

GeoNet

Monitoring New Zealand's Natural Hazards



Brad Scott
Sara Page
GNS Science

2009 National Lifelines Forum



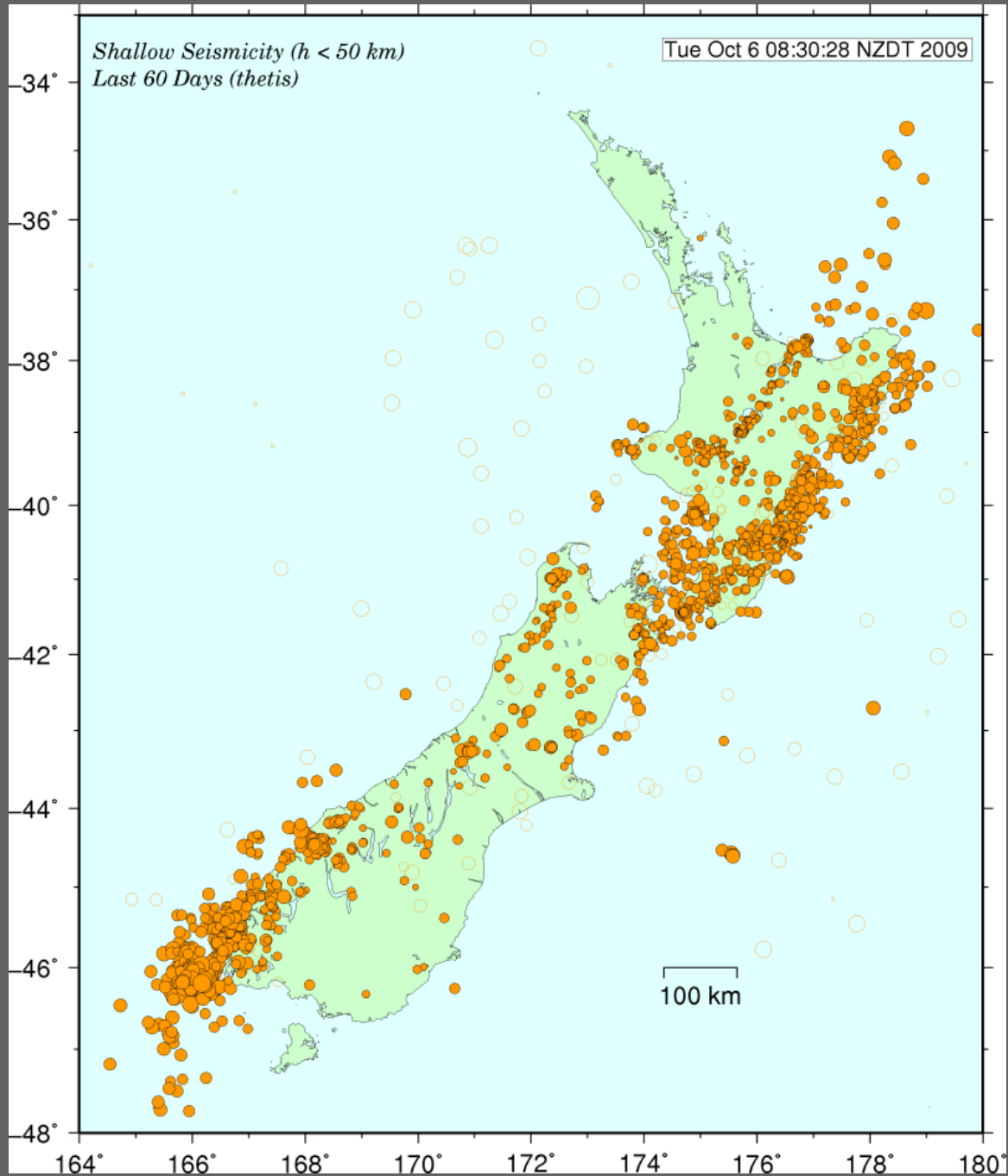
What does GeoNet do?

- Runs a national system to *monitor* and *collect data* for research of geological hazards in New Zealand
- It performs:
 - **Earthquake detection and analysis**
 - **Volcano surveillance**
 - **Landslide response**
 - **Tsunami detection**
- Deliver information and data to monitoring staff, responding agencies, lifeline utilities, the research community and the general public.



Earthquake detection and analysis

National Seismograph Network



Complimented by


The Strong Motion Network



cGPS Network



Volcano Surveillance



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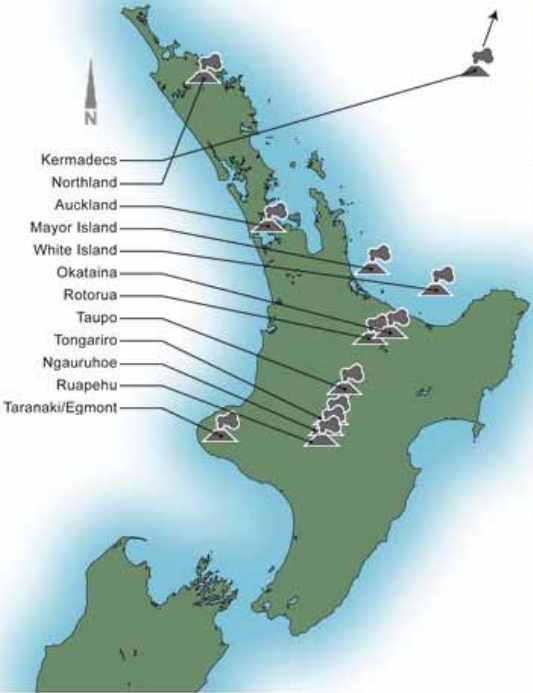
Alert Bulletins
Current Activity
Images
Monitoring Methods
Our Volcanoes
Volcano Resources
FAQ
Links
Glossary

Auckland
Kermadecs
Mayor Is.
Ngauruhoe
Northland
Okataina
Rotorua
Ruapehu
Taranaki
Taupo
Tongariro
White Is.

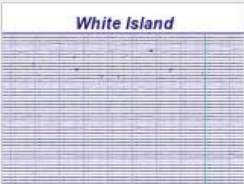
Current Activity

An overview of current New Zealand volcanic activity.

Hover over or select a volcano name




White Island



Seismic Activity:

- [Drums](#)
- [RSAM & SSAM](#)

Crater | **Whakatane** | **Rim**



Volcano Cameras:

- [Latest set](#)
- [Previous set](#)
- Animation:

This table shows the current **alert level**, ranging from **0** to **5**, for New Zealand's volcanoes and volcanic centres. The most frequently active volcanoes are Ruapehu, Tongariro, Ngauruhoe and White Island, as well as Raoul Island in the Kermadec group.

Detailed information showing earthquake activity, seismic drums, seismicity diagrams and maps of the monitoring networks, plus photos and movies for some of the volcanoes, can be viewed by choosing a location from the map, the table or a tab shown above.

Volcanic Alert Level Summary	
Volcano	Alert Level
Auckland Volcanic Field	0
Kermadec Islands	0
Mayor Island	0
Ngauruhoe	1
Northland	0
Okataina	0
Rotorua	0
Ruapehu	1
Taranaki/Egmont	0
Taupo	0
Tongariro	0
White Island	1

Landslides

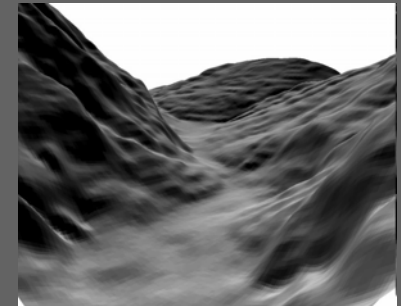
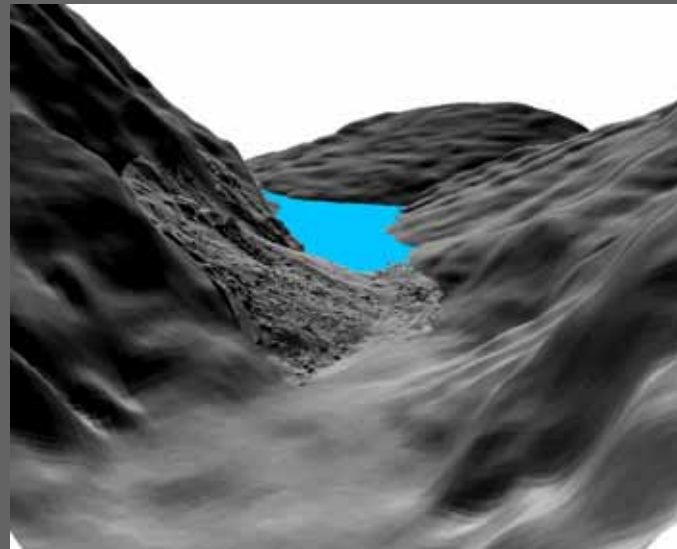
- **Landslide database**

- Catalogue
- Inventory



- **Rapid response capability**

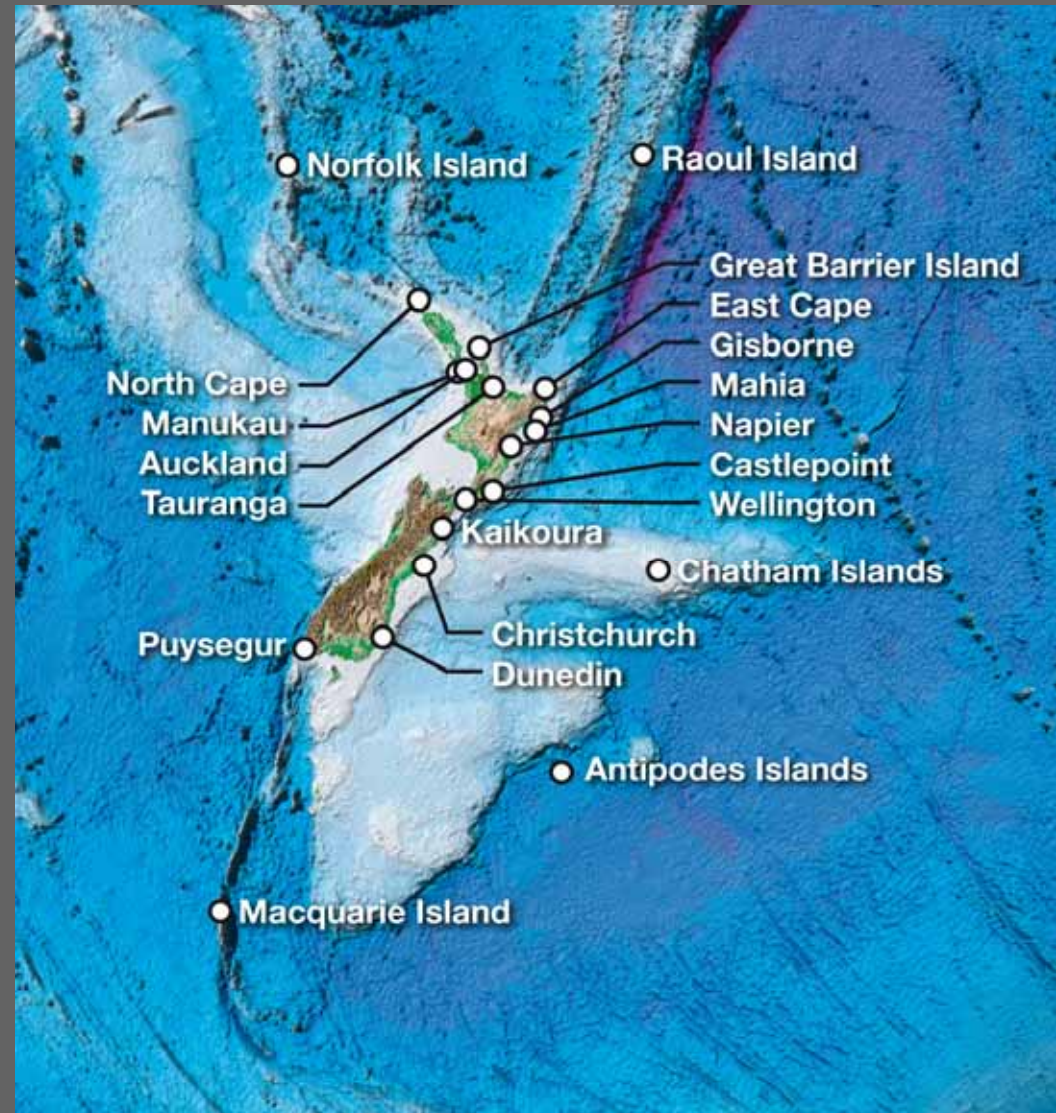
- Duty team
- Missions



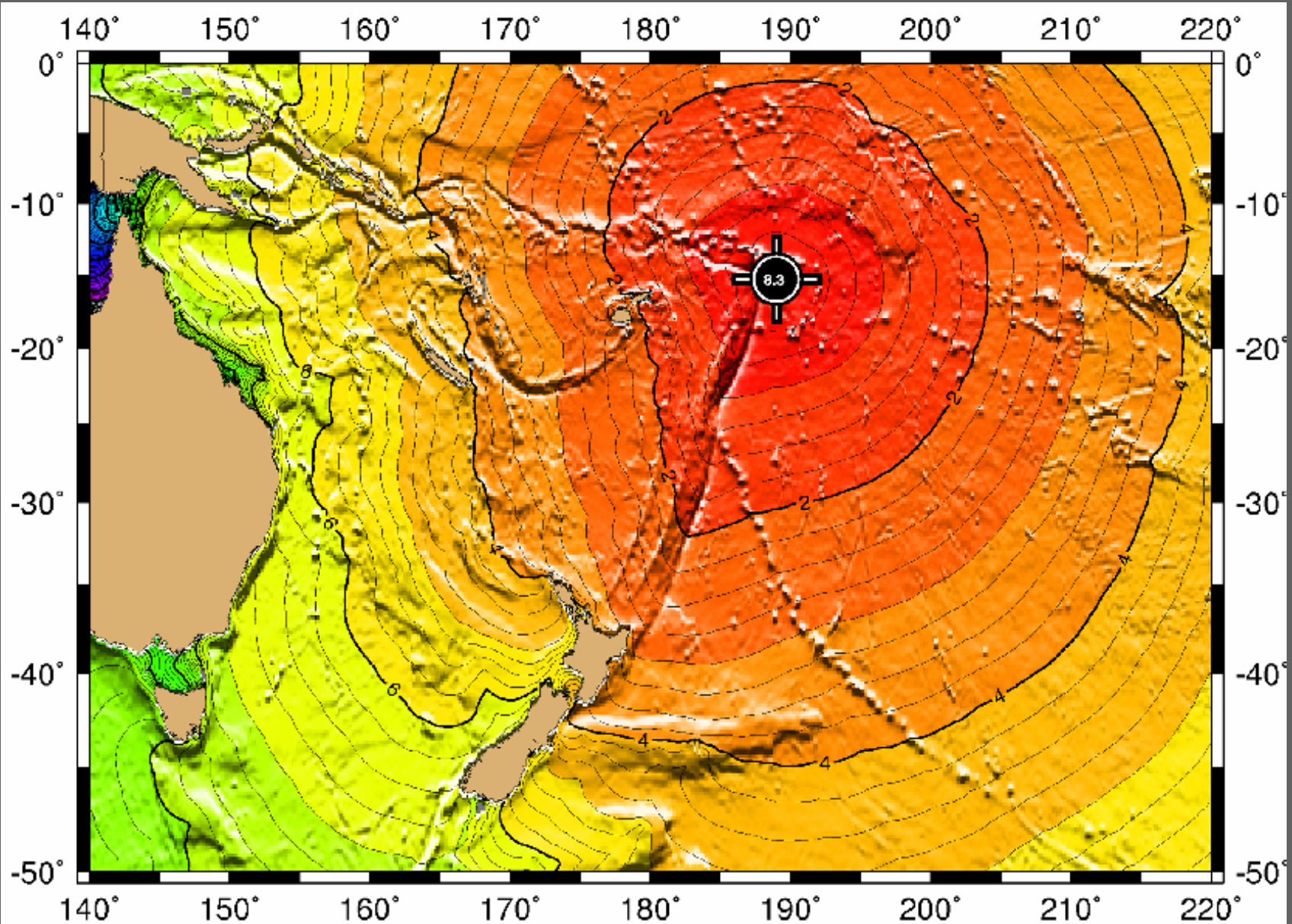
New Zealand Tsunami Detection Gauge Network

