

TSUNAMI WARNINGS

- A GUIDE FOR MEDIA -

August 2018

NEVER HAPPENS?
HAPPENS



Ministry of Civil Defence
& Emergency Management
Te Rākau Whakamarumarū



Tsunami that affect New Zealand may be generated on, near, or far from our shores.

New Zealand is at risk from tsunami that happen near us, and around the Pacific.

We know from geological evidence that our coasts have experienced many large tsunami before human settlement, and some smaller but still damaging tsunami since people arrived here.

We now live, work and play all along the coast. The likelihood of tsunami is as clear and present as it ever was — we just haven't had any really big ones since New Zealand became a relatively populous country.

Tsunami are unpredictable...

A tsunami is most likely to be caused by an earthquake that moves the sea floor*. No-one can predict exactly when or where earthquakes will happen, and how big they'll be.

We know a lot about specific tsunami source areas around the Pacific that have caused tsunami in the past, including some that run through and near New Zealand.

But events such as the earthquake and tsunami that occurred on 14 November 2016 show us there is still a lot to learn. They also show us that assessments about tsunami threat can change, as more data about the earthquake's characteristics becomes available over time.



Tsunami can also be caused by volcanic activity, underwater landslides, or landslides into water.

...but are also (in a way) predictable.

We know earthquakes happen, and we know some of them will cause tsunami. We also know that some of these future tsunami (regardless of where in the Pacific they may be generated) will affect New Zealand.

Once a tsunami has been confirmed, scientists have the expertise to estimate where and when tsunami activity may affect New Zealand's coasts.

'Tsunami activity' may mean unusual, dangerous swells or currents at beaches and coastal waters. Or, more seriously, it may mean waves that inundate the land.

Given enough time and confirmed data, it's possible to estimate what sort of tsunami activity we can expect. If waves are likely, scientists can estimate a range for how big they might be.

WHO ARE THE SCIENTISTS?



GNS SCIENCE

Our friends at GNS Science (powered by the GeoNet project) examine and review earthquake and tsunami-related data, and determine what it means for New Zealand.

Scientists from other organisations assist GNS Science by participating in the Tsunami Experts' Panel.

REMEMBER

GNS Science are our go-to experts regardless of where tsunami are generated. This is because GNS Science is a New Zealand-based organisation. Only they have the necessary depth and breadth of local scientific knowledge required to make informed estimates of a tsunami's effect on New Zealand.

Information that comes from international agencies (such as the Pacific Tsunami Warning Centre (PTWC)) is always examined as part of the assessment process — but data from international agencies should never be presented as definitive for New Zealand.

WHERE DOES MCDEM FIT IN?

TSUNAMI WARNINGS AND ADVISORIES

The Ministry of Civil Defence & Emergency Management (MCDEM) is the official agency for providing tsunami advisories and warnings.

Using information from our GNS Science partners, we issue these advisories and warnings to regional Civil Defence Emergency Management Groups (CDEM Groups), you (the media), and the public.

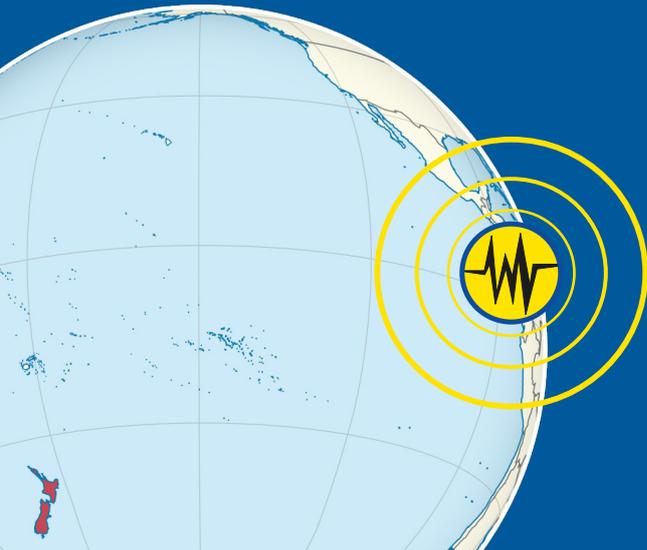
Media will always receive our warnings and advisories via email. We also publish the key info on our Facebook page (www.facebook.com/NZCivilDefence), our @NZCivilDefence Twitter account, and our website.

REMEMBER

Only advisories and warnings issued by MCDEM represent the official threat status for New Zealand, as we use information confirmed by GNS Science.

Information from international agencies (e.g. PTWC, or the United States Geological Survey (USGS)) should never be presented as definitive for New Zealand.

DISTANCE IS EVERYTHING

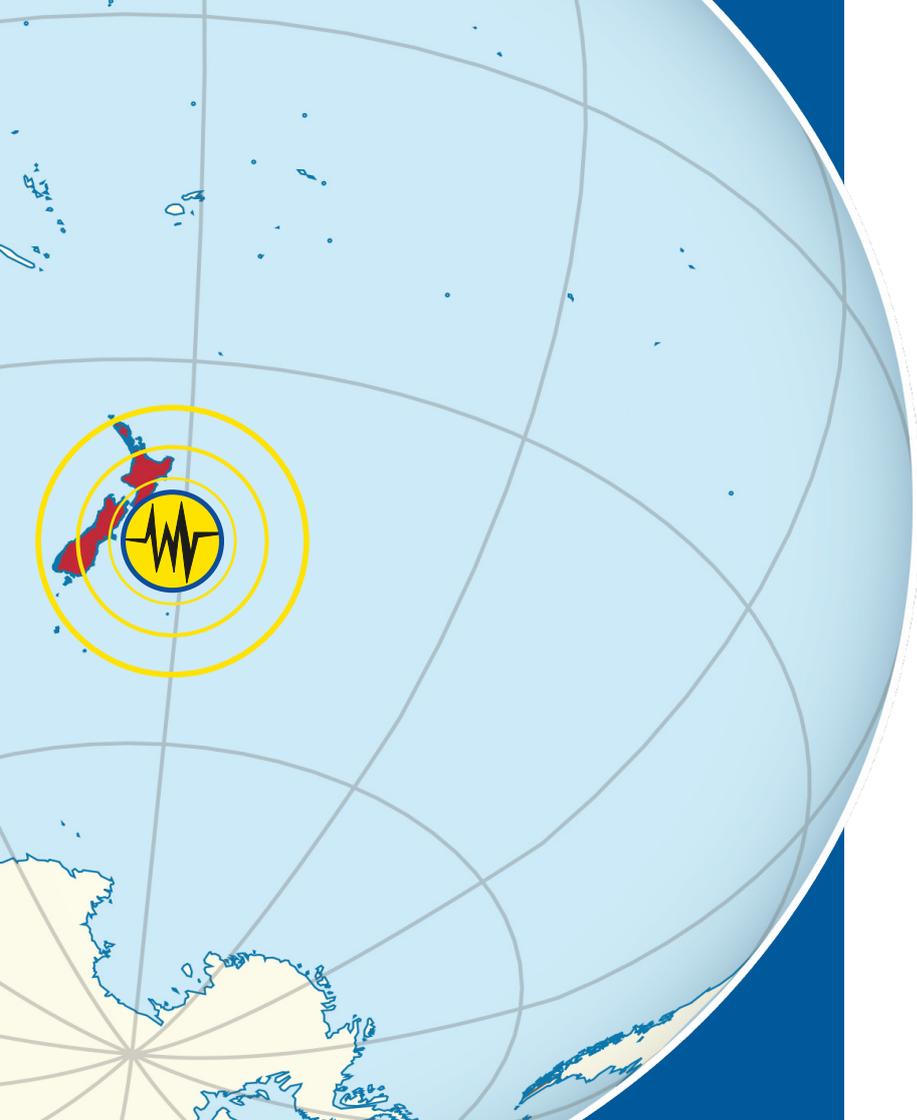


Assessing tsunami activity and providing accurate, timely warnings depends on distance. A tsunami coming from far away gives GNS Science time to gather confirmed data and assess the tsunami's characteristics. The more distant the tsunami's origin, the more time they have to assess it, and the more accurate that assessment will be.

If the tsunami's origin is far from New Zealand:

- GNS Science have time to assess
- Assessments are based on confirmed data
- MCDEM can issue more refined advice
- Communities have time to prepare and act

UNFORTUNATELY, THE INVERSE IS ALSO TRUE.



