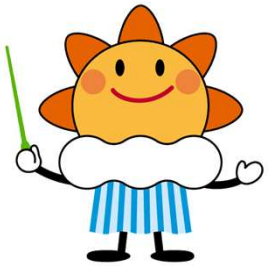
21 Jan. 2026

NWPTAC Introduction

OKAGAKI Akira
Earthquake and Tsunami Observation Division
Japan Meteorological Agency



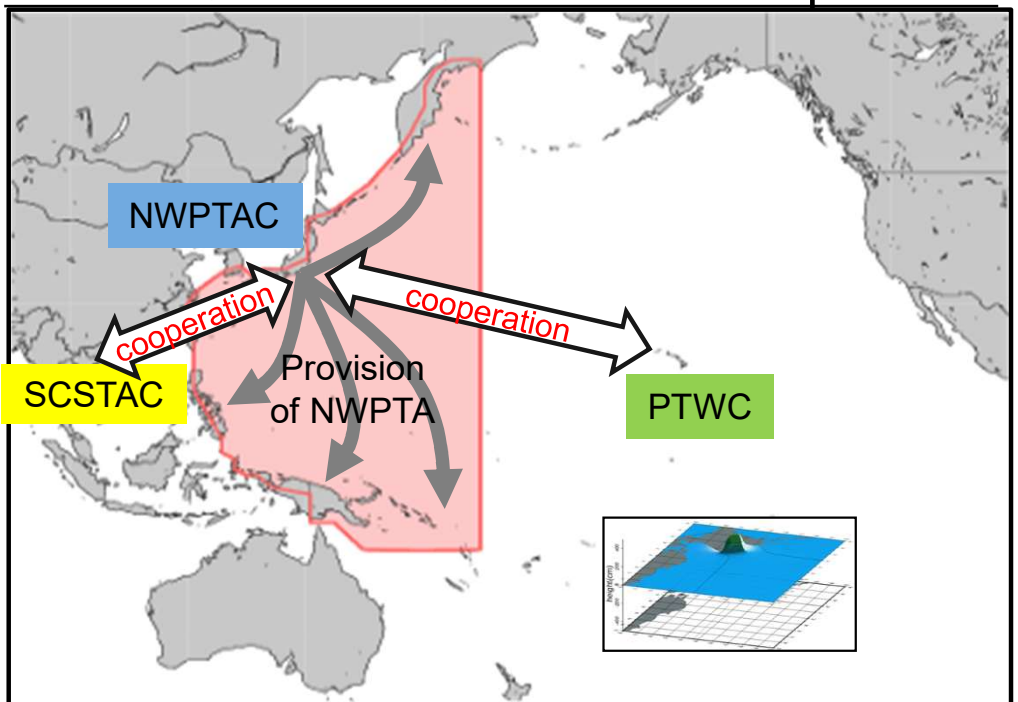
Outline

- Overview of NWPTAC services and history
- Operational Procedures and products
- Recent activities
  - 29 Jul 2025 off Kamchatka earthquake
  - Revision of NWPTAC Users' guide
- Notice
  - Communication tests and Contact points

Northwest Pacific Tsunami Advisory Center (NWPTAC)

- ✓ JMA operates Northwest Pacific Tsunami Advisory Center (NWPTAC) since 2005 under PTWS framework, and contributes to tsunami disaster mitigation systems of Pacific countries in collaboration with the Pacific Tsunami Warning Center (PTWC) and SCSTAC.
- ✓ The center provides contact points of recipient countries with Northwest Pacific Tsunami Advisories (NWPTA) to support their national DRR activities.
- ✓ Once a tsunami generic event happens, the first advisory will be issued in about 10-30 minutes. It includes tsunami heights and coastal arrival times derived from pre-calculated tsunami scenario database. Typically, the second advisory uses numerical simulation output using CMT solution and deliver graphical products. We issue revised advisories when necessary, for example more reliable earthquake parameters are derived.
- ✓ The center monitors sea level observation carefully and integrate them to the following issuance.

