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Intergovernmental
Oceanographic
Commission

3.7 Australian National Report

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*31st Session of the Intergovernmental Coordination Group for the Pacific Tsunami
Warning and Mitigation System (ICG/PTWS XXXI), Beijing, 8-11 April 2025*

Joint Australian Tsunami Warning Centre

The Joint Australian Tsunami Warning Centre (JATWC), consisting of:

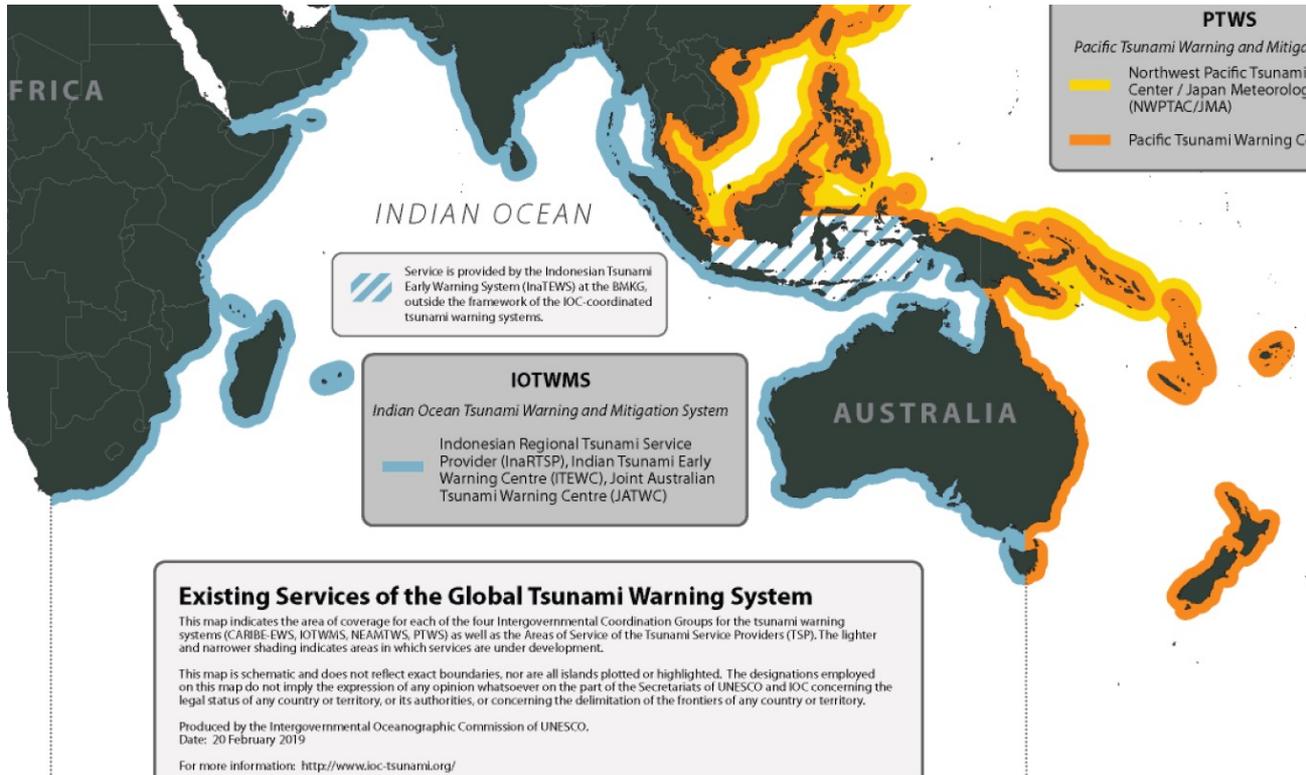
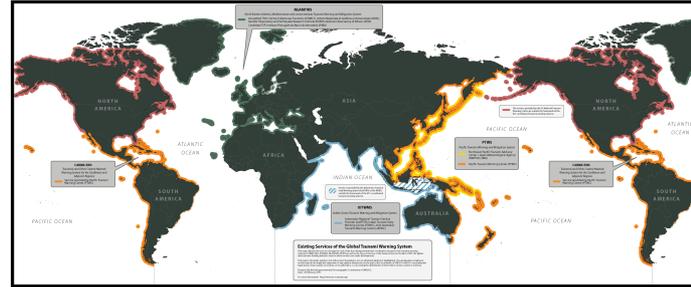
Geoscience Australia (GA), Canberra: Earthquake Monitoring and Alerting
Bureau of Meteorology (The Bureau), Melbourne & Brisbane: Sea Level Monitoring and Tsunami Warning

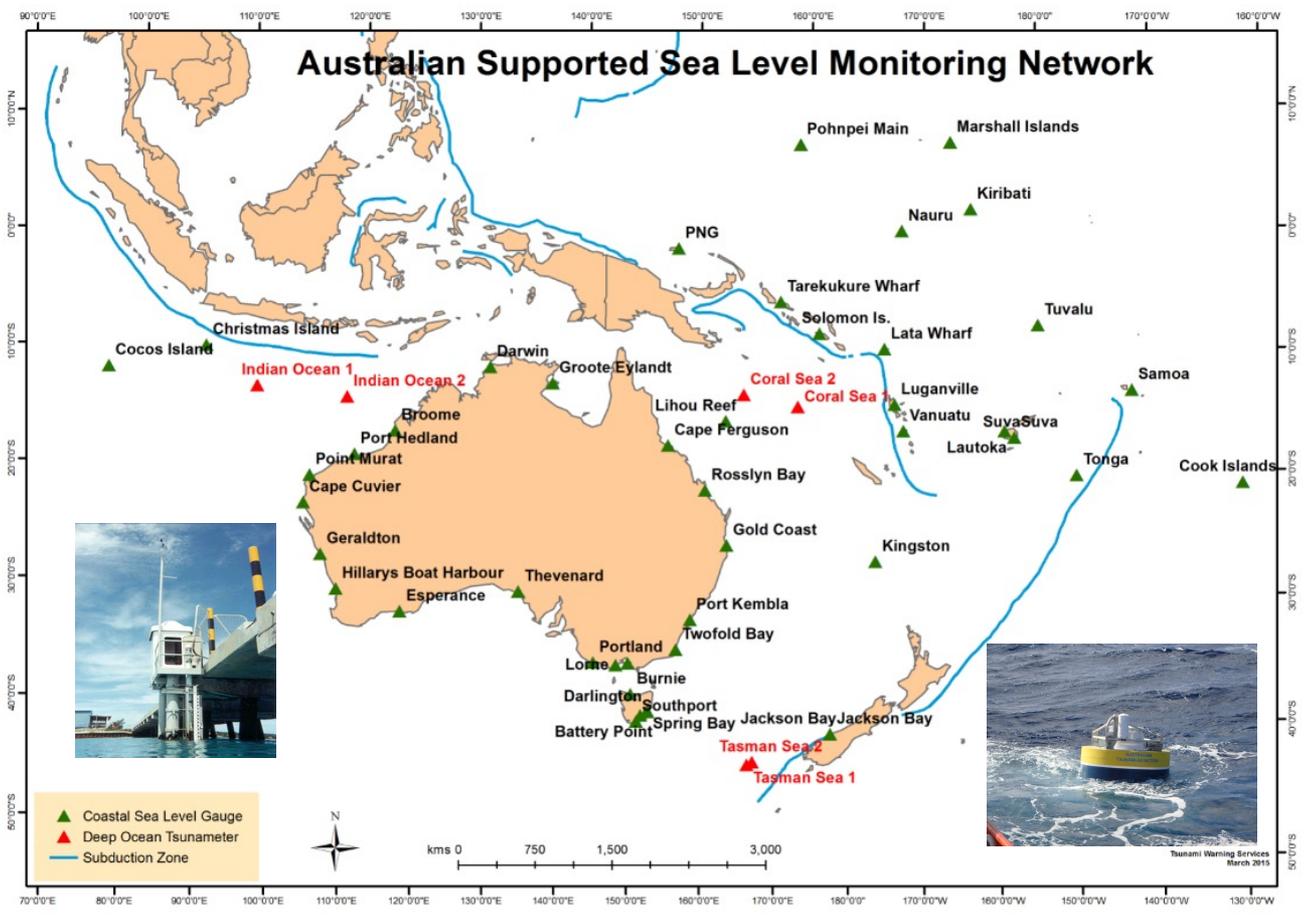


JATWC staff located at Geoscience Australia (left) and Bureau of Meteorology (right)

