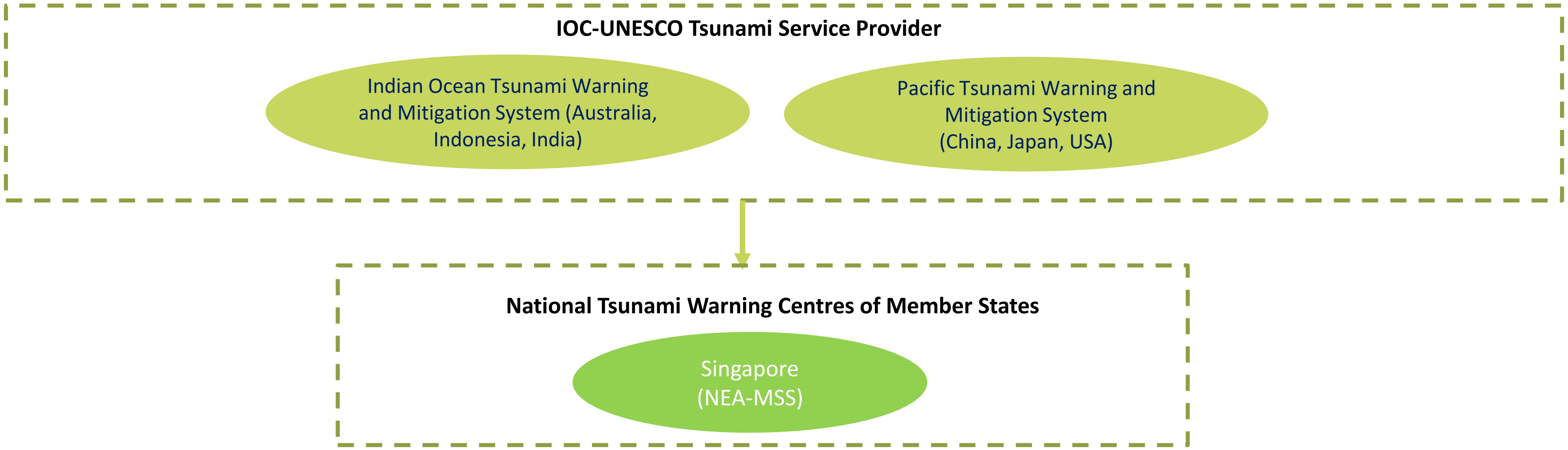
Current Standard Operating Procedure



Colour code	Definition
SOP (green)	Existing SOP
SOP (yellow)	Existing SOP to be improved
SOP (red)	SOP not yet existing

Participation in Tsunami Exercises

- Backup South China Sea Tsunami Advisory Center (BSCSTAC) Communications Test (22 Nov 2024)
- South China Sea Tsunami Advisory Centre (SCSTAC) Communications Test (24 Feb, 6 Jun, 5 Nov 2025)
- Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) Communications Test (11 Jun 2025)
- Pacific Tsunami Warning and Mitigation System (PTWS) Capacity Assessment 2025
- Pre-IOWave25 SOP Workshop (4-6 Aug 2025), IOWave25 (5 Nov 2025)



Enhanced Tsunami Assessment Study

- Collaborated with Nanyang Technological University to update parameters for tsunami response using latest bathymetry and tsunami models
- Explored worst-case scenarios at earthquake (Sunda Megathrust, Manila Trench) and non-earthquake sources (landslide, volcano)
- Tsunami arrival times for Singapore range from 9-15 hours, less than 1m maximum wave height, with considerably strong currents (up to 2.2m/s)

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