GNS Science and LINZ partnership

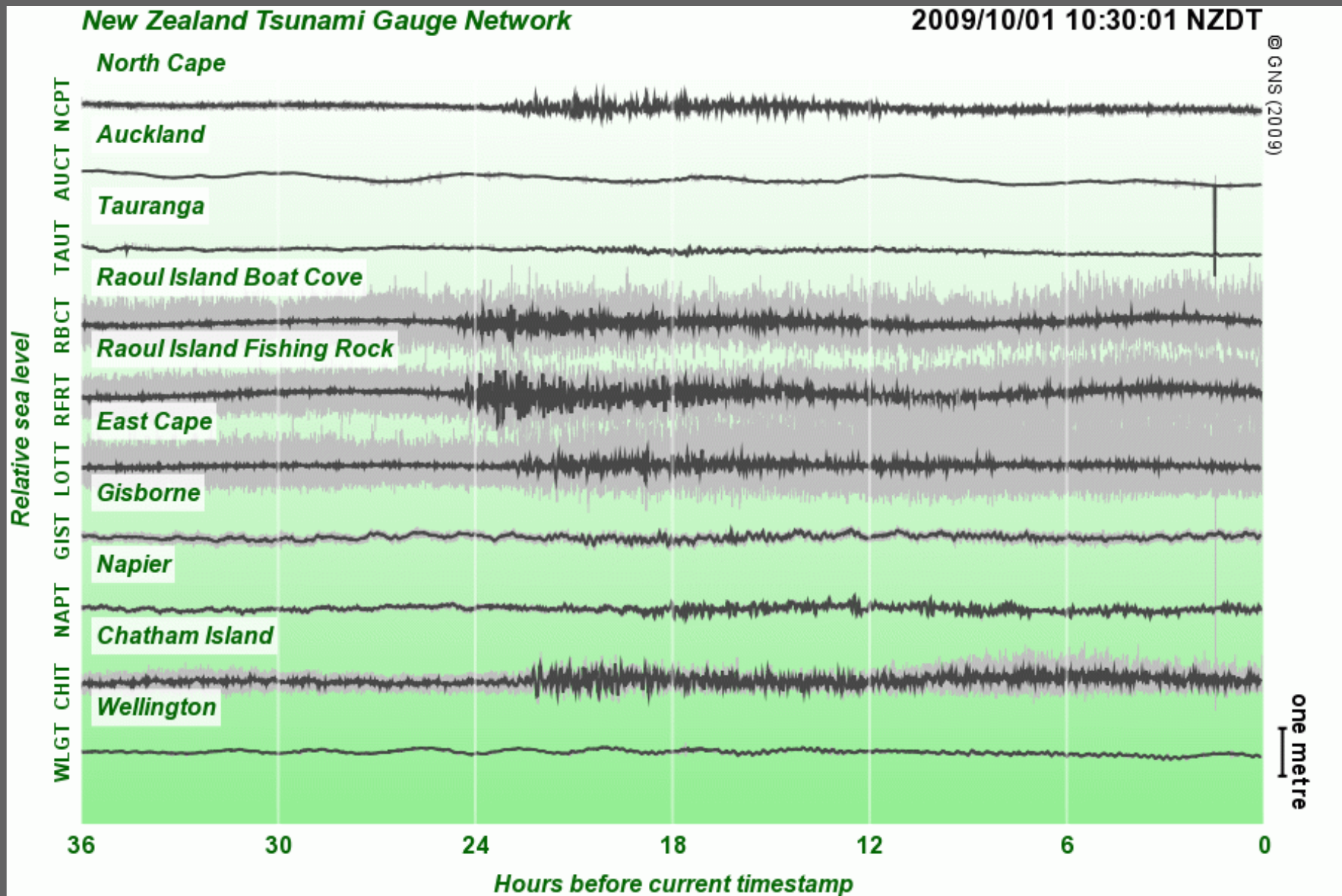
- 19 tsunami gauge stations (2 Australia)
 - 2 New Zealand offshore islands
 - 2 Australian offshore islands
 - 8 open coastal sites
 - 7 at centres of population
-
- Network to operate in real-time
 - Currently 10 operational sites



Travel Times for the Samoa event



Samoa Event

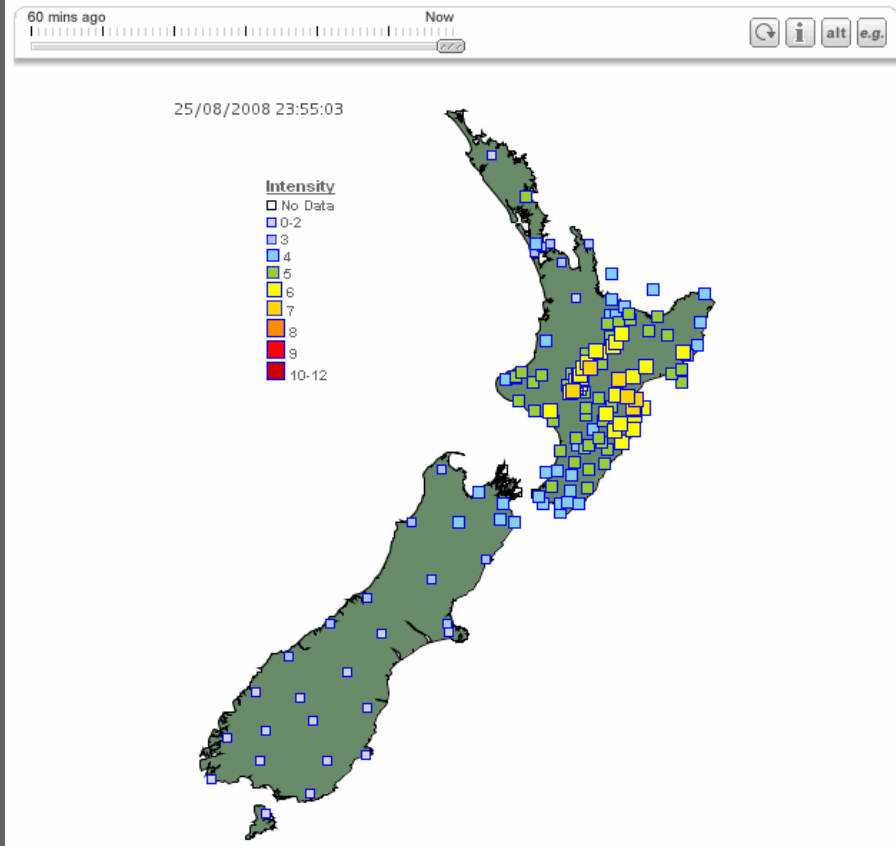


How do you stay in touch

- Web page www.geonet.org.nz
 - Shake NZ
- Earthquake notifications
 - Email
 - Fax
 - Cellphone (text, mobile web)
 - Pager
- Volcano Alert Bulletins
 - Fax
 - Email
- Web Services and RSS

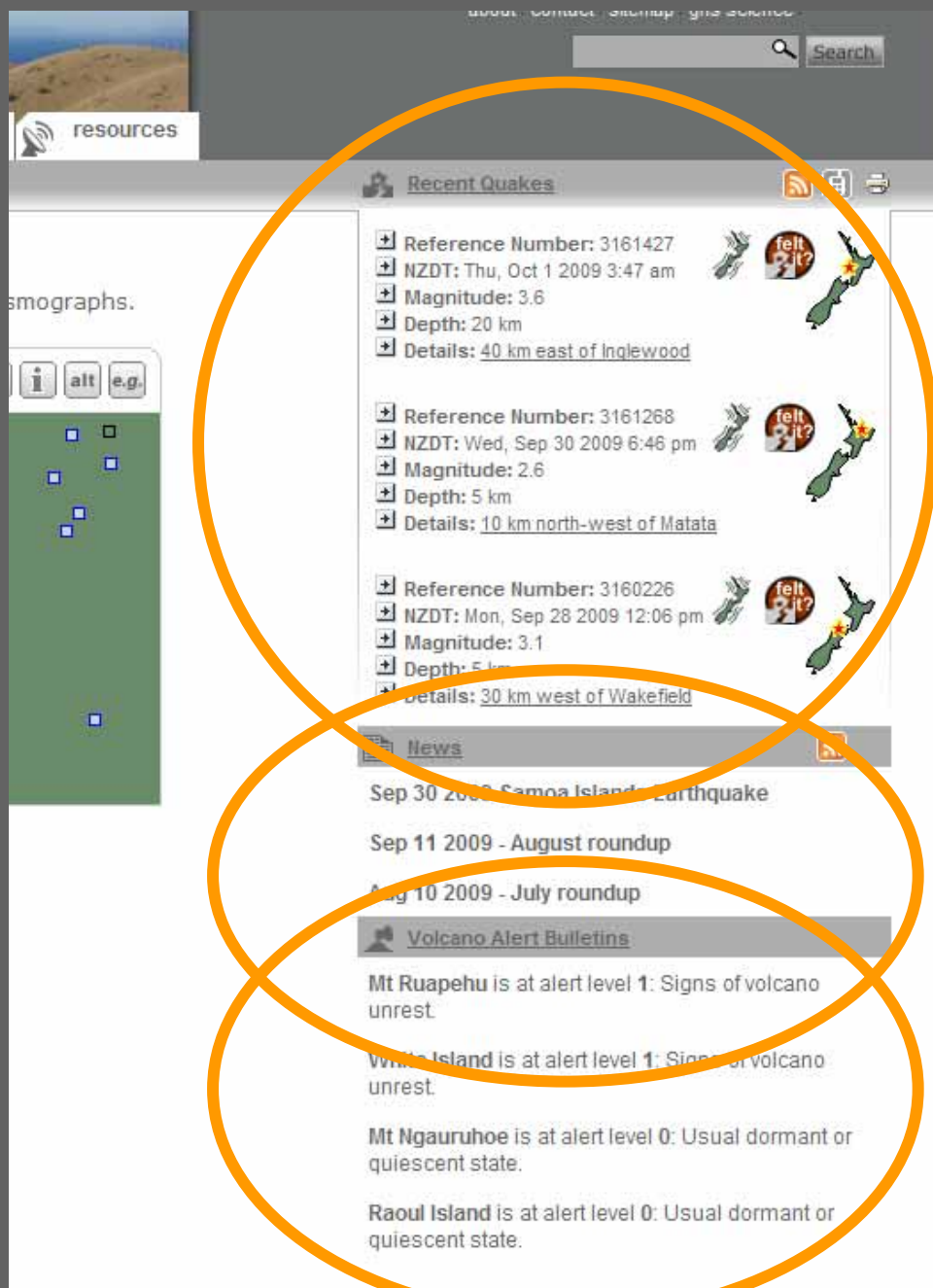
ShakeNZ

This map shows near real-time shaking intensity from New Zealand's network of seismographs.



- Real-time shaking intensity map
- Continuous seismographs
- Quickly shows which parts of the country are affected
- Approximate location, how widely it was felt and to the extent to which it has affected the country

The magnitude 5.9 earthquake that struck Hawke's Bay on 25th August, 2008.