Australia's International Role

JATWC serves as a Tsunami Service Provider (TSP) for the Indian Ocean





Recent Developments at the JATWC

Bureau of Meteorology

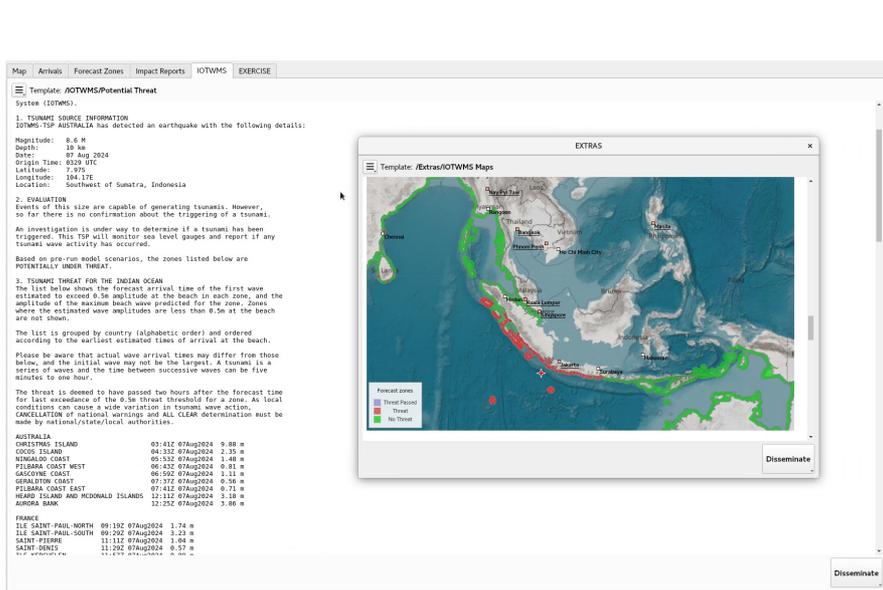
- ISO 9001. The Bureau's Tsunami Warning Services, part of the JATWC, was internationally reaccredited in 2023 for further 3 years to 2026 as an ISO 9001 compliant quality managed system, following its maiden accreditation in 2020.
- TOAST. The Bureau completed a major system change project, with TOAST implemented to assess tsunami threat, issue and disseminate products for both the national tsunami warning and Indian Ocean TSP services.
- Capability to deliver NAVAREA maritime products and non-seismic products.

Geoscience Australia

- Commenced work towards ISO 9001:2015 accreditation for GA-JATWC systems.
- Upgraded its system to SeisComp5.
- Tested the seismic array processor in real-time, in parallel to GA-JATWC operations. Assessment of performance is continuing ahead of plans to operationalise the seismic array processor.

The Tsunami Observation and Simulation Terminal (TOAST)

The Tsunami Observation and Simulation Terminal (TOAST) system, together with the business release of the Product Generation Engine, was implemented on 15 October. TOAST has successfully replaced the Tsunami Decision Support Tool (DST). While the primary reason for the change was to improve IT security, it came with a number of additional benefits in short and longer-term.



