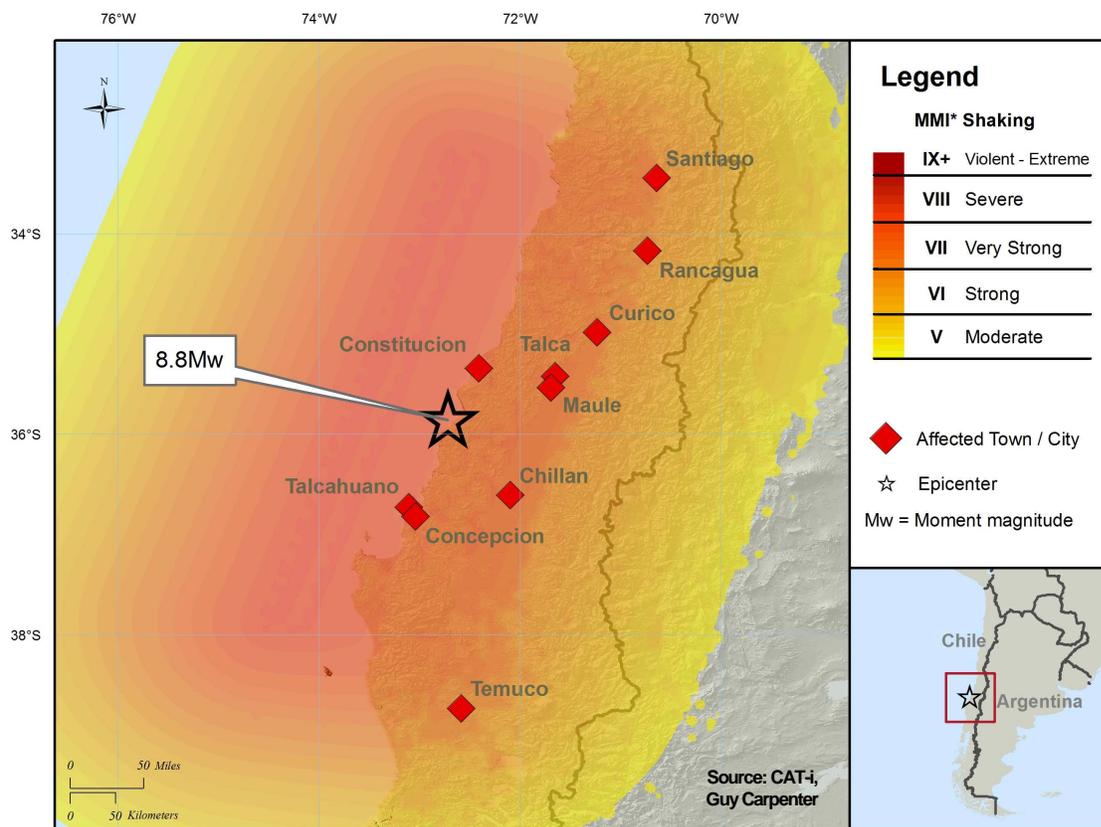


Status Report No: EQC-1

## 8.8 Mw Earthquake in Chile

**Date:** 27 February 2010  
**Time:** 06:34:14 UTC (03:34:14 local time)  
**Position:** 35.846S, 72.719W  
**Depth:** 21.7 miles (35 km)  
**Magnitude:** 8.8 Mw  
**Region:** Offshore Maule, Chile



\*Modified Mercalli Intensity (MMI) measures the perceived strength of shaking produced by the earthquake at a certain location. For more information on the MMI scale please see [www.earthquake.usgs.gov/learning/topics/mercalli.php](http://www.earthquake.usgs.gov/learning/topics/mercalli.php).

**Reference points to earthquake location:**  
 100 km (60 miles) NNW of Chillan, Chile  
 105 km (65 miles) WSW of Talca, Chile  
 115 km (70 miles) NNE of Concepcion, Chile  
 325 km (200 miles) SW of Santiago, Chile

## **Summary**

A massive earthquake struck off the coast of Maule in Chile at 06:34 UTC on 27 February (03:34 local time), causing severe damage across of the country and claiming more than 700 lives in Chile's biggest earthquake for around 50 years. The earthquake, measuring 8.8 Mw, was located 60 miles (100 kilometres) north-northwest of Chillan and 200 miles (325 kilometres) southwest of Santiago, according to the US Geological Survey (USGS). The USGS added that the quake was centred about 21.7 miles (35 kilometres) underground and was felt in Argentina. This is the fifth largest earthquake ever to be recorded, according to the USGS. Around 150 aftershocks have hit the region since the main earthquake, the most powerful at 6.9 Mw.

Reports from coastal gauges indicate that a tsunami was generated with wave measurements ranging from 1.6 feet (0.5 metres) and 8.2 feet (2.5 metres) near the epicentre location. The Pacific Tsunami Warning Center consequently issued tsunami warnings for all 53 Pacific regions and countries, including Central and South America, New Zealand, the east coast of Australia, Hawaii, Japan and the Philippines.