IF THE TSUNAMI'S ORIGIN IS CLOSE TO NEW ZEALAND...

- a tsunami could arrive within minutes
- communities must act immediately
- GNS Science may not have enough time to assess the threat before the first waves arrive
- MCDEM may not have enough time to issue an official warning before the first waves arrive.

HENCE: LONG OR STRONG, GET GONE.

If an earthquake is LONG or STRONG, move immediately to the nearest high ground, or as far inland as possible. Don't wait for an official warning.

“Long or Strong, Get Gone” is the best advice for people near the coast after a large, strongly-felt earthquake.

We encourage media to share the “Long or Strong, Get Gone” message with audiences if an earthquake of this sort occurs, even if no detailed information is yet available.

**IF AN EARTHQUAKE IS
LONG
OR
STRONG
GET GONE**

A white line representing a seismic wave, consisting of several small peaks and troughs, positioned between the words 'STRONG' and 'GET GONE'.

**MOVE IMMEDIATELY TO THE NEAREST
HIGH GROUND OR AS FAR INLAND AS POSSIBLE.
DON'T WAIT FOR AN OFFICIAL TSUNAMI WARNING.**



TSUNAMI SOURCES

WHAT IS A LOCAL-SOURCE TSUNAMI?

A local-source tsunami is one that is generated close to New Zealand's coastline.

Scientific information for a local-source tsunami is often uncertain at first. It takes time to assess whether a tsunami has been generated, so there may not be time for an official warning. If people experience the natural warning signs, they need to act immediately — that's why it's all about "Long or Strong, Get Gone".

It's important to remember that, in a local-source situation, New Zealand communities may have experienced the primary effects of the earthquake. This means there may be injuries and damage to buildings. It also means roads, bridges, power supplies, and communications networks may have been affected.

Local-source tsunami may also be caused by volcanic activity, underwater landslides, or landslides into water.

WHAT IS A REGIONAL OR DISTANT-SOURCE TSUNAMI?

A regional or distant-source tsunami is one that is generated at least one hour's travel time from New Zealand.

In a regional or distant-source situation, New Zealand communities are likely to have been spared the primary effects of the earthquake. Although the tsunami itself may be dangerous and destructive, there will be some time to warn people before the first waves arrive.

The warning process and the messages we send are different for local-source tsunami and tsunami from further away (regional and distant-source tsunami).

Regardless, you can help us save lives by sharing the right messages with your audiences.

OUR PROCESS

REGIONAL AND DISTANT-SOURCE TSUNAMI

1 New Zealand receives **notification** of a possible tsunami threat from the Pacific Tsunami Warning Centre (PTWC). This notification goes directly to MCDEM and GNS Science.

2 MCDEM will rapidly send out a “**Large Pacific Earthquake Being Assessed**” advisory to CDEM Groups and the media, to let everyone know we are checking whether there is a threat to New Zealand. Remember that this advisory is not the same as confirmation of a tsunami threat for New Zealand.

3 GNS Science tsunami experts review the available information to determine what it means for New Zealand. This will include looking at tsunami modelling to help determine the most likely scenario.

4 GNS Science determines the severity of the threat and informs MCDEM. **MCDEM issues an advisory or warning based on this.** If/when available, a threat map may accompany a warning, or follow it in a later update.

National Warning: LAND AND MARINE THREAT

Tsunami waves are expected to affect the land. A Land and Marine Threat means that evacuations will be required.

National Warning: BEACH AND MARINE THREAT

The tsunami is likely to cause dangerous and unpredictable currents around our coasts. People should stay off beaches and out of the water.

National Advisory: NO THREAT TO NEW ZEALAND

There is no threat to our coasts.

5 For regional and distant source tsunami, there is more time for **assessment of possible local impacts.** CDEM Groups are responsible for advising which local areas or zones should be evacuated in their regions (land and marine threat), or which marine areas and coasts are off limits (beach and marine threat). They will advise the media and the public.

6 If either type of warning is issued, it will remain in effect until GNS Science advises that the threat has passed. This may take as long as 24 hours, as **tsunami waves and currents can be dangerous long after the first waves arrive.** When MCDEM receives this confirmation, we issue a “Tsunami Warning for New Zealand Cancelled” message.