Map | **Analysis** | **Forecast Zones** | **Impact Reports** | **IOTWMS** | **EXERCISE**

Template: /IOTWMS/PotentialThreat
System: IOTWMS

1. **Tsunami Source Information**
IOTWMS-TSP AUSTRALIA has detected an earthquake with the following details:
Magnitude: 6.4 M
Depth: 10 km
Date: 07 Aug 2024
Origin Time: 0329 UTC
Latitude: 0.97 S
Longitude: 104.17E
Location: Southwest of Sumatra, Indonesia

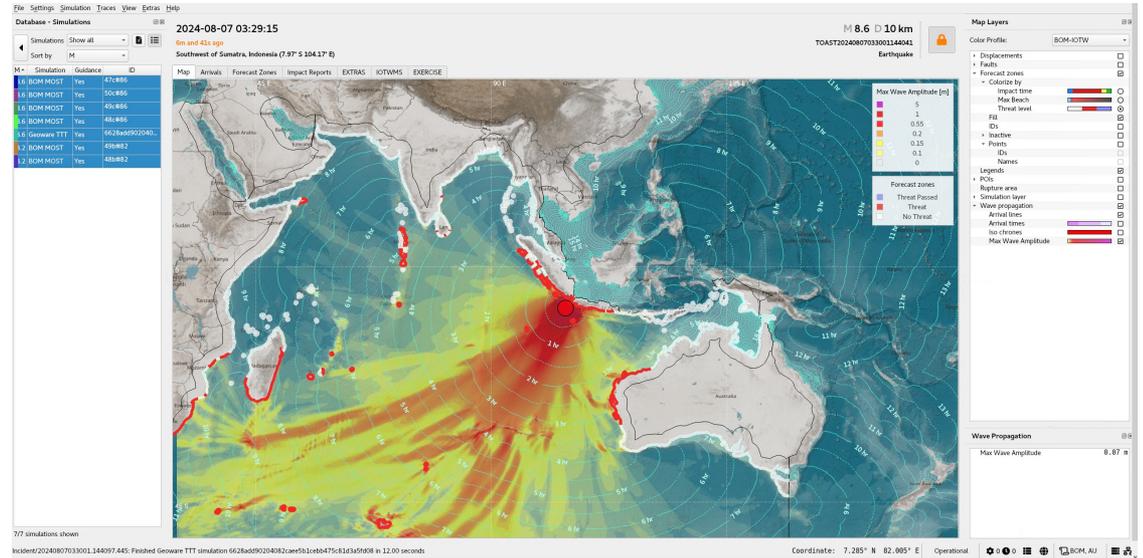
2. **Evaluation**
Events of this size are capable of generating tsunamis. However, so far there is no confirmation about the triggering of a tsunami.
An investigation is under way to determine if a tsunami has been triggered. This TSP will monitor sea level gauges and report if any tsunami wave activity has occurred.
Based on pre-run model scenarios, the zones listed below are POTENTIALLY UNDER THREAT.

3. **Tsunami Threat for the Indian Ocean**
The list below shows the forecast arrival time of the first wave estimated to exceed 0.5m amplitude at the beach in each zone, and the amplitude of the maximum beach wave predicted for the zone. Zones where the estimated wave amplitudes are less than 0.5m at the beach are not shown.
The list is grouped by country (alphabetic order) and ordered according to the earliest estimated times of arrival at the beach. Please be aware that actual wave arrival times may differ from those below, and the initial wave may not be the largest. A tsunami is a series of waves and the time between successive waves can be five minutes to one hour.
The threat is deemed to have passed two hours after the forecast time for last exceedance of the 0.5m threat threshold for a zone. As local conditions can cause a wide variation in tsunami wave activity, CANCELLATION OF NATIONAL ALERTS and ALL CLEAR determination must be made by national/state/local authorities.

Country	Location	Time	Amplitude (m)
AUSTRALIA			
CORCOWS ISLAND		03:41Z 07Aug2024	9.88
COCOS ISLAND		04:33Z 07Aug2024	2.35
MINGULAD COAST		05:33Z 07Aug2024	1.48
PILBARA COAST WEST		06:43Z 07Aug2024	0.81
GASCOINE COAST		06:59Z 07Aug2024	1.13
OSWALTON COAST		07:37Z 07Aug2024	0.56
PILBARA COAST EAST		07:42Z 07Aug2024	0.73
HEARD ISLAND AND MCDONALD ISLANDS		12:11Z 07Aug2024	3.18
AUSTRAL BANK		12:32Z 07Aug2024	3.86
FRANCE			
ILE SAINT-PHIL NORTH		09:19Z 07Aug2024	1.74
ILE SAINT-PHIL SOUTH		09:29Z 07Aug2024	3.23
SAINT-PIERRE		11:17Z 07Aug2024	1.64
SAINT-DENIS		11:29Z 07Aug2024	0.57
Other locations			

