

Earthquakes

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Around twenty thousand earthquakes are recorded each year in and around New Zealand, but only about 250 of these are felt. Earthquakes are caused when the stresses of plate tectonics break the rocks of the crust (a sudden movement). If the break reaches the surface a [fault](#) [3]line is created.

There are thousands of earthquakes in New Zealand every year. Most are too small to be felt. Earthquakes happen when rocks suddenly break. If the break reaches the surface a [fault](#) [3]line is created.

Faults

A fault is a break in the rocks that make up the Earth's crust, along which rocks on either side have moved past each other. Sometimes the blocks of rock on either side of a fault suddenly shift to a new position in just a few seconds. This sudden release of energy sends out waves, which are felt on the surface as an earthquake. The strength of the earthquake depends on the area of fault that has shifted and the amount of movement. A small area and small movement creates a small earthquake.



Where are the fault lines in New Zealand?

I wonder if there are fault lines that haven't been discovered yet.

Seismic waves

The place where a fault ruptures is called the focus or origin, and the point directly above on the Earth's surface is called the epicentre. The energy released by a fault movement radiates outwards as seismic waves, or shock waves.

Earthquakes in Māori tradition

For centuries before Europeans arrived, Māori had experienced rū whenua which means 'the shaking of the land'. According to Māori tradition, earthquakes are caused by the god Rūaumoko (or Rūamoko), the son of Ranginui (the Sky) and his wife Papatūānuku (the Earth).

Rangi had been separated from Papa, and his tears had flooded the land. Their sons resolved to turn their mother face downwards, so that she and Rangi would not see one another's sorrow and grieve more. When Papatūānuku was turned over, Rūaumoko was still at her side and was carried to the world below. To keep him warm there he was given fire. He is the god of earthquakes and volcanoes, and the rumblings that disturb the land are made by him as he walks about.

Anywhere in New Zealand

All of New Zealand is prone to earthquakes. However, there is a variation in the level of earthquake activity across the country. Wellington is one of the most active of New Zealand's seismic regions and Auckland one of the least active. Large earthquakes can still happen in regions with lower activity. This is best illustrated by the recent events in Christchurch.

Most of New Zealand's seismic activity, including its major historic earthquakes, occurs within a broad zone of deformation (about 100km wide) that runs along the plate boundary from offshore East Cape to Fiordland.

What can we expect in the future?

Based on its seismic history, New Zealand should experience 50 magnitude 5 earthquakes and two magnitude 6 earthquakes each year, four magnitude 7





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earthquakes per decade, and a magnitude 8+ earthquake every century. However, earthquakes are not evenly spread over time and they often occur in clusters. A damaging earthquake could happen at any time. At least 25 per cent of the population is expected to experience shaking great enough to damage household contents and buildings in the next 50 years.







BEFORE:

-  Practice your earthquake drill: **DROP, COVER AND HOLD.**
-  Talk with your family and prepare an emergency plan.
-  Identify safe places close to you at home or school.
-  Get your parents to 'Fix, Fasten and Forget' items at home.



DURING:

-  **DROP, COVER AND HOLD.**
-  Stay where you are until the shaking stops.
-  If inside remain inside, if outside stay outside.
-  Do not attempt to run outside.



AFTER:

-  Listen to and follow all instructions from adults or the radio.
-  Stay calm.
-  If you can, help others who may need it.
-  Watch out for possible dangers or hazards.
-  Remember there may be some aftershocks.
-  Remember your prepared action plan and follow it if it is safe to do so.

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[4]

Faults

A fault is a break in the rocks that make up the Earth's crust, along which rocks on either side have moved past each other. Sometimes the blocks of rock on either side of a fault shift to a new position in just a few seconds. This sudden release of energy sends out seismic waves, or shock waves. These waves are felt as an earthquake.

Where are the fault lines in New Zealand?

I wonder if there are fault lines that haven't been discovered yet.

Earthquakes in Māori tradition

Long before Europeans arrived, Māori had felt rū whenua which means 'the shaking of the land'. In Māori tradition, earthquakes are caused by the god Rūaumoko, the son of Ranginui (the Sky) and his wife Papatūānuku (the Earth).

Rangi had been separated from Papa, and his tears had flooded the land. Their sons tried to turn their mother face down, so that she and Rangi would not see one another's sorrow. When Papatūānuku was turned over, Rūaumoko was still at her side and was carried to the world below. To keep him warm he was given fire. He is the god of earthquakes and volcanoes, and the rumblings of the land are made by him as he walks about.

Anywhere in New Zealand

A large earthquake could happen anywhere in New Zealand. But some areas have more than others. Wellington is one of the most active earthquake regions and Auckland one of the least active. Large earthquakes can still happen in regions with lower activity. This is best seen by the recent events in Christchurch.