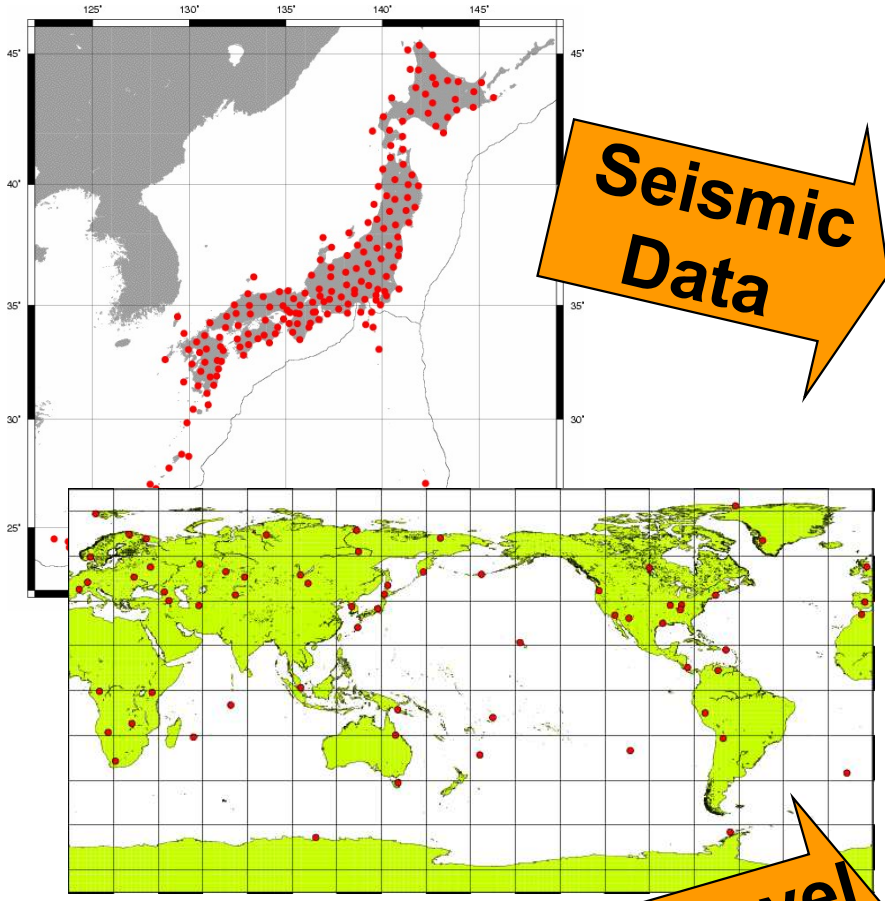
NWPTAC Area of Service and cooperation



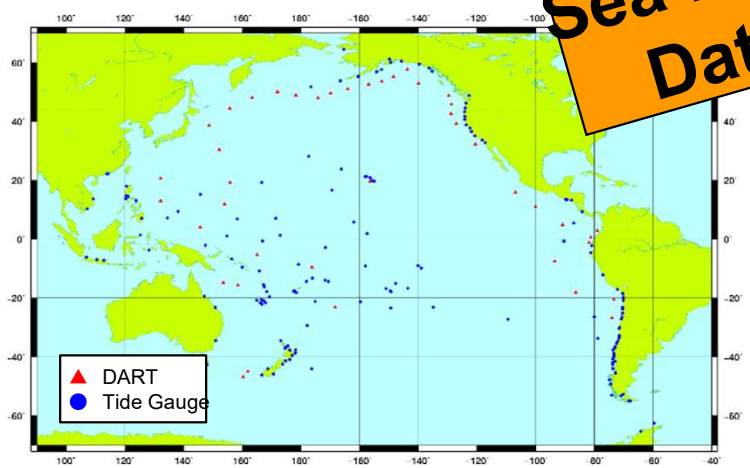
Operation Room of NWPTAC (JMA)

JMA H.Q.s

Issuance of NWPTA

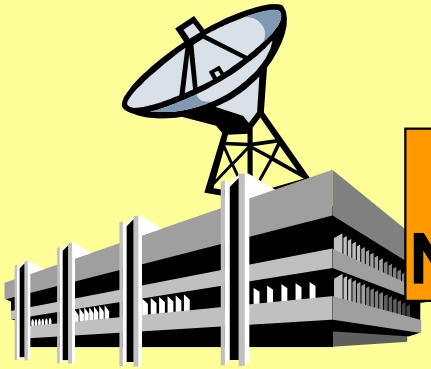


Seismic Data



Sea Level Data

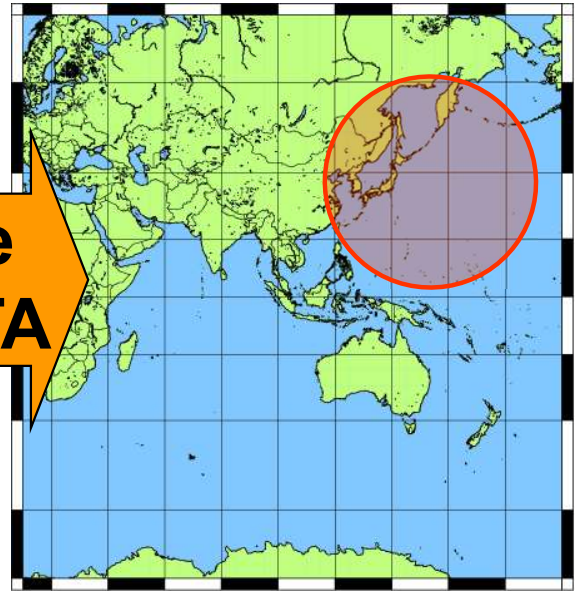
JMA



Criteria:
Earthquake of M6.5 or greater in the Northwest Pacific Ocean

Issue NWPTA

via
GTS,
E-mail



Contents:

- Earthquake Information
- Evaluation of Tsunami
- Estimated Tsunami Arrival Tim
- Estimated Tsunami Height
- Observed Data

Information Exchange

PTWC, SCSTAC

History of NWPTAC

1999 ICG/ITSU-XVII accepted the JMA's proposal to establish a regional tsunami warning center for the Northwest Pacific at JMA.

2003 JMA submitted a report at ICG/ITSU-XIX to demonstrate its readiness for the operation of the center.

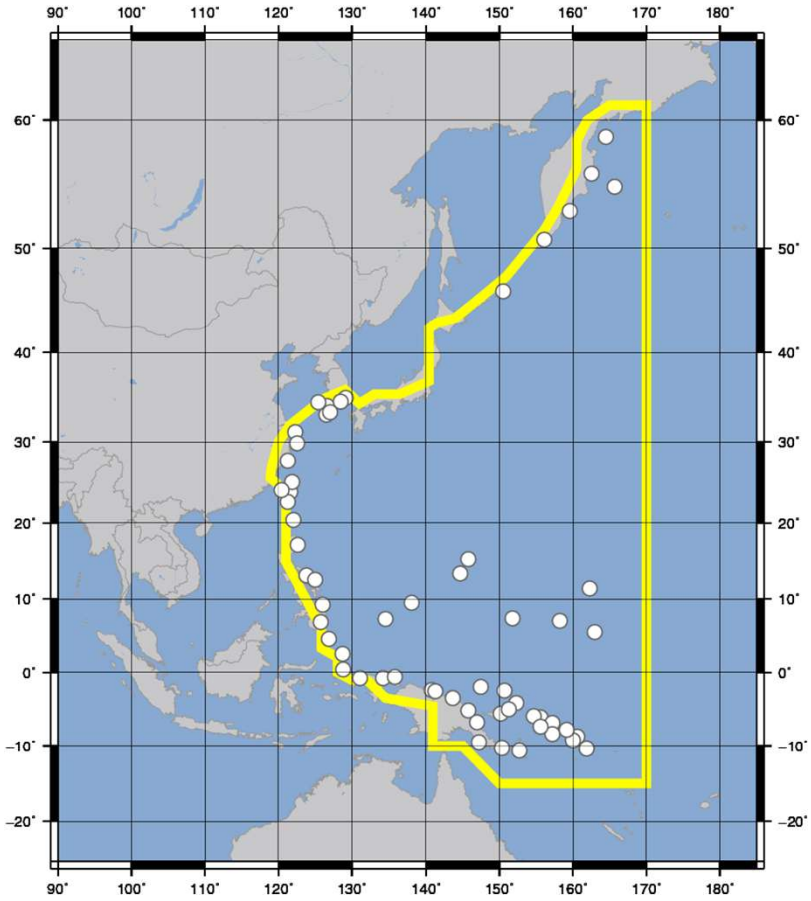
2004 IOC/EC-XXXVII adopted a resolution to start the services of the regional center at JMA by March 2005.