Legend: Forecast zones: Threat Passed, Threat, No Threat

Disseminate



File | Settings | Simulation | Tables | View | Extras | Help

Database - Simulations

2024-08-07 03:29:15
Southwest of Sumatra, Indonesia (7.97° S 104.17° E)

M	Simulation	Guidance	ID
16	BOH MOST	Yes	47C899
16	BOH MOST	Yes	50C899
16	BOH MOST	Yes	40B899
16	BOH MOST	Yes	46B899
16	Genovese TTT	Yes	6626a902040...
17	BOH MOST	Yes	49B892
17	BOH MOST	Yes	48B892

Map | Analysis | Forecast Zones | Impact Reports | EXTRAS | IOTWMS | EXERCISE

Map Layers: BOM-IOTW

Legend: Forecast zones, Threat Passed, Threat, No Threat

Wave Propagation: Max Wave Amplitude 6.87 m

77 simulations shown
Incident:20240807033001144097445: Finished Genovese TTT simulation 6626a90204020e5610eb475c3d3a5908 in 12.00 seconds

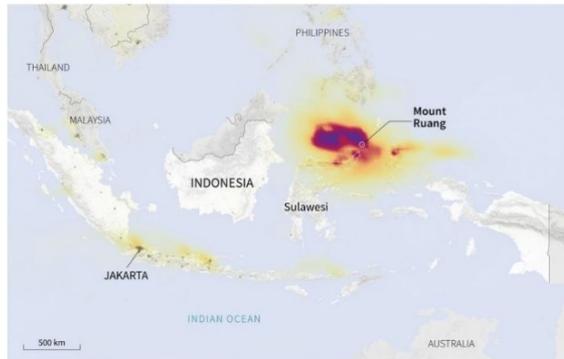
Coordinates: 7.285° N 82.005° E | Operational

JATWC Non-Seismic Products

- No threat Bulletins for the Indian Ocean and Australia were issued in response to the eruption of Ruang on the 30th of April 2024.
- This is the first non-seismic product issued by a TSP for the Indian Ocean.

Volcano Mount Ruang erupts in Indonesia

Column of sulphur dioxide (SO₂) in the atmosphere as of April 17 at 0000 GMT, in mg/m²



[Mount Ruang in Indonesia Erupts - Civildaily](#)



[Indonesia volcano: How Ruang eruption could impact weather and climate | CNN](#)

EARTHQUAKE: TALAUD ISLANDS, INDONESIA 18:35 UTC 29 April 2024 Mag N/A

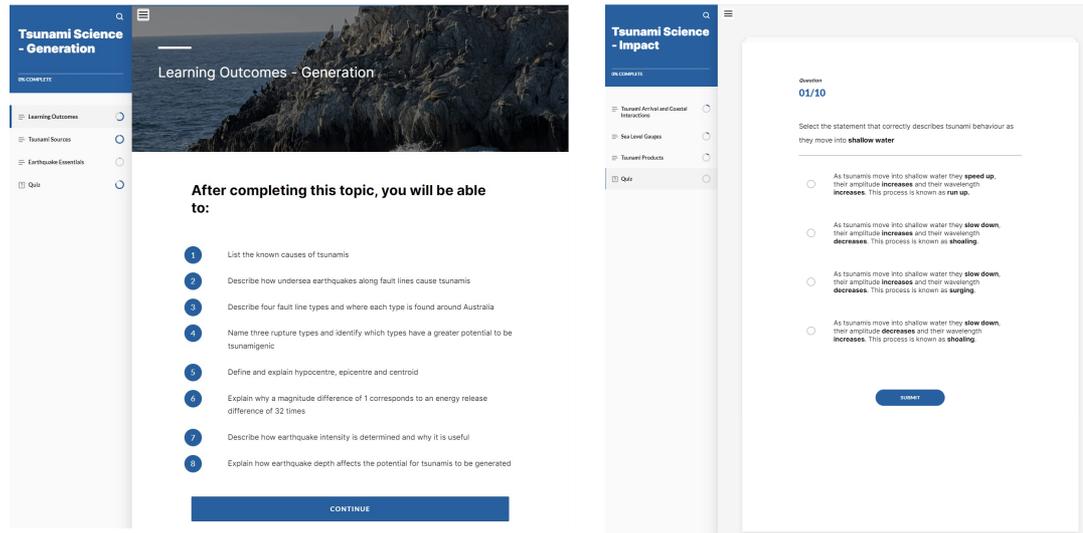
INFORMATION FOR BULLETIN 1.No Threat Bulletin 2109UTC 29 Apr 2024