REMEMBER

PLEASE SHARE OUR MESSAGES

Please share the messages we issue through all your channels as quickly as you can. We want to reach as many people as possible. Remember that information from international agencies (including PTWC) should not be presented as definitive for New Zealand. If the situation is serious enough we will officially request our broadcast media partners (who are identified in our MOU with broadcasters) to broadcast the emergency information at regular intervals until we issue a cancellation.

LAND AND MARINE THREATS

Land and marine threats are as serious as our warnings get. A land and marine threat means that tsunami waves are coming, and will reach inland. A Land and Marine Threat will usually mean evacuation for at least some areas.

Always remember that the first tsunami waves may not be the largest.

BEACH AND MARINE THREATS

Beach and marine threats are unlikely to require any evacuations (besides getting people off beaches). Unpredictable currents and swells are obviously dangerous for people in or on beaches and coastal waters, but people on dry land don't need to worry about waves reaching them.

It's extremely important that we get the 'beach and marine threat' information out there, but generally this type of threat should be positioned as 'low risk' for anyone not actually in the water or at the beach.

TIMING

Some tsunami warnings may have a long lead-in time, i.e. it may be as much as 12 hours before tsunami activity affects our coasts.

This means communities need to be absolutely clear about **timing**, as well as the appropriate safety advice. For example, if we know at 8pm in the evening that 'beach and marine threat' tsunami activity is due to begin at 6am the next morning, this information needs to be shared ASAP and throughout the evening, to ensure that anyone who's going to be on the water the next day can cancel their plans.

FOR LOCAL EVACUATION INFORMATION, ASK LOCALLY

MCDEM can only ever identify very broad areas for evacuation. We can't issue evacuation advice for specific locations. CDEM Groups and local councils will have the information about which tsunami zones are being evacuated in their areas of responsibility, or which specific coastal areas are off limits.

INFORMATION CAN CHANGE

GNS Science experts make their determinations based on the data available at the time. But information develops, and situations can change. Thankfully, in a regional or distant-source situation, there should be enough time to recalibrate and issue revised advice.

WHEN WE KNOW, YOU'LL KNOW

Information becomes clearer, more reliable, and more specific as time passes. Bottom line — once we have confirmed information, we will give it to you straight away.

OUR PROCESS

LOCAL-SOURCE TSUNAMI

1

A **very large earthquake** near the coast (or, less likely, an offshore volcanic eruption/landslide) happens. We won't know whether a tsunami has been generated until coastal instruments detect waves, or people see tsunami waves.

2

Anyone near the coast who feels the earthquake **LONG** (more than 1 minute) or **STRONG** (hard to stand up), or sees or hears unusual ocean behaviour must evacuate immediately.

We don't want anyone to wait for an official warning of any kind. IF IN DOUBT, GO. These will always be the key messages for local-source tsunami, regardless of any new systems or technology the future brings.

3

MCDEM issues a National Warning or Advisory based on available data.

National Warning: TSUNAMI THREAT

If the earthquake is very large, and/or located near a known dangerous tsunami source (off the East Coast of the North Island), **MCDEM will issue a "National Warning: Tsunami Threat" stating "Long OR Strong, Get Gone"**.

We may send this warning before GNS Science can provide a detailed assessment — even if we don't know whether a tsunami has been generated. This first warning may arrive after the first waves.

Our tsunami warning may have a **map attached, which indicates broad areas for evacuation**. These maps are prepared based on modelling.

National Advisory: NO TSUNAMI THREAT TO NEW ZEALAND

If GNS Science determines there's no threat to our coasts, MCDEM issues a "No tsunami threat for New Zealand" advisory. Bear in mind that communities may be dealing with the earthquake's aftermath, including possibly severe damage and aftershocks. MCDEM will be working with CDEM Groups to figure out what the situation is on the ground, and what help is needed.

4

If MCDEM issues a tsunami threat, **CDEM Groups may advise which areas or zones should be evacuated** in their regions. Note that (because this is local-source) they may not have time to do this before the first waves arrive.

5

Information becomes clearer, more reliable, and more specific as time passes. GNS Science will continuously assess the threat, and MCDEM will keep updating the warning status with the latest information until the tsunami warning is cancelled.

