

Tsunami in Australia

The Australian coastline has experienced tsunami through recorded history but most have been small and have presented little threat of land inundation to our coastal communities. Despite this, tsunami are unpredictable and dangerous. A relatively small tsunami may still result in strong rips and currents that can be dangerous to swimmers and other marine users. Sea levels and waves that are higher than normal can endanger coastal users and cause damage to moored boats. In the event of large tsunami travelling in the direction of Australia, there could be extensive inundation of coastal land, serious threat to lives and damage to property.

Since European settlement several large tsunami have reached Australia's coastline. One such event occurred 17 July 2006 when a magnitude 7.7 undersea earthquake south of Java generated a tsunami that affected parts of the northwest WA coast, particularly Steep Point. Waves of up to two metres were recorded with evidence of inundation up to 200 metres inland. This tsunami caused widespread erosion, extreme vegetation damage and destroyed several campsites.



Photo: Paul Dickenson

Campers at Steep Point were lucky to escape when the July 2006 tsunami inundated their beach camp site, picked up their 4WD vehicle and moved it ten metres up the beach. Fish, starfish, corals and sea urchins were also deposited on roads and dunes well above the regular high-tide mark.

Although the more destructive waves did not travel towards Australia during the December 2004 Indian Ocean Tsunami, a half metre tsunami wave passed the Cocos Islands and dangerous rips and currents were experienced on the western and southern coasts of Australia. At least 30 people were rescued after being swept out to sea, some relatively minor land inundation occurred and boats were damaged in marinas. Fortunately no lives were lost.

What are the natural warning signs of tsunami?

The following are natural signs of tsunami that you may, but not always, experience when you are near the coast in Australia or overseas. If you notice any of these warning signs take appropriate action as outlined in this guide.

You may...

Feel the earth shake

A large undersea earthquake may be felt prior to tsunami by an ongoing shaking of the ground in coastal regions. However, you may not feel an earthquake if the source is far away.

See the ocean drop

As tsunami approach the shoreline, the sea level may, but not always recede/drop dramatically before returning as a fast-moving wall of water.

Hear an unusual roaring sound

A roaring sound from the ocean may precede the arrival of tsunami.

In the unlikely event of tsunami being generated directly offshore from our coast, little or no warning may be available for communities initially impacted apart from possible natural warning signs.

Where can I find more information on tsunami?

Bureau of Meteorology

www.bom.gov.au/tsunami

Geoscience Australia

www.ga.gov.au/hazards/tsunami

Emergency Management Australia

www.ema.gov.au/tsunami

Australian State and Territory emergency services

www.ses.nsw.gov.au

www.ses.vic.gov.au

www.emergency.qld.gov.au/ses

www.fesa.wa.gov.au

www.ses.sa.gov.au

www.ses.tas.gov.au

www.ses.act.gov.au

www.emergency.nt.gov.au

Surf Life Saving Australia

www.slsa.asn.au

**For latest tsunami warnings call
1300 TSUNAMI (1300 878 6264)
or visit the Bureau's website
www.bom.gov.au/tsunami**

**For tsunami assistance call SES on 132 500
(or if in Tas or NT police assistance on 131 444).**

For life threatening emergencies call 000.



Australian Government



Tsunami Information for Recreational Marine Users

Produced in conjunction with Australian State and Territory governments.

Do you spend time at the beach or by the water?

If you spend time on or near the beach, swimming, boating, fishing or participating in other recreational marine activities, then please read ahead for some important safety information about tsunami.

Tsunami can pose a risk to all recreational marine users. Tsunami can cause rapid and unpredictable changes in water level, resulting in dangerous rips and currents in harbours, coastal inland waterways and along beaches. Less frequently, tsunami can also result in more serious inundation of coastal land (ie water that overflows onto normally dry land areas), serious threat to lives and damage to property, especially in low lying coastal areas.