Exchange Bulletins	Threat Map	Threat Table	Deep Water Wave Amplitude Map	Travel Times Map	NTWC Status Reporting Form	Other Data
<p>IDY68500</p> <p>-----</p> <p>TSUNAMI BULLETIN NUMBER 1 (TYPE-II THREAT ASSESSMENT BULLETIN) IOTHMIS-TSP SERVICE PROVIDER AUSTRALIA (JATWC) ISSUED AT 2109 UTC Monday 29 April 2024</p> <p>-----</p> <p>... NO TSUNAMI THREAT IN THE INDIAN OCEAN ...</p> <p>This bulletin applies to areas within and bordering the Indian Ocean. It is issued in support of the UNESCO/IOC Indian Ocean Tsunami Warning and Mitigation System (IOTHMIS).</p> <p>1. TSUNAMI SOURCE INFORMATION IOTHMIS-TSP AUSTRALIA has detected a volcanic eruption at Ruang with the following details:</p> <p>Date: 29 Apr 2024 Origin Time: 1835 UTC Latitude: 2.31N Longitude: 125.36E Location: TALAUD ISLANDS, INDONESIA</p> <p>2. EVALUATION Based on a tsunami travel time threat assessment, there is NO THREAT to countries in the Indian Ocean.</p> <p>3. ADVICE This bulletin is being issued as advice. Only national/state/local authorities and disaster management officers have the authority to make decisions regarding the official threat and warning status in their coastal areas and any action to be taken in response.</p> <p>4. UPDATES No further bulletins will be issued by IOTHMIS-TSP AUSTRALIA for this event unless other information becomes available.</p> <p>Other IOTHMIS-TSPs may issue additional information at: IOTHMIS-TSP INDIA: http://www.incois.gov.in/Incois/tsunami/eqevents.jsp IOTHMIS-TSP INDONESIA: http://rtsp.bmkg.go.id</p> <p>5. CONTACT INFORMATION IOTHMIS-TSP AUSTRALIA Joint Australian Tsunami Warning Centre (JATWC) Bureau of Meteorology GPO BOX 1289 Melbourne, Victoria, Australia, 3001 http://reg.bom.gov.au/tsunami/rtsp</p> <p>END OF BULLETIN</p> <p>-----</p>						

JATWC Training and Competency Developments

The Bureau-JATWC has upgraded its training and competency package and implementation guide.

The Bureau and GA have provided support for the NTWC Minimum Staff Competency Training Pilot and WG-PICT Task Team Capacity Development.



Tsunami Science - Generation

Learning Outcomes - Generation

After completing this topic, you will be able to:

- 1 List the known causes of tsunamis
- 2 Describe how undersea earthquakes along fault lines cause tsunamis
- 3 Describe four fault line types and where each type is found around Australia
- 4 Name three rupture types and identify which types have a greater potential to be tsunamigenic
- 5 Define and explain hypocentre, epicentre and centroid
- 6 Explain why a magnitude difference of 1 corresponds to an energy release difference of 32 times
- 7 Describe how earthquake intensity is determined and why it is useful
- 8 Explain how earthquake depth affects the potential for tsunamis to be generated

