

Introduction to tsunamis

Speed read

- A tsunami is a series of long, high waves that are not regular wind-driven waves.
- Tsunamis are interconnected hazards, which means they are a result of other hazards. Undersea earthquakes, submarine landslides, volcanic eruptions, land or ice slumping into the ocean, meteorite impacts and rapid weather changes can all generate tsunamis.
- Tsunami impacts can vary widely and can have different impacts on people, systems and the environment depending on the size, location and strength of the tsunami.

Key points

- A tsunami is a series of waves. The first wave is often not the largest. Depending on how it was generated, tsunami waves may be observed for a few hours to over 24 hours after the triggering hazard event.
- The most common cause of a tsunami is a large undersea subduction zone earthquake.
- Regular waves are caused by wind and only move the top part of the ocean. A tsunami is different. Tsunamis move all the water from the surface to the ocean floor (see Figure 1).
- Tsunamis are much more destructive than regular wind-driven waves because the huge body of water of a tsunami can continue to rush onto land for an extended period of time.
- Each tsunami is different. The damage caused by tsunamis depends on how it starts, how far it travels, how strong it is and the direction it moves.
- The impacts will also be influenced by other factors such as the landscape near the wave, the infrastructure and the numbers of people living or working in the path of the tsunami.

Key terms

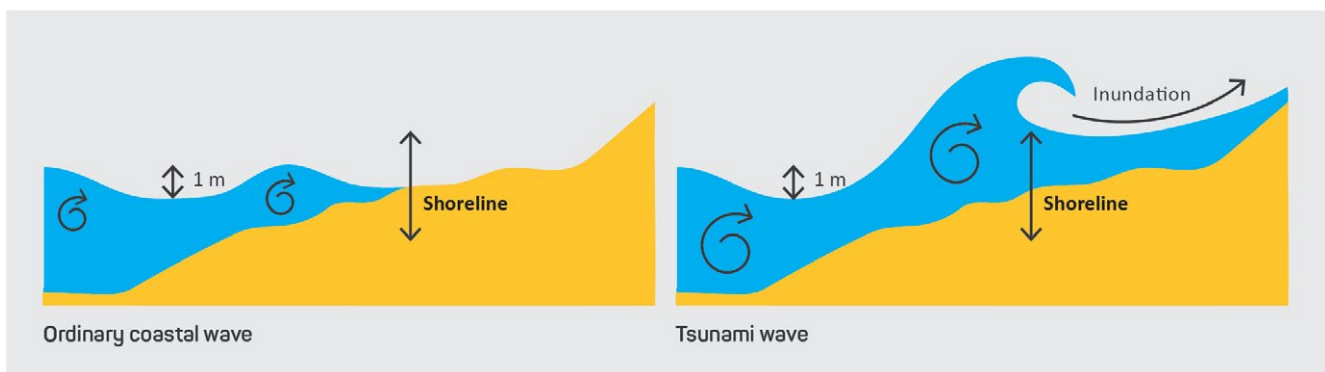


Figure 1: Wave behaviour of a coastal (wind-driven) wave compared to that of a tsunami wave.

Source: National Emergency Management Agency, NZ (2025) Tsunami Evacuation: Director's Guideline for Civil Defence Emergency Management Groups [DGL 08/25].

Quick Guide

Term	Definition
Tsunami	The name tsunami is derived from the Japanese words ‘tsu’ meaning harbour, and ‘nami’ meaning wave. The word tsunami is now used internationally to describe a series of long period, full depth waves travelling across the ocean.
Australian Tsunami Advisory Group (ATAG)	An advisory committee of the Australian-New Zealand Emergency Management Committee, which deals with national tsunami issues, including the implementation of the Australian Tsunami Warning System (ATWS).
Australian Tsunami Warning System	The Australian Tsunami Warning System is an end-to-end tsunami warning and emergency response system. The ATWS involves key national, state and territory partners and organisations in: • earthquake detection • tsunami assessment and warning • emergency response and recovery.
Australian Warning System (AWS)	A nationally consistent multi-hazard warning system for emergency services to use when warning communities of expected consequences and required hazards. The warning system is comprised of warning levels, calls to action, hazard icons, colours, and shapes.
Inundation	Primary source of tsunami risk. Inundation: The wetting of land areas that would otherwise be dry. Maximum inundation: The maximum water depth on land reached by a tsunami. Inundation distance: The maximum distance from the coast reached by a tsunami (or modelled tsunami).
Run-up	The maximum vertical height for locations on land that are above mean sea level, that the sea attains during a tsunami (measured in metres).
Wave amplitude	A measure of half of the wave height from peak-to-trough. It should be recognised that tsunami waves are typically not symmetrical.
Wave height	The vertical distance between the trough and the crest of a wave.
Wavelength	The mean horizontal distance between successive crests or troughs of a wave pattern.
Wave period	The time taken for one wavelength to pass a given point.
Wave propagation	Any of the ways in which waves travel.

Quick Guide

Take action

- Read and watch the videos in Chapter 1 of Tsunami: The Ultimate Guide to find out more about tsunamis.
- Check out the 'Understanding Hazards' Collection on the Australian Disaster Resilience Knowledge Hub.
- Find out what your tsunami risk is.
- Consider how close you are to the ocean and the earthquake activity in your region.
- Consider how close your business or other systems you rely on are to the ocean.
- Use the emergency planning tools and include these in your tsunami preparation.

More information

- [Tsunami Emergency Planning in Australia Handbook](#) (AIDR 2025), Chapter 1 and 2
- [Tsunami: The Ultimate Guide](#)
- [Australian Emergency Management Arrangements](#)
- [Emergency Planning](#)