GeoNet's hazard information: via the web

Latest 3 earthquakes

Breaking news

Volcano alert levels

Significant / Large Earthquakes



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details felt it? maps shaking maps

New Zealand Earthquake Report - Dec 20 2007 at 8:55 pm (NZDT)

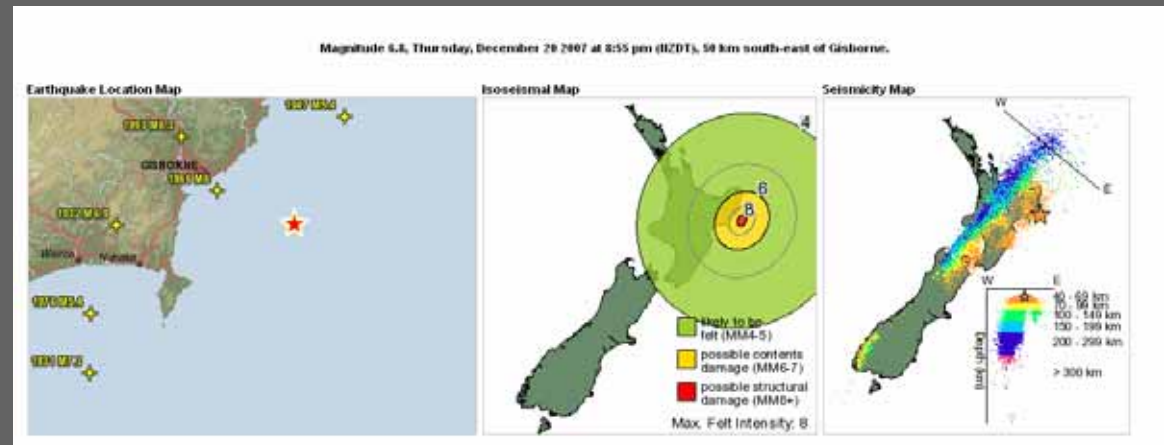
Magnitude 6.8, Thursday, December 20 2007 at 8:55 pm (NZDT), 50 km south-east of Gisborne.

Quake Details

Reference Number	2839343/G
Universal Time	December 20 2007 at 7:55
NZ Daylight Time	Thursday, December 20 2007 at 8:55 pm
Latitude, Longitude	38.86°S, 178.52°E
Focal Depth	40 km
Richter magnitude	6.8
Region	Hikurangi Trough
Location	↕ 50 km south-east of Gisborne ↕ 400 km south-east of Auckland

Felt widely, especially along east coast North Island

Did you feel this earthquake? We would appreciate it if you could fill out a [GeoNet Felt Earthquake Report](#) and let us know of your experiences.



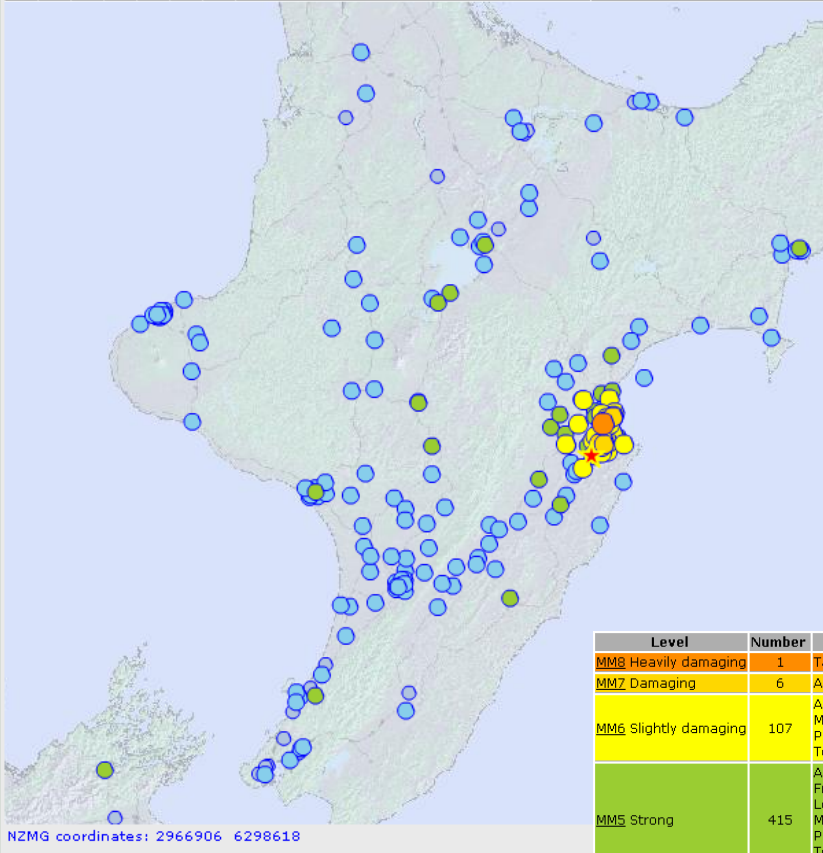
Felt earthquake reports

- Publicly accessible questionnaire on the web:
 - Collect personal experiences, and relate them to local geology and the building type
 - Compile isoseismal diagrams to show how and where the earthquake affected people
 - Improve the earthquake damage model

The screenshot shows a web browser window displaying the 'GeoNet Felt Report' page. The page title is 'GeoNet Felt Report' and the event details are 'Magnitude 3.5, Friday, November 16 2007 at 11:58 am (NZDT), 30 km north-west of Hanmer Springs.' The page is divided into sections for reporting the experience. The current section is 'Stage 2: Your experience of the earthquake'. It includes instructions: 'Please do not use the browser back button.' and '* denotes required question.' The questions are: 'Where were you at the time of the earthquake?' with options: 'Indoors' (selected), 'Outdoors', 'In a stopped vehicle', and 'In a moving vehicle'. 'What was the built environment?' with options: 'Residential' (selected), 'Business/industrial', 'Rural', and 'Don't know/Not applicable'. 'What were you doing when the earthquake occurred?*' with options: 'Sitting/Lying', 'Standing' (selected), 'Walking/Running', 'Sleeping', and 'Travelling in a vehicle'. 'How would you best describe the shaking?*' with options: 'Not felt' and 'Heard, but not felt' (selected).