Do not attempt to surf tsunami. They are much more dangerous and powerful than normal ocean and wind swell waves.

Tsunami explained

A tsunami is a series of waves travelling across the ocean due to a sudden displacement of a large body of water. This displacement can be caused by events such as undersea earthquakes, landslides, volcanic eruptions or even asteroid impacts. Tsunami are different from wind swell waves on the ocean. Normal ocean and wind swell waves may cause motion in the water to depths of 150 metres. In contrast, the passage of tsunami involve the movement of water all the way to the seafloor.

Tsunami waves move outwards away from their source and may go unnoticed by ships, boats or from the air. As tsunami cross the deep ocean, wave heights may be much less than one metre but speeds can reach up to 950km/hr. Tsunami have extremely long wavelengths – up to hundreds of kilometres between wave crests in the deep ocean.

Depending on how tsunami approach the coastline, they may look like rapidly rising or falling tides or a series of breaking waves. Tsunami will also look and behave differently depending on the shape of the seafloor and coastline. There may be a relatively long time between waves arriving at the coastline and the first wave is not necessarily the largest. The second or third wave is generally larger. As tsunami approach the shore, speed reduces and wave height can grow significantly – up to several metres. It is not so much this movement of water, but the energy moving through it that makes tsunami so dangerous.

How you will be advised of a tsunami warning

Marine and immediate foreshore threat

If you are on or near the beach, swimming, boating, fishing or participating in other recreational marine activities, and a tsunami warning is issued by the Bureau of Meteorology, listen carefully. A tsunami warning may be relayed through Lifeguards, Surf Lifesavers, or emergency authorities via official channels (eg radio, television, sign boards and the internet) and/or unofficial channels (eg face to face or verbal announcement).

The Joint Australian Tsunami Warning Centre (JATWC), jointly operated by the Bureau of Meteorology and Geoscience Australia, detects and verifies any tsunami threat to the coastline of Australia and its offshore territories. Depending on the level of threat determined by the JATWC, the Bureau of Meteorology may issue a tsunami warning (via the radio, television, 1300 TSUNAMI, or the Bureau's website, www.bom.gov.au/tsunami) restricted to the marine environment and immediate foreshore area for parts of the Australian coastline. You will be advised to:

- Get out of the water and move away from the immediate water's edge of harbours, coastal estuaries, rock platforms and beaches.
- Return any boats in harbours, estuaries and in shallow coastal water to shore, then secure your boat and move away from the waterfront.
- Move any vessels already at sea to deep water well offshore and remain there until further advised.
- Not go to the coast or headlands to watch the tsunami.
- Listen to the media for further information and follow the advice from emergency services.
- Check that your neighbours have received this advice.

Land inundation threat

If there is a possibility of more serious inundation of coastal land, the JATWC may extend the tsunami warning for the marine environment and immediate foreshore to a tsunami warning for more extensive land inundation. Advice on the appropriate response is determined in consultation with the relevant State or Territory emergency authority who may order the evacuation of low lying coastal areas. You will be advised to:

- Take only essential items that you can carry including important papers, family photographs and medical needs.
- Go to higher ground or inland. Move away from all beaches and the water's edge of harbours and coastal estuaries.
- Walk to safety if possible to avoid traffic jams.
- Take shelter in the upper storey of a sturdy brick or concrete multi-storey building if you cannot leave the area.

When will I know that the tsunami threat is over?

Tsunami warnings will be cancelled by the JATWC when the main threat is deemed to have passed. The relevant State or Territory emergency authority will inform the public when it is safe to return to the affected area. Caution should still be exercised however, as unusually strong waves, currents and abnormal sea levels may still affect some beaches, harbours and coastal waterways for hours, or even days after, depending on the location.

It is important that you follow the advice contained in these warnings. By reading this guide and responding to advice included in warnings, you can minimise the risk to your safety. Evacuation or exclusion orders are legally enforceable under State/Territory legislation.