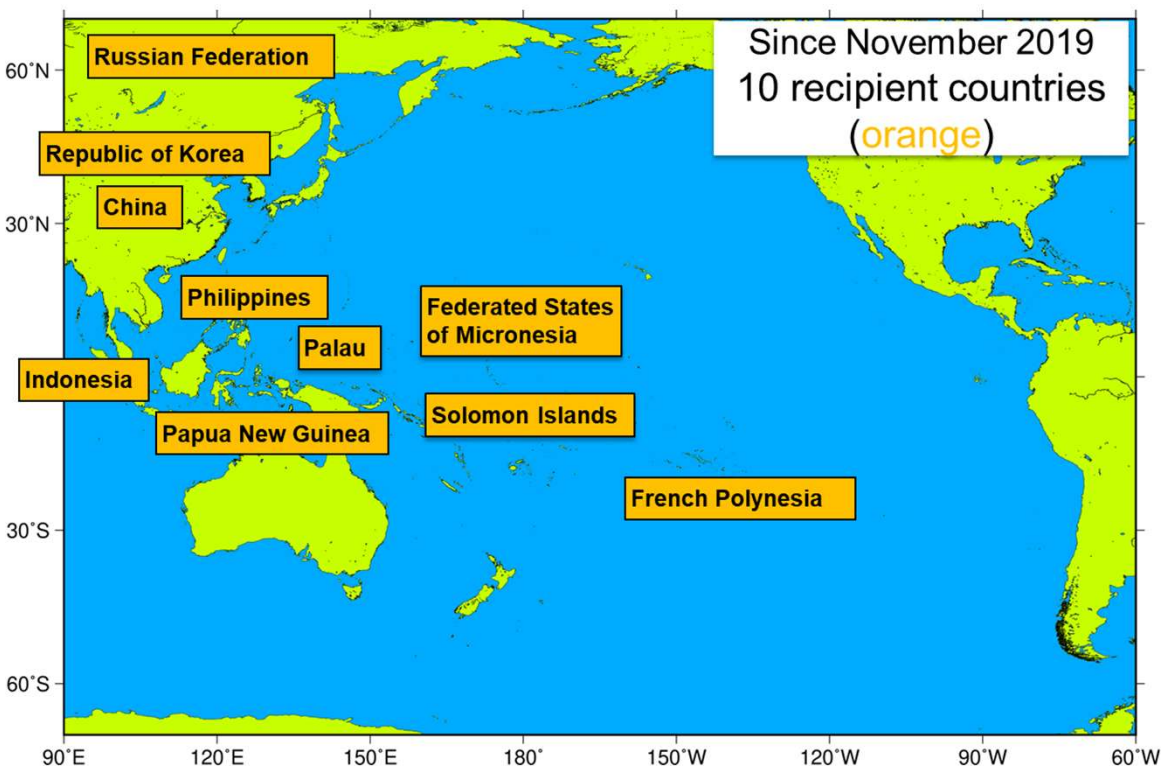
2005 JMA initiated the operation of NWPTAC.

2006 JMA started the interim service for the South China Sea region.

2019 JMA changed over to the enhanced NWPTAC Products.
JMA terminated the interim service for the South China Sea region.