Add instrument shaking



NZMG coordinates: 2966906 6298618

Hawkes Bay

August 25th 2008

Level	Number	Localities
MM8 Heavily damaging	1	Taradale [1]
MM7 Damaging	6	Akina [1], Greenmeadows [1], Hastings [1], Marewa [1], Mayfair [1], Taradale [1]
MM6 Slightly damaging	107	Akina [5], Bay View [3], Bluff Hill [3], Clive [1], Flaxmere [4], Frimley [8], Greenmeadows [2], Hastings [5], Havelock North [6], Karamu [2], Mahora [3], Maraekakaho [1], Maraenui [4], Marewa [2], Mayfair [2], Meeanee [4], Napier [1], Napier South [1], Okawa [1], Onekawa [6], Pakipaki [3], Parkvale [4], Pirimai [3], Poraiti [2], Poukawa [1], Pukahu [1], Rissington [1], Saint Leonards [1], Tamatea [4], Taradale [19], Te Awanga [1], Tomoana [1], Twyford [2]
MM5 Strong	415	Ahuriri [4], Akina [14], Bay View [11], Bluff Hill [8], Bridge Pa [3], Brooklands [1], Camberley [1], Clive [6], Crownthorpe [1], Eskdale [3], Flaxmere [9], Frimley [3], Greenmeadows [21], Hastings [9], Haumoana [8], Havelock [1], Havelock North [39], Hospital Hill [7], Jervostown [2], Karamu [1], Longlands [4], Mahora [10], Mangapapa [1], Mangateretere [2], Maraekakaho [1], Maraenui [3], Marewa [18], Matapiro [1], Mayfair [9], Motuoapa [1], Napier [2], Napier South [13], Onekawa [16], Pakipaki [1], Pakowhai [3], Parkvale [20], Pirimai [9], Poraiti [1], Poraiti [1], Puketapu [2], Raureka [14], Reikorangi [1], Saint Leonards [9], Sherenden [1], Taihape [2], Tamatea [26], Taradale [59], Taupo [3], Te Awa [3], Te Awanga [1], Tikokino [2], Turangi [2], Tutira [2], Twyford [2], Waiohiki [3], Waiouru Military Camp [1], Waipawa [1], Wanganui East [1], Weber [1], Westshore [2], Whakatu [1], Whirinaki [1], Woolwich [3]
MM4 Largely observed	665	Acacia Bay [4], Ahuriri [6], Ahuriri [1], Akina [3], Apati [1], Aramoho [6], Ashhurst [4], Awapuni [8], Bastia Hill [1], Bay View [1], Bluff Hill [12], Bridge Pa [5], Broadlands [1], Brookvale [1], Bulls [1], Bunnythorpe [1], Clive [4], Cloverlea [1], Colyton [1], Dannevirke [13], Durie Hill [3], Eskdale [2], Feilding [16], Fitzroy [1], Flaxmere [6], Foxton [2], Foxton Beach [4], Frankleigh Park [1], Frimley [1], Gisborne [7], Gonville [7], Gore [1], Greenmeadows [5], Hamilton [1], Hastings [8], Haumoana [9], Havelock [1], Havelock North [56], Hawera [5], Hawke Bay [1], Hokowhitu [12], Hopelands [1], Hospital Hill [7], Hunterville [1], Kaimata [1], Karamea [1], Karamu [2], Kauangaroa [1], Kawerau [1], Kelvin Grove [3], Kimbolton [2], Kinloch [3], Kotemaori [1], Levin [1], Longlands [2], Lower Hutt [1], Maharahara [1], Mahia Beach [1], Mahora [7], Mangamahu [1], Mangapapa [4], Mangatoro [1], Mangaweka [1], Manutuke [1], Maraekakaho [3], Marewa [6], Marton [7], Masterton [1], Matamou [2], Mayfair [3], Merrilands [3], Milson [1], Morere [1], Motuoapa [3], Napier [9], Napier South [5], National Park [2], New Plymouth [4], Ngamoko [1], Ngongotaha [1], Norsewood [1], Nukuhau [5], Oakura [1], Ohakune [1], Ohope [1], Okoia [1], Onekawa [5], Ongaonga [1], Ongarue [1], Opiki [1], Oruanui [1], Otamatea [2], Otane [5], Owahango [3], Pahiatua [3], Pakowhai [2], Palmerston North [24], Paraparaumu [2], Paraparaumu Beach [2], Parkvale [4], Patoka [1], Patutahi [2], Pinehaven [1], Pirimai [5], Pohangina [1], Poraiti [1], Poukawa [1], Puketapu [1], Puketitiri [1], Putorino [1], Raetihi [5], Ratapiko [1], Raukawa [1], Raunaki South [2], Raureka [10], Reporoa [3], Retaruke [1], Rewa [1], Rissington [1], Rongotea [1], Rotorua [1], Saint Johns Hill [2], Saint Leonards [1], Sanson [1], Silverstream [1], Spotswood [1], Springvale [5], Stratford [3], Summerhill [1], Taihape [8], Takapau [2], Takaro [3], Tamatea [6], Taradale [6], Taumarunui [8], Taupo [46], Te Aute [1], Te Awanga [3], Te Hapara [3], Te Hauke [1], Te Horo [1], Te Puhue [1], Te Wairoa Hut (Rogers Hub) [1], Terrace End [3], Timber Bay [1], Tokaanu [1], Turangi [14], Tutira [1], Upokongaro [1], Vogeltown [1], Waimarama [1], Waiohiki [1], Waiouru [2], Waiouru Military Camp [2], Waipari [1], Waipawa [14], Waipukurau [11], Wairoa [10], Waitahanui [2], Waitara [1], Waituna West [1], Waiwhare [1], Wanganui [15], Wanganui East [6], Welbourn [1], Wellington [8], West End [3], Westend [1], Westmere [1], Westown [1], Westshore [2], Whakatane [1], Whakatu [1], Whataupoko [6], Woodlands [1], Woodville [9]
MM3 Weak	59	Acacia Bay [1], Aratiatia [1], Ashhurst [1], Awapuni [1], Brooklands [1], Cashmere [1], Durie Hill [2], Fitzroy [1], Foxton [3], Foxton Beach [1], Havelock North [1], Hawera [1], Hokowhitu [2], Hurdon [1], Karori [1], Khandallah [1], Kinloch [1], Levin [1], Longlands [1], Lynmore [1], Mangakino [1], Milson [1], Minginui [1], Ngaio [2], Otaki [1], Owhata [1], Paekakariki [2], Palmerston North [2], Paraparaumu Beach [1], Poroporo [1], Rangitumau [1], Raunaki Beach [1], Raureka [1], Redwood [1], Renwick [1], Rotorua [2], Spotswood [1], Stokes Valley [1], Takaro [1], Taradale [1], Taumarunui [1], Taupo [2], Tihiroa [1], Waikanae [2], Wellington [2], Westown [1], Whataupoko [1], Whiti [1]
Total	1253	