Tsunami Science - Impact

Overview 01/10

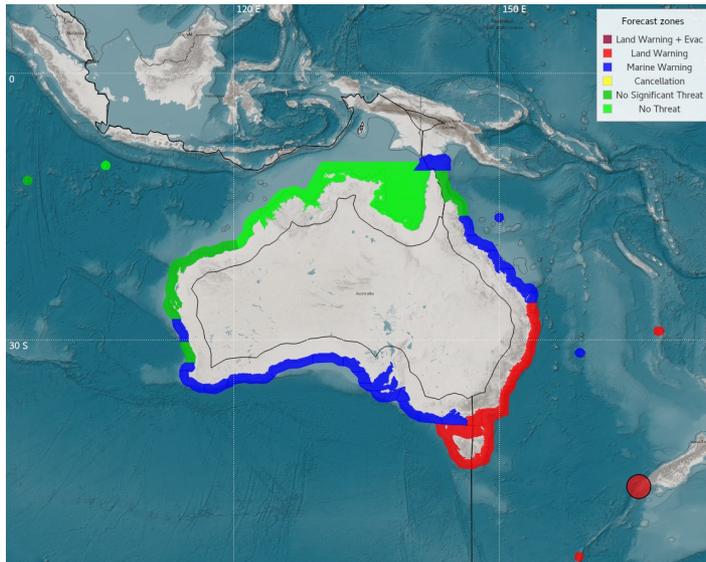
Select the statement that correctly describes tsunami behaviour as they move into **shallow water**

- As tsunamis move into shallow water they **speed up**, their amplitude **increases** and their wavelength **increases**. This process is known as **run up**.
- As tsunamis move into shallow water they **slow down**, their amplitude **increases** and their wavelength **decreases**. This process is known as **shoaling**.
- As tsunamis move into shallow water they **slow down**, their amplitude **decreases** and their wavelength **decreases**. This process is known as **surging**.
- As tsunamis move into shallow water they **slow down**, their amplitude **decreases** and their wavelength **increases**. This process is known as **shoaling**.

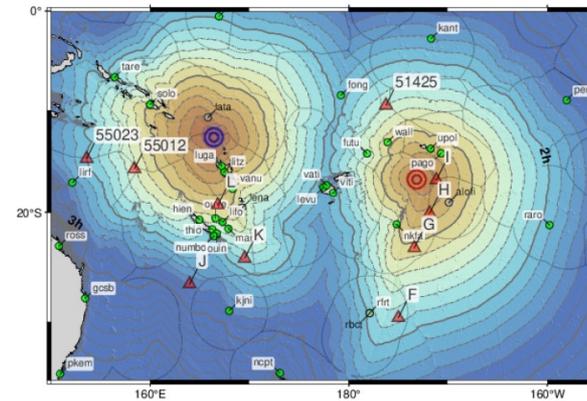
SUBMIT

PACWAVE24

- National Tsunami Warning System - ATWS was successfully exercised on 23 October 2024 with TOAST and supporting applications performing well.
- PICTS (Pacific Island Countries and Territories) Regional exercise on 5 November focused on data sharing and trialled the use of slack for data sharing with multiple channels set up for different types of data.



	Origin Time	Source location	Final magnitude
Event 1	23:00 UTC 11/04	Vanuatu / Solomon 12.69°S, 166.40°E	Mw 8.8
Event 2	23:15 UTC 11/04	Samoa / Tonga 16.839°S, 173.168°W	Mw 8.9



Future Developments

GA-JATWC will upgrade to SeisComP6.

Bureau-JATWC has plans for several minor TOAST updates.

Projects under way at a few States/Territories on the tsunami inundation modelling and mapping, for both seismic and non-seismic tsunami sources.

The [Australian Warning System](#) (AWS). AWS is being nationally rolled out, to be implemented by State/Territory emergency services for all-hazards including tsunami.

[National Messaging System](#). The system is built on the cell-broadcast technology, to be fully operational by mid-late 2027. It will align with the [Australian Warning System](#).



THANK YOU

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