The USGS said more than 12.5 million people live in areas impacted by a Modified Mercalli Intensity (MMI) of VII or higher (see Table 1 below), equivalent to very strong shaking with the potential for moderate to heavy damage. This number includes the 4.8 million people living in the capital city of Santiago, the USGS said. Santiago, Temuco (population of around 238,000 people), Rancagua (213,000), Concepcion (215,000), Chillan (150,000) and Talca (197,000) also experienced intensity VII shaking while the town of Talcahuano (population of 253,000) experienced intensity VIII, equivalent to severe shaking with the potential for heavy damage.

Witnesses said the shaking lasted for around 60 seconds and reports indicate that the damage is widespread and severe. The current official death toll stands at 711 but this is expected to rise with many people still missing and some communities largely cut-off. A state of catastrophe has been declared in six of Chile's 15 regions after officials said about 1.5 million homes were damaged, a third of them severely, and hundreds of thousands of people have been made homeless. The earthquake also severely damaged infrastructure, including roads, bridges, ports, airports, utilities and communication networks. The Chilean government has today imposed a curfew in the Maule and Concepcion regions after hundreds of looters ransacked stores for food and other goods. Looting also reportedly broke out in parts of Santiago.

It is feared losses will be in the billions of dollars. EQECAT estimates the economic damage from the earthquake will be between USD15 billion and USD30 billion, or 10% and 20% of gross domestic product. Damage in the state of Santiago is expected to exceed 50% of the total, EQECAT said. EQECAT added that most of the damage, 55% to 65%, would be to residential structures, with commercial damage accounting for 20% to 30% of the total and industrial damage making up 15% to 20%.

Chile President Michelle Bachelet said the country is facing "an emergency without parallel" and early assessments indicate the destruction near the epicentre location is catastrophic. The towns of Maule and Talca are thought to be among the worst-hit areas. In Concepcion, the city closest to the epicentre, there have been reports of severe damage with buildings levelled and streets made impassable by debris and damaged roads. Around 60 people are feared to have been crushed after an apartment block collapsed in the city. The town of Constitucion was also severely hit, with reports of around 350 casualties. Around 90% of the historic centre in the town of Curico was destroyed while several roads and bridges in the area were damaged or destroyed, according to reports. Chile's main seaport in Valparaiso was ordered closed while damage was assessed and several mining operations in the region were shut down. However, following damage assessments, several mines located to the north of the earthquake's epicentre slowly resumed operations yesterday despite limited power supplies.

In the capital of Santiago, some 200 miles (325 kilometres) northeast of the epicentre, power and communication lines were cut and reports said damage and destruction was evident throughout the city. Early assessments indicate that older buildings in the capital were badly damaged, while newly built properties fared well. All forms of transportation in the city were suspended. Santiago international airport was closed for around 24 hours after the terminal building was damaged but officials said the runways were unscathed and commercial airline services have been partially re-established with aircraft now allowed to land. One metro line in Santiago has also been re-opened.

Coastal towns in Chile were also hit by tsunamis triggered by the earthquake. Surging waves of up to 8.2 feet (2.5 metres) submerged houses and smashed cars in communities across the country's Pacific coast. Constitucion was badly hit by a tsunami while more than 20 boats were swept ashore by waves in the port of Talcahuano and dumped in the streets. Large waves also struck Chile's Juan Fernandez island group, reaching halfway into one inhabited area and killing five people. Several more are missing.

Further afield, hundreds of thousands of people sought higher ground after the Pacific Tsunami Warning Center warned of "widespread damage" across the Pacific region. Although the centre later said waves were not as high as predicted, reports in Japan said northern Hokkaido's Pacific coastline was hit by a 3 foot (1 metre) high tsunami. Around 630,000 people in areas at risk were ordered to evacuate and coastal train services were suspended. Thousands of people also left coastal areas of the Philippines after text message warnings were sent. Parts of the Marquesas Islands in French Polynesia were hit by a wave, but no casualties were reported. New Zealand's Chatham Islands recorded a wave of 5 feet (1.5 metres) and areas along the main North and South Islands experienced small surges but with no reported serious damage. Several other Pacific nations were hit by tsunamis but no major damage or casualties were reported.

The event is Chile's largest earthquake since the 8.0 Mw Valparaiso/Santiago quake of 1985. Closer to the epicentre location, AIR Worldwide said some 200 people died and around 140,000 homes were destroyed when a 7.6 Mw earthquake shook the cities of Concepcion and Chillan in 1939. The largest ever recorded earthquake, a 9.5 event, occurred off of Chile's southern coast in 1960. Therefore, there is high earthquake awareness in Chile and the building codes in the country are among the most stringent in the world. Reports emerging from Chile said most of the collapsed buildings in the latest earthquake were of older design. According to Axco, earthquake coverage is widespread in Chile, with an estimated 90% of property insurance policies carrying earthquake cover.

**Table 1: Estimated Population Exposed to Significant Earthquake Shaking**

<b>Estimated MMI</b>	<b>Estimated Population Exposure</b>	<b>Perceived Shaking</b>
VIII	5,480,000	Severe
VII	7,258,000	Very strong
VI	751,000	Strong
V	2,721,000	Moderate

## **For More Information**

For the most up to date information on earthquakes around the world please visit the USGS Web site at: <http://www.earthquake.usgs.gov/>.

Hazard data illustrated in the CAT-i map was taