



**METEOROLOGICAL
SERVICE
SINGAPORE**

Tsunami Response Plan

Eugene Chong
Senior Meteorologist, WSD

Background

- 1997** Installation of national seismic network
- 2007 - 2008** Established National Tsunami Early Warning System (TEWS)
 - Established links with regional /international tsunami warning centres
 - Completed tsunami simulation studies and models
 - Formulation of Tsunami Task Force (TTF)
- 2008 - 2010** Tsunami Response Plan (TRP)
 - Members of TTF submitted Support Plans for the TRP
 - Endorsed by Crisis Management Group (CMG), Tsunami
- 2011, 2012** Table-top Exercises (with TTF agencies and others)
- 2018 - 2020** Update of TRP
 - Members of TTF updated/submitted Support Plans
- 2020** Internal Table-top Exercise

Regular participation in International Tsunami Exercises (IOWave & PacWave) and communication tests since 2006

Tsunami Response Plan (TRP)

Objectives:

- a) Mitigate the impact of a tsunami on Singapore
 - By 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

Tsunami Task Force (TTF):

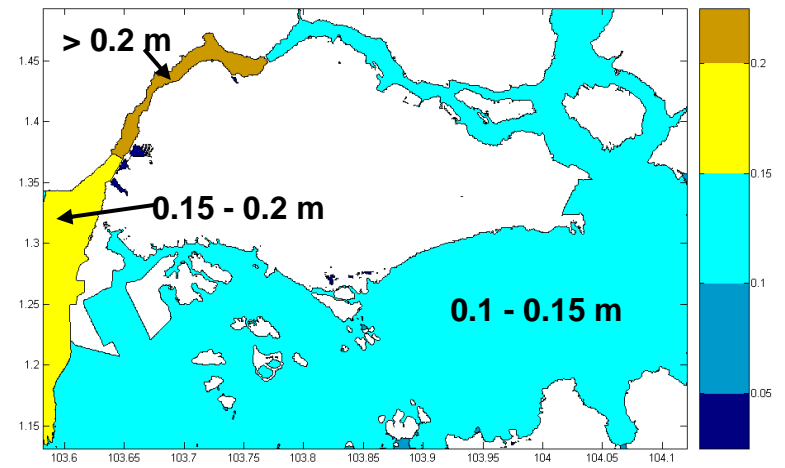
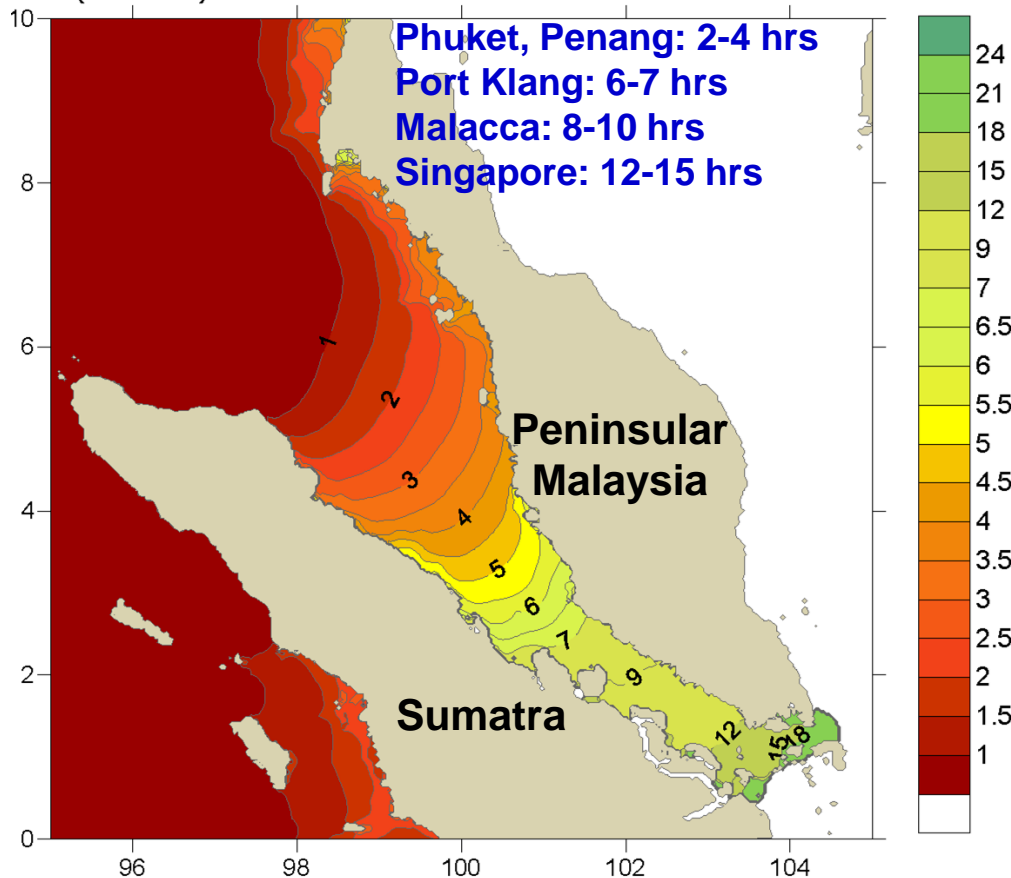
- Chaired by the Director-General, Meteorological Service Singapore (MSS)
- Members (as of Dec 2020):

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

Tsunami Model Simulations

Scenario 1: Source in Andaman Sea

TUNAMI-N2 simulation
Arrival Time of First Wave (hour) - 2004.12.26 Indonesian Tsunami
T (seconds): 0 - 86400