REMEMBER

LOCAL-SOURCE TSUNAMI ARE A BIG DEAL

Local-source tsunami can arrive within minutes at areas closest to the source, and New Zealand has some local tsunami sources (e.g. the Hikurangi Trench) that can produce very large, life threatening tsunami.

TSUNAMI EVACUATION WARNING MAPS ARE BROAD INDICATORS

The maps indicating evacuation areas we may issue for a local-source tsunami warning are conservative. They show black areas which MCDEM advises should be evacuated immediately, and shaded areas which are under assessment (noting that 'Long or Strong, Get Gone' still applies to all areas — both black and shaded).

In issuing these maps, there's always a risk of overstating the threat to some areas. But in these situations, we only have preliminary data to go on (if any), and we just can't afford the time it takes refine the advice.

THE CHALLENGE FOR GNS SCIENCE AND MCDEM

Local-source tsunami are challenging. We have to make rapid decisions in highly uncertain situations. Instruments can detect earthquakes, but cannot confirm whether a tsunami has been generated until waves hit the coastal tsunami gauges.

It can also be difficult for scientists to determine the exact location and size of very large earthquakes in the first few minutes, because the shaking can overwhelm monitoring instruments. We need a scientist to interpret the data and make sense of it. This takes time.

WE NEED THE MEDIA MORE THAN EVER

If there's a large earthquake that looks like it's in local-source tsunami territory (due to its magnitude and location), we need you to help us keep people safe.



The best things you can do to help us are:

1. Push the "Long or Strong, Get Gone" message.
2. Keep watching your email and MCDEM's website and social media accounts. That's where the latest, official information will be sent when it is ready.
3. Publish and share our messages through all the channels you have. This includes tsunami maps.
4. Remember that our officials will be 100 per cent focused on issuing safety messages and assessing the ongoing threat. Please be understanding if we can't grant you requests for information and interviews right away. Rest assured, all we know (and all the information you'll need during the initial stages of the event) will be appearing ASAP in your email and on our social media.

**NOTHING WILL
EVER BEAT
'LONG OR
STRONG, GET
GONE'**

THERE'S NO SILVER BULLET...

No single process or piece of technology will ever be able to provide a 100 per cent failsafe way to warn the public about local-source tsunami.

An effective overall warning system involves many people and many tools. GNS Science, MCDEM, and CDEM Groups work constantly to build knowledge of tsunami, develop modelling and tools, enhance processes, and improve warning messages.

...BUT THERE IS A GOLDEN RULE

No matter what systems or technology we develop, nothing will ever beat this golden advice for a local-source tsunami:

Long or Strong, Get Gone.

Anyone near the coast who feels the earthquake LONG (more than 1 minute) or STRONG (hard to stand up), or sees or hears unusual ocean behaviour must evacuate immediately.

If people know and understand 'Long or Strong, Get Gone', it won't matter if the earthquake has knocked out the cell towers, or cut power to tsunami sirens.

People in the areas most likely to be affected by the tsunami - i.e. those areas where the earthquake was felt LONG or STRONG - will know exactly what to do.

MORE INFO



PLANNING FOR EMERGENCIES AND BEING PREPARED

www.happens.nz
www.getthru.govt.nz

HOW TO CONTACT CDEM GROUPS

www.civildefence.govt.nz/find-your-civil-defence-group

ABOUT CDEM

www.civildefence.govt.nz/cdem-sector/cdem-framework/guide-to-the-national-civil-defence-emergency-management-plan

ALL ABOUT TSUNAMI

<http://www.civildefence.govt.nz/get-tsunami-ready>

<http://www.civildefence.govt.nz/cdem-sector/cdem-framework/guidelines/national-tsunami-advisory-and-warning-plan>

TSUNAMI ZONES

<http://www.civildefence.govt.nz/get-tsunami-ready/#maps>

MOU WITH BROADCASTERS

<http://www.civildefence.govt.nz/media/memoranda-of-understanding-mou-with-radio-and-tv-broadcasters>

WHO TO CONTACT

www.civildefence.govt.nz/media/local-regional-media-contact-information







THANK YOU

for helping us keep New Zealanders safe.



Ministry of Civil Defence
& Emergency Management
Te Rākau Whakamarumarū