

GNS Science Geological Hazard Alert Service

Introduction

GNS Science locates significant earthquakes and monitors volcanic activity in the New Zealand region around the clock.

The geological hazard monitoring networks are operated through the GeoNet project and funded by the Earthquake Commission. These networks facilitate the rapid location and assessment of significant earthquakes and the monitoring of volcanic activity.

When larger earthquakes occur we can make accurate estimates of location and magnitude, together with an indication of damage potential, within one hour.

Changes in volcanic activity are also assessed in near real time and are also reported rapidly when an eruption occurs.

GNS Science operates two Geohazards Duty Teams at Wellington and Taupo, with the Duty Officers providing information and advice about earthquake and volcanic activity.

Alert mechanisms

GNS Science can provide critical information about earthquake and volcanic events for your organisation; these are available via a variety of methods outlined below:

- **SMS and Pager (earthquake only):** a short message describing the location and magnitude of an earthquake can be sent to subscribers; an estimate of the Modified Mercalli Intensity (MMI) at the epicentre is also given. Transmission of messages can be restricted by area and magnitude thresholds.
- **Facsimile (volcano, earthquake):** for earthquakes, an isoseismal map showing the location and magnitude of an earthquake, together with contours depicting the expected shaking on the Modified Mercalli Intensity scale, can be faxed to subscribers. Transmission of faxes can be restricted by a magnitude or MMI threshold (or both), or by expected MMI shaking at a particular location. For volcanoes, a Volcanic Alert Bulletin is faxed.
- **Email (volcano, earthquake):** for earthquakes, an email message describing the location and magnitude can be sent to subscribers. Transmission of messages can be restricted by area and magnitude thresholds. For volcanoes, a Volcanic Alert Bulletin is emailed. Ideally an organisation will set up an internal distribution list so that maintenance of subscribers is handled locally.

GNS Science recommends a pager is used where it is critical to receive a notification due to the possibility of overloading on the cellphone networks or loss of internet connectivity after a damaging event.

The hazard alert information is also posted to the GeoNet web site at www.geonet.org.nz, which is hosted on multiple servers in New Zealand and overseas. The web servers are designed to cope with sudden peaks of demand such

as are experienced immediately after a widely-felt earthquake or during an eruption episode. They also provide access for the general public to event information and act as a backup should the recipient fail to receive alerts.

Consultation and advice

During normal office hours there are a number of staff on hand to help with enquiries about earthquake and volcanic activity. Out of office hours an answering service handles this and the caller can ask to be put through to the Geohazards Duty Officer. If the Duty Officer is busy, as is likely following a significant event, they may request the answering service to re-direct calls to other Duty Team members. The answering service will log the call and take the number of the caller; the Duty Officer or a colleague will call back as and when they are able.

The GNS Science Duty Officer(s) may be contacted at any time on:

- **(04) 570 1444 (Wellington) - please ask for the “Geohazards Duty Officer”**
- **(07) 374 8211 (Taupo) - please ask for the “Geohazards Duty Officer”**

Scale of charges

Mechanism	Charge
SMS and Pager	\$30 per month per cellphone or pager ID
Facsimile	\$95 per month per telephone number
Email	\$10 per month per email address

These charges may be waived solely at the discretion of GNS Science.

Amendments to existing subscribers

Amendment requests should be emailed to **info@geonet.org.nz**.

New subscribers should return forms to

**GeoNet Data Centre
GNS Science
PO Box 30-368
Avalon
Lower Hutt 5040**

Fax: (04) 570 4676

Email: info@geonet.org.nz

Earthquake Alert Service: Application Form
(please complete one for each recipient)



Contact details

Name: _____

Job title: _____

Organisation: _____

Work location: _____

Email address: _____

Work telephone number: _____

Mobile telephone number: _____

Signature: _____ Date: _____

Methods of alert

Please mark the boxes and provide further information where indicated:

- SMS alert** to mobile phone number _____ *(please specify)*
- ALL**
- OR**
- Greater than **Modified Mercalli Intensity** ____ at **latitude** _____, **longitude** _____
(please specify)
- OR**
- Greater than **Richter magnitude** ____ *(please specify)*
- Greater than **Modified Mercalli Intensity** ____ *(please specify)*
- Between **latitudes** _____ and _____, **longitudes** _____ and _____ *(please specify)*
- Pager alert** to pager network ID _____ *(please specify)*
- ALL**
- OR**
- Greater than **Modified Mercalli Intensity** ____ at **latitude** _____, **longitude** _____
(please specify)
- OR**
- Greater than **Richter magnitude** ____ *(please specify)*
- Greater than **Modified Mercalli Intensity** ____ *(please specify)*
- Between **latitudes** _____ and _____, **longitudes** _____ and _____ *(please specify)*
- Email alert** to email address _____ *(please specify)*
- ALL**
- OR**
- Greater than **Modified Mercalli Intensity** ____ at **latitude** _____, **longitude** _____
(please specify)
- OR**
- Greater than **Richter magnitude** ____ *(please specify)*
- Greater than **Modified Mercalli Intensity** ____ *(please specify)*
- Between **latitudes** _____ and _____, **longitudes** _____ and _____ *(please specify)*

Facsimile alert to phone number _____ (*please specify*)

ALL

OR

Greater than **Modified Mercalli Intensity** ____ at **latitude** _____, **longitude** _____

OR

(*please specify*)

Greater than **Richter magnitude** ____ (*please specify*)

Greater than **Modified Mercalli Intensity** ____ (*please specify*)

NB. Latitude and longitude box not available for facsimile

Guidance for the Earthquake Alert Service

The Richter magnitude defines a scale for the amount of energy released by an earthquake. For every increase of a unit of magnitude there is a corresponding 30 times increase in energy released. So a magnitude 8 event releases 900 times more energy than a magnitude 6 event.

An earthquake of Richter magnitude 6 located 150 km below the surface will be noticed by many people, but it will not cause any significant damage. The same event located 5 km below the surface will cause major damage as it is so much closer to people, buildings and their environment. The Modified Mercalli Intensity (MMI) scale grades the impact of an earthquake on people living on the earth's surface, and so can be more useful as an indicator of the earthquake's significance to the community.

Earthquake studies in New Zealand have yielded a relationship between instrumentally recorded ground shaking and the MMI scale. The model is necessarily simple but is useful in estimating possible damaging effects before actual reports are received from the affected areas.

The New Zealand Modified Mercalli Intensity scale has grades from 1 to 12, but for simplicity, the following thresholds are significant:

MMI threshold	Description
4	felt by most people indoors, but not damaging
6	felt by all people, some minor damage to property and contents
8	general alarm, significant structural damage can occur

**Volcanic Alert Service: Application Form
(please complete one for each recipient)**



Contact details

Name: _____

Job title: _____

Organisation: _____

Work location: _____

Email address: _____

Work telephone number: _____

Mobile telephone number: _____

Signature: _____ Date: _____

Methods of alert

Please mark the boxes and provide further information where indicated:

Facsimile to phone number _____ (*please specify*)

ALL Volcanic Alert Bulletins

OR

Only Volcanic Alert Bulletins from:

- Kermadecs** (Raoul Island)
- Auckland, Northland**
- Bay of Plenty** (Mayor Island, White Island, Okataina, Rotorua)
- Taupo**
- Tongariro National Park** (Ruapehu, Ngauruhoe, Tongariro)
- Taranaki / Egmont**

Email to email address _____ (*please specify*)

ALL Volcanic Alert Bulletins

OR

Only Volcanic Alert Bulletins from:

- Kermadecs** (Raoul Island)
- Auckland, Northland**
- Bay of Plenty** (Mayor Island, White Island, Okataina, Rotorua)
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- Tongariro National Park** (Ruapehu, Ngauruhoe, Tongariro)
- Taranaki / Egmont**