NWPTAC Area of Service (AoS) and NWPTA Recipient Countries

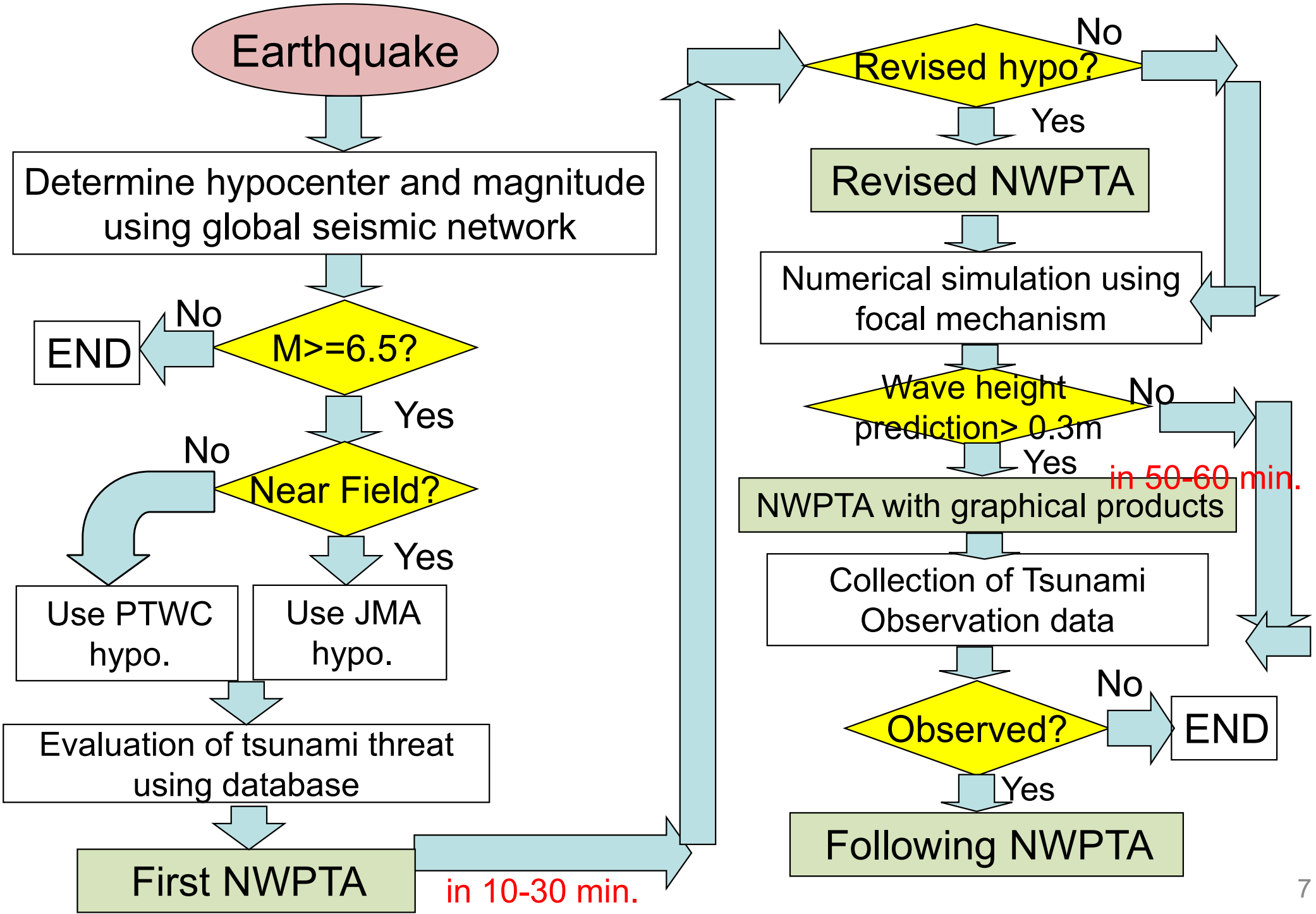




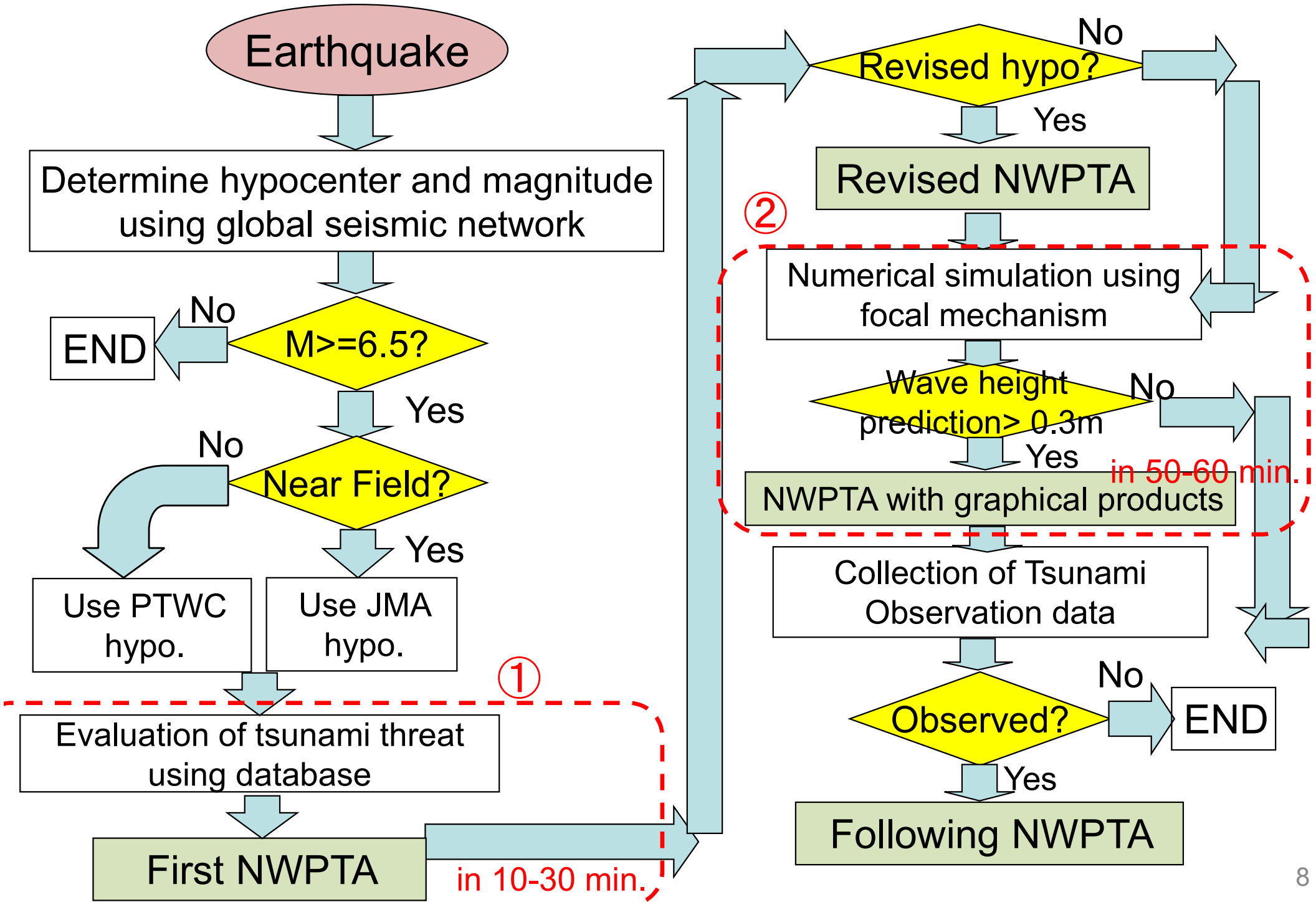
: AoS : Forecast Point

The NWPTAC AoS was changed when the full operation of SCSTAC started in November 2019.

Standard Operation Procedure for NWPTAC



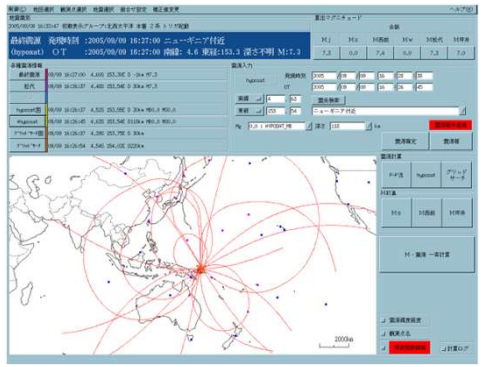
Standard Operation Procedure for NWPTAC

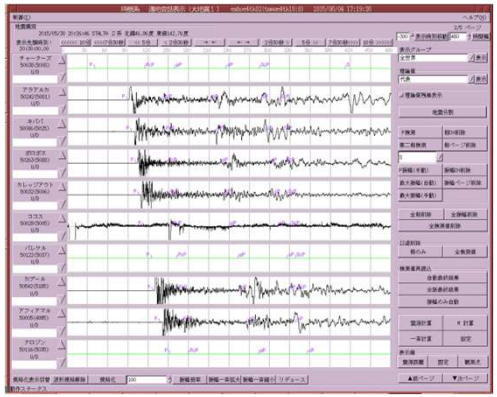


① Northwest Pacific Tsunami Advisory (NWPTA)

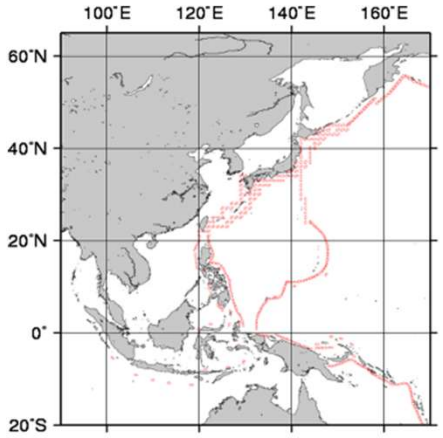
Setting tsunami sources in advance, computer simulations of tsunami propagation are conducted and those results are stocked in the database. Based on the hypocenter and magnitude, the most appropriate case is chosen from the database and tsunami heights and arrival times are estimated based on the chosen scenario.