What can we expect in the future?





Based on history, New Zealand should have:

- 50 magnitude 5 earthquakes each year
- two magnitude 6 earthquakes each year
- four magnitude 7 earthquakes per decade
- a magnitude 8+ earthquake every century.

But earthquakes are not evenly spread over time and they often occur in clusters. A damaging earthquake could happen at any time.







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[4]

Māori keywords:

Audio Māori keywords:

- [Rūaumoko - god of earthquakes and volcanoes](#) [5]
- [Ranginui - Sky father](#) [6]
- [Papatūānuku - Earth mother](#) [7]
- [rū whakawhiti - seismic wave](#) [8]

Samoan keywords:

Atua o mafui'e ma mauga mu	God of earthquakes and volcanoes
Tamā o le Lagi	Sky Father
Tinā o le Eleele	Earth Mother

Tongan keywords:

Tamai 'o e LangiSky Father Fa'ee 'o e fonuaEarth Mother

Cook Islands Maori keywords:

ngaruerue enua	God of earthquakes and volcanoes
Ātea	Sky Father
Papa	Earth Mother
ngaru ākaki / tai akakī	seismic wave

Niuean keywords:

TagaloaGod of earthquakes and volcanoes TagaloaSky Father TagaloaEarth Mother

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[Check out the GeoNet recent earthquakes webpage](#) [9] to see if there have been any earthquakes today and where they were centred.

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[10]

Earthquakes happen in New Zealand every day but are usually too small to be felt. Some earthquakes, however, are large and have caused serious damage to property and even injured or killed people. Image: GNS Science.

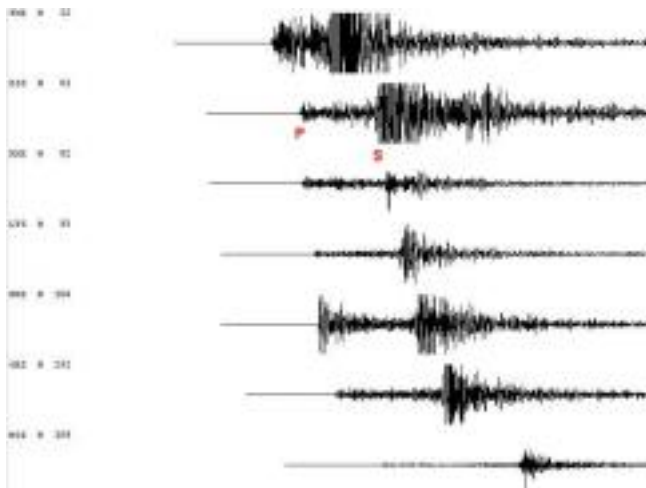


[11]

Shallow earthquakes usually break to the Earth's surface to create faults. Image: Geological & Nuclear Sciences - Lincoln University.

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[12]

The energy released by a fault movement radiates outwards as seismic waves. Image: GNS Science.



[13]

The 22 February, Christchurch earthquake caused a lot of damage and tested people's preparedness. Image: LEARNZ.

Source URL: <http://learnz.org.nz/node/1576>

Links

- [1] <http://learnz.org.nz/sites/learnz.org.nz/files/std-earthquakes.mp3?uuid=5f2a86d854111>
- [2] <http://learnz.org.nz/sites/learnz.org.nz/files/easy-earthquakes.mp3?uuid=5f2a86d853b51>
- [3] <http://www.learnz.org.nz/shakeout154/glossary#fault>
- [4] <http://activities.learnz.org.nz/wp164/wp164-a02-earthquakes/quiz.html>
- [5] http://learnz.org.nz/sites/learnz.org.nz/files/ruaumoko_2_0.mp3?uuid=5f2a86d85425c
- [6]

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http://learnz.org.nz/sites/learnz.org.nz/files/ranginui_1_0.mp3?uuid=5f2a86d85435f

[7] http://learnz.org.nz/sites/learnz.org.nz/files/papatuanuku_3_0.mp3?uuid=5f2a86d854459

[8] http://learnz.org.nz/sites/learnz.org.nz/files/ru-whakawhiti_0.mp3?uuid=5f2a86d85454f

[9] <http://www.geonet.org.nz/>

[10] <http://learnz.org.nz/sites/learnz.org.nz/files/bg-earthquakes-01.jpg>

[11] <http://learnz.org.nz/sites/learnz.org.nz/files/bg-earthquakes-02.jpg>

[12] <http://learnz.org.nz/sites/learnz.org.nz/files/bg-earthquakes-03.jpg>

[13] <http://learnz.org.nz/sites/learnz.org.nz/files/bg-earthquakes-05.jpg>