GeoNet's hazard information: tailored alerts - modes of transfer



Pager



Fax



Email



Web service and RSS



SMS

GeoNet's hazard information: tailored alerts - earthquakes

- Pager / SMS:

```
Eq Rpt: MAG 4.4, MM3, FD 90, LOC 20 km E of Wanganui, TIME 02:30 AM, 18-08-2006
```

- Tailored email:

```
GEOLOGICAL & NUCLEAR SCIENCES  
GeoNet Data Centre, Lower Hutt, New Zealand  
http://www.geonet.org.nz
```

PRELIMINARY EARTHQUAKE INFORMATION

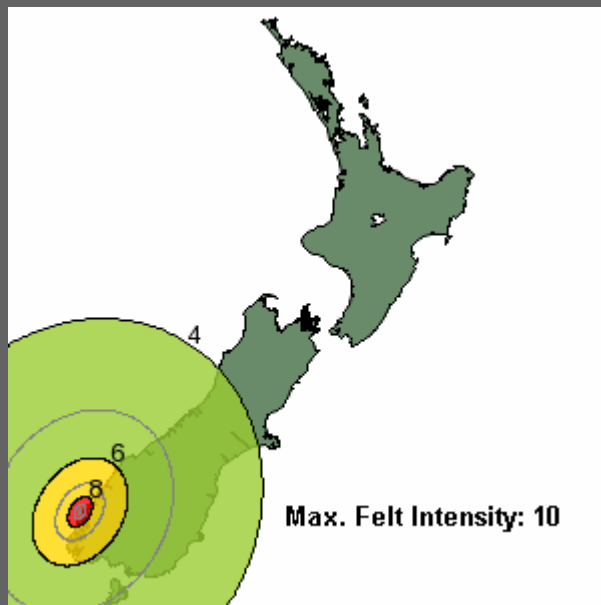
The following earthquake has been recorded by GNS:

```
Reference number:      2612142/G  
Universal Time:        2006-08-17 14:30:22  
Local time (NZST):    02:30 AM on Friday 18 August 2006  
Latitude, Longitude:  39.87S, 175.31E  
NZ Map Grid (E, N):   2707000, 6146000  
NZ Trans Merc (E, N): 1797000, 5584000  
Location:             20 km east of Wanganui  
Focal depth:          90  
Richter magnitude:    4.4
```

May have been felt near Wanganui.

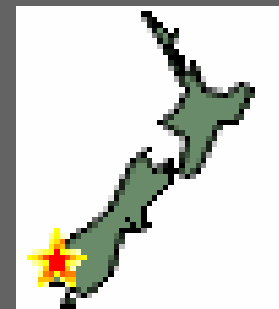
Mobile web

- Tiny maps for phone and PDA screens
- Complements text message information



NZST: Tue, Aug 22 2003 00:12 am
Magnitude: 7.1
Max. Felt Intensity: [MM10](#)
Depth: 12 km
Details: 70 km north-west of Te Anau

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Geological Hazard Alert Service

GNS Science locates significant earthquakes and monitors volcanic activity in the New Zealand region around the clock. We can provide critical information about earthquake and volcanic events for your organisation.

GNS Science can provide rapid notification of significant earthquakes or volcanic activity. All members of [CDEM groups](#) and [Lifeline utilities](#) qualify to receive this service for free. For other individuals and organisations, the scale of charges is shown in the Geological Hazard Alert Service [application form](#).

Preliminary Earthquake Report

Reference No. 2009/005/G
NZ Daylight Time: 2007 Feb 21 21:00
Latitude, Longitude: 36.52S 175.02E
Location: 30 km east of Orewa
Focal Depth: 15 km
Richter Magnitude: 4.5
Max. Felt Intensity: VI
Felt widely in the Auckland area.

Expected Intensity (Modified Mercalli)

Earthquake Alert Fax
Data supplied by GeoNet: www.geonet.org.nz
Phone: +64 4 275 1600 Fax: +64 4 275 4070 enr@gns.govt.nz

The data from GeoNet's monitoring networks helps to improve our knowledge about the processes that cause New Zealand's geological hazards.

⇒ Stronger research capabilities

⇒ Enhanced community resilience





www.geonet.org.nz