Determination of hypocenter and magnitude



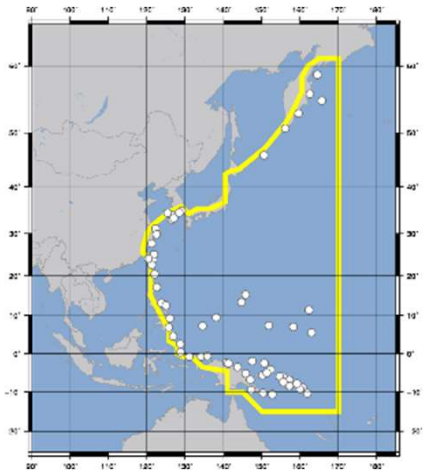


Search of the most appropriate simulation from the database



Positions of faults for pre-calculated tsunami database

Estimation of tsunami heights and arrival times at the forecast points



Positions of forecast points

Text message of NWPTAC

TSUNAMI BULLETIN NUMBER 002
ISSUED BY NWPTAC(JMA)
ISSUED AT 0949Z 24 MAR 2018
PART 01 OF 01 PARTS

HYPOCENTRAL PARAMETERS (REVISION)
ORIGIN TIME:0858Z 24 MAR 2018
PRELIMINARY EPICENTER:LAT03.0SOUTH LON148.0EAST
BISMARCK SEA
NEW GUINEA AREA
MAG:8.3 (MW)

EVALUATION
THERE IS A POSSIBILITY OF A DESTRUCTIVE OCEAN-WIDE TSUNAMI

THIS BULLETIN IS FOR
EAST COASTS OF PHILIPPINES (ADDITION)
NORTH COASTS OF PAPUA NEW GUINEA
CELEBES SEA (CANCELLATION)

ESTIMATED TSUNAMI ARRIVAL TIMES AND WAVE AMPLITUDES
EAST COASTS OF PHILIPPINES

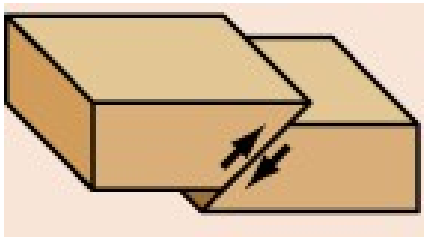
LOCATION	COORDINATES	ARRIVAL TIME	AMPL
LEGASPI	13.2N 123.8E	1257Z 24 MAR	0.3-1M (ADDITION)

NORTH COASTS OF PAPUA NEW GUINEA

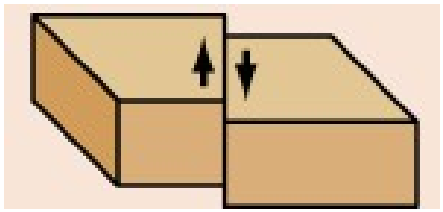
LOCATION	COORDINATES	ARRIVAL TIME	AMPL
VANIMO	02.6S 141.3E	0953Z 24 MAR	1-3M(REVISION)
WEWAK	03.5S 143.7E	0931Z 24 MAR	3-5M
MADANG	05.2S 145.8E	0935Z 24 MAR	5-10M
RABAUL	04.2S 152.3E	1000Z 24 MAR	OVER10M

① Uncertainties of fault mechanism

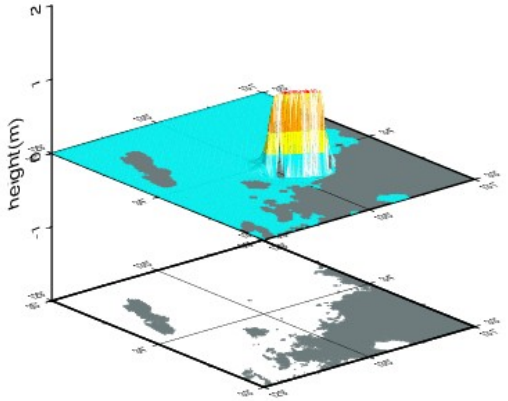
Immediately after an earthquake, Magnitude and hypocenter can be estimated. Focal mechanism (reverse fault or strike slip fault) cannot be known.



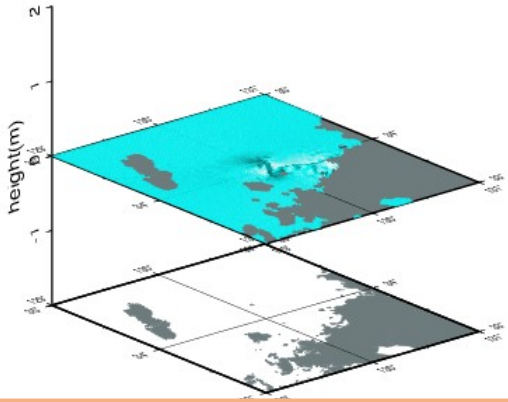
Reverse Fault
(dip angle: 45degree)



Strike slip fault

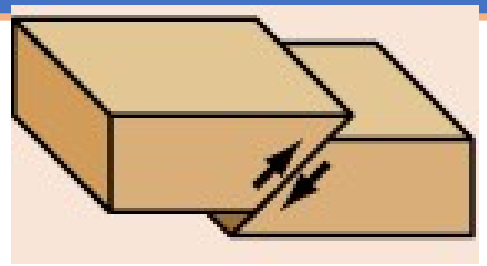


Tsunami is large



Tsunami is small

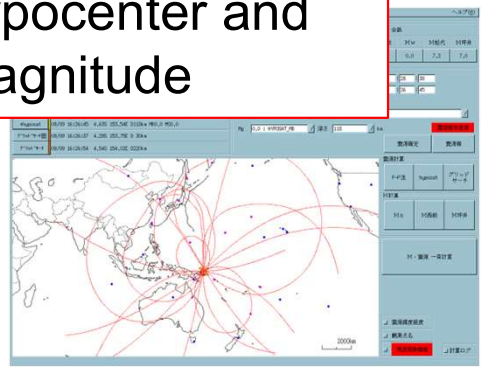
To consider the worst case scenario NWPTA, simulation result of pure reverse fault are stored in the Database