- At least 12 hours lead time
- Wave height < 1m

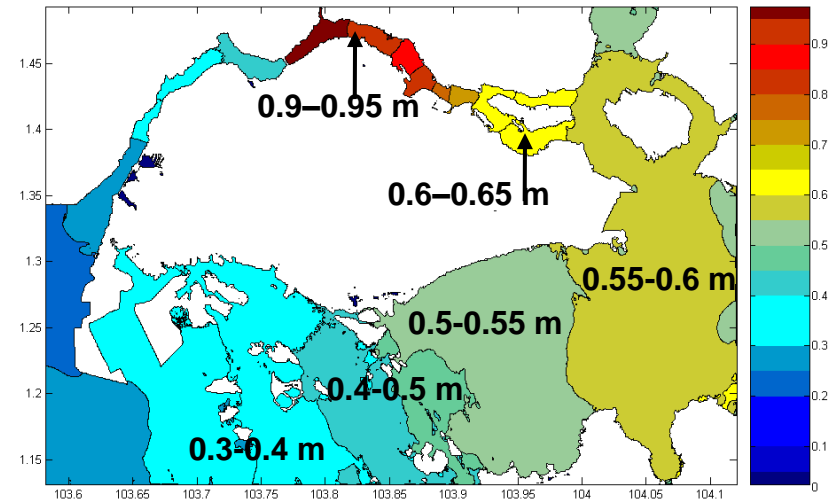
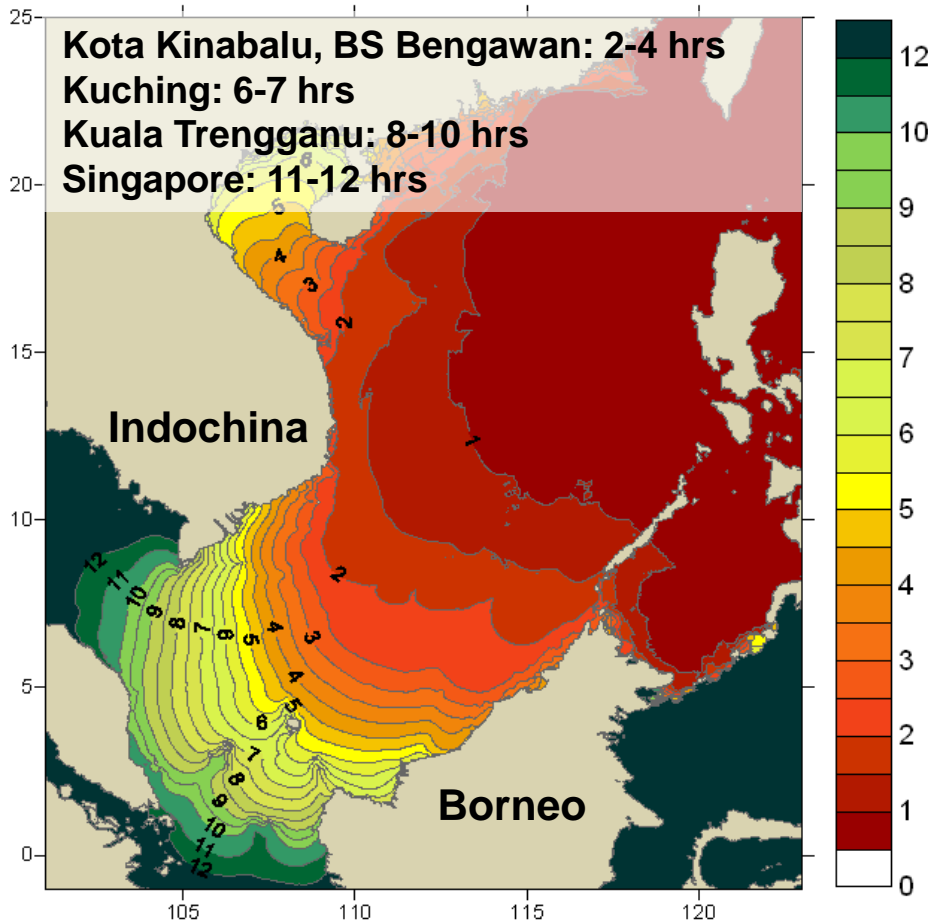
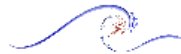
Tsunami Model Simulations

Scenario 2: Source in South China Sea

TUNAMI-N2 simulation

Arrival Time of 1st Wave (hour) - South China Sea Tsunami

T (hours): 0 - 12



- At least 11 hours lead time
- Wave height < 1m

Concept of Operation – Activation Alerts

Advance Notice	Type of Alert	Message Content	
-	Earthquake Alert	Detection of potentially tsunami-genic earthquake and initial alert	
10 – 12 hr	YELLOW Alert: Tsunami Watch	Tsunami is expected to affect Singapore	PHASE 1
6 – 8 hr	AMBER Alert: Tsunami Advisory	Confirmation of ocean-wide tsunami, and it is expected to affect Singapore	
2 – 4 hr	RED Alert: Tsunami Warning	Imminent arrival of tsunami at Singapore	
0 hr	BLACK Alert: Tsunami Report	Tsunami hits Singapore	PHASE 2
N.A.	GREEN Alert: Tsunami Information	All Clear/Stand down. Threat of the tsunami is over.	PHASE 3

* The Phases of Operations may not progress sequentially. At any of the phases, a return to 'Green' phase is possible when tsunami is assessed to no longer be a threat to Singapore.



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