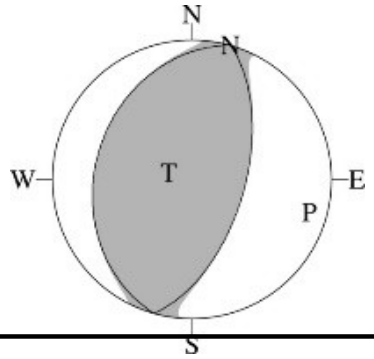
Pure reverse fault
Dip angle 45°
Slip angle 90°

② Northwest Pacific Tsunami Advisory(Graphical products)

Determination of hypocenter and magnitude



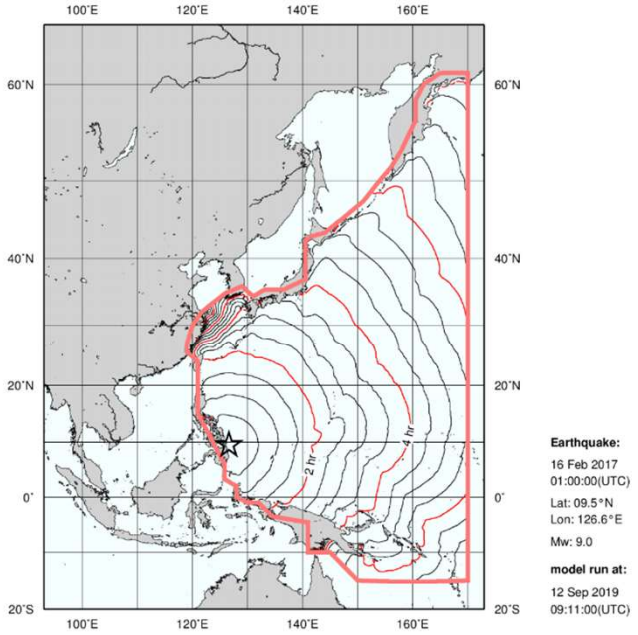
Estimation of CMT solution



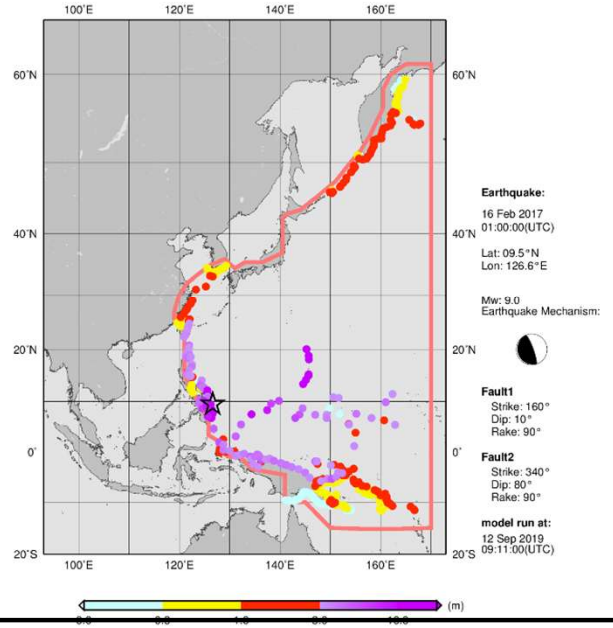
Tsunami simulation in real-time basis

Three kinds of graphical products in addition to text message

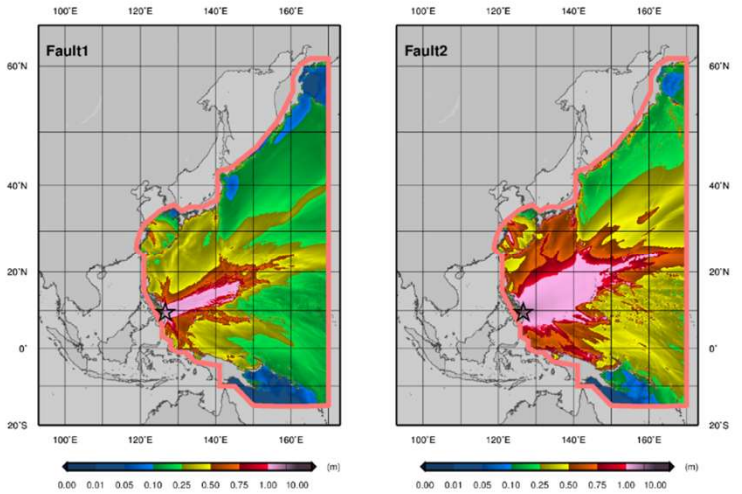
Tsunami travel time map



Coastal tsunami amplitude forecast map



Deep-Ocean tsunami amplitude forecast map



Concept of NWPTA

NWPTAs are :

- simply advisories to be considered by recipients in alerting the people and the issuance of actual evacuation notices is the responsibility of each recipient.

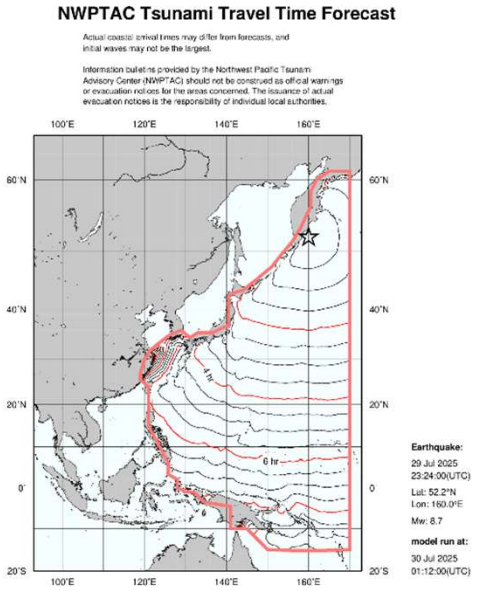
- exclusive to Tsunami Warning Focal Points (TWFPs) or National Tsunami Warning Centers (NTWCs) of recipient countries.

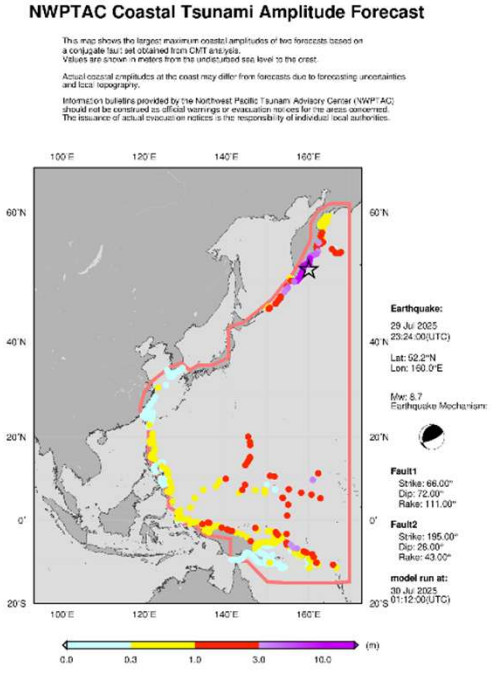
- NOT warnings and therefore NWPTAC does not refer to cancellation of warnings in subsequent messages

NWPTAC's Response to the 29 JUL 2025 Earthquake off Kamchatka Peninsula (1/2)

Date	Time (UTC)	Actions
29 July	23:24:52	The earthquake occurred.
29 July	23:34	The PTWC issued the tsunami threat message 01 with M8.0
		The NWPTAC estimated tsunami amplitudes and arrival times using the pre-simulated tsunami scenario database based on M8.0, consistent with the PTWC.
29 July	23:45	The NWPTAC issued the bulletin number 01.
30 July	00:16	The PTWC updated the magnitude to 8.7 in the threat message 002.
		The NWPTAC estimated tsunami amplitudes and arrival times using pre-simulated tsunami scenario database based on the updated magnitude 8.7.
30 July	00:49	The NWPTAC issued the bulletin number 02.
		The NWPTAC carried out the tsunami simulation using the USGS CMT with Mw 8.7 and estimated tsunami amplitudes and arrival times based on the result of the tsunami simulation.
30 July	01:19	The NWPTAC issued the bulletin number 03 with the graphical products.
30 July	01:44 to 1923	The NWPTAC issued the bulletin number 04 to 15 with observed sea level changes.

Graphics showed in Bulletin 03





NWPTAC's Response to the 29 JUL 2025 Earthquake off Kamchatka Peninsula (2/2)

NWPT Advisories in this event;

- **15** bulletins issued over **19** hours
- First bulletin based on pre-simulated DB issued in **20 minutes**
- **Graphical products** derived from the real-time simulation issued in **115 minutes**
- Provided ETA and Wave Amplitude for **45 Forecast Points out of 61 points**

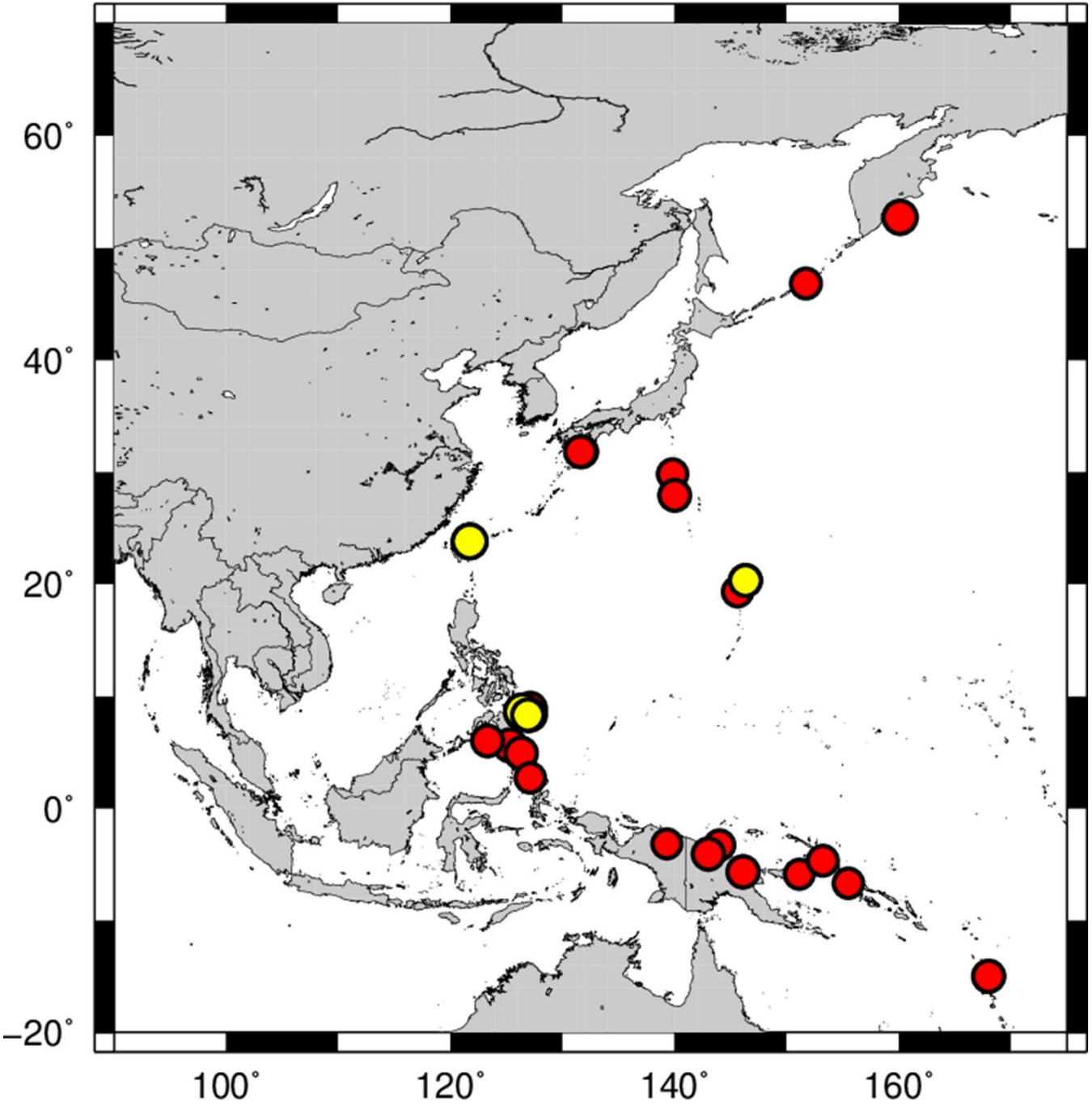
Estimated Wave Amplitude for 45 Forecast Points

+ : Estimated amplitude is larger than amplitude in the previous bulletin

LOCATION	COORDINATES	ESTIMATED WAVE AMPLITUDE (M8.0 DB Bulletin No.1)	ESTIMATED WAVE AMPLITUDE (M8.7 DB Bulletin No.2)	ESTIMATED WAVE AMPLITUDE (M8.7 simulation Bulletin No.3)
OSTROV_KARAGINSKIY	58.8N 164.5E		0.3-1M +	1-3M +
UST_KAMCHATSK	56.1N 162.6E	0.3-1M	1-3M +	3-5M +
PETROPAVLOVSK_K	53.2N 159.6E	5-10M	OVER10M +	OVER10M
NIKOLSKOYA	55.1N 165.7E	0.3-1M	3-5M +	3-5M
SEVERO_KURILSK	50.8N 156.1E	0.3-1M	1-3M +	5-10M +
URUP_IS.	46.1N 150.5E		0.3-1M +	1-3M +
SHANGHAI	31.2N 122.3E			0.3-1M +
TAITUNG	22.7N 121.2E			0.3-1M +
BASCO	20.4N 122.0E			0.3-1M +
PALANAN	17.2N 122.6E			0.3-1M +
LEGASPI	13.2N 123.8E		0.3-1M +	0.3-1M
LAOANG	12.6N 125.0E			0.3-1M +
MADRID	09.2N 126.0E		0.3-1M +	0.3-1M
DAVAO	06.9N 125.7E			0.3-1M +
BEREBERE	02.5N 128.7E			0.3-1M +
PATANI	00.4N 128.8E			0.3-1M +
SORONG	00.8S 131.1E			0.3-1M +
MANOKWARI	00.8S 134.2E		0.3-1M +	1-3M +
WARSA	00.6S 135.8E		0.3-1M +	1-3M +
JAYAPURA	02.4S 140.8E		0.3-1M +	1-3M +
GEME	04.6N 126.8E			0.3-1M +
VANIMO	02.6S 141.3E		0.3-1M +	1-3M +
WEWAK	03.5S 143.7E		0.3-1M +	1-3M +
MADANG	05.2S 145.8E		0.3-1M +	1-3M +
MANUS_IS.	02.0S 147.5E		0.3-1M +	1-3M +
KIMBE	05.6S 150.2E		0.3-1M +	1-3M +
ULAMONA	05.0S 151.3E			0.3-1M +
RABAUL	04.2S 152.3E		0.3-1M +	0.3-1M
KAVIENG	02.5S 150.7E		0.3-1M +	1-3M +
KIETA	06.1S 155.6E		1-3M +	3-5M +
PANGGOE	06.9S 157.2E	0.3-1M	1-3M +	3-5M +
GHATERE	07.8S 159.2E		0.3-1M +	1-3M +
AUKI	08.8S 160.6E		0.3-1M +	1-3M +
KIRAKIRA	10.4S 161.9E		1-3M +	1-3M
SAIPAN	15.3N 145.8E		0.3-1M +	1-3M +
GUAM	13.4N 144.7E		0.3-1M +	1-3M +
MALAKAL	07.3N 134.5E		0.3-1M +	1-3M +
YAP_IS.	09.5N 138.1E			0.3-1M +
POHNPEI_IS.	07.0N 158.2E		0.3-1M +	1-3M +
KOSRAE_IS.	05.5N 163.0E		1-3M +	1-3M
ENIWETOK	11.4N 162.3E		0.3-1M +	1-3M +
LAE	06.8S 147.0E			0.3-1M +
ALOTAU	10.3S 150.4E		0.3-1M +	0.3-1M
AMUN	06.0S 154.7E		0.3-1M +	1-3M +
HONIARA	09.3S 160.0E		0.3-1M +	0.3-1M

Earthquake locations of NWPTA Issuance (Sep. 2023 – Feb. 2025)

気象庁 Japan Meteorological Agency



✓ NWPTA was issued for 26 events between September 2023 and February 2025.

●: NWPTA was issued.
●: Graphical products was issued in the NWPTA second bulletin.

Revision of NWPTAC User's Guide

気象庁 Japan Meteorological Agency

TABLE OF CONTENTS

- NWPTAC prepared a draft of the revised its user's guide based on the proposed common Table of Contents for PTWS.
- The draft was sent by e-mail to TNC for the request of the feedback.
- After incorporated the comments from the TNCs, NWPTAC submitted it to ICG/PTWS 31st session.
  - https://oceanexpert.org/document/36080

* The revised user's guide do not affect NWPTAC products or NWPTAC operations in any way.

NWPTA Communications Tests

Test Messages

NWPTAC conducts communications tests via GTS and email basically twice a year. The recent one was done on 9 December 2025.

TEST message

NWPTA COMMUNICATIONS TEST
ISSUED BY NWPTAC (JMA)
ISSUED AT 0500Z 09 DEC 2025

THIS IS A TEST MESSAGE.

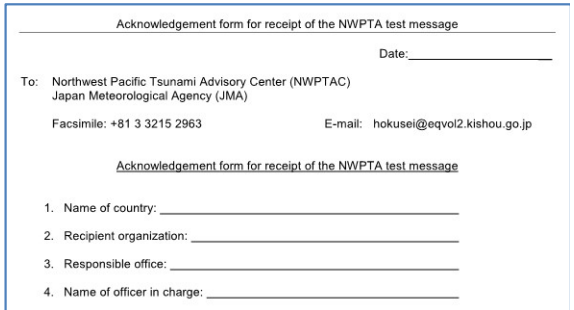
THIS TEST MESSAGE IS SENT TO EACH RECIPIENT ORGANIZATION
IN ORDER TO EXAMINE THE COMMUNICATIONS STATUS.

PLEASE COMPLETE AND RETURN THE ACKNOWLEDGEMENT FORM ATTACHED TO THE EMAIL
SENT IN ADVANCE, AS WELL AS THIS MESSAGE, BY TELEFAX AND/OR E-MAIL TO:

+81 3 3584 8644
NWPTAC_HOKUSEI@MET.KISHOU.GO.JP

Recipients are requested to check that test message is received via all of their designated communications methods, then fill and return the form.

To ensure the operational functionality of all communications methods, a responses is highly appreciated.



Acknowledgement form for receipt of the NWPTA test message

Date:_____

To: Northwest Pacific Tsunami Advisory Center (NWPTAC)
Japan Meteorological Agency (JMA)

Facsimile: +81 3 3215 2963 E-mail: hokusei@eqvol2.kishou.go.jp

Acknowledgement form for receipt of the NWPTA test message

1. Name of country: _____
2. Recipient organization: _____
3. Responsible office: _____
4. Name of officer in charge: _____

Contact information from NWPTAC to Palau

maria.ngemaes@noaa.gov
pr.wso.palau@noaa.gov
nemo.coordinator@palaugov.org
palaunemo@gmail.com

Please let us know if any updates.

Thank you for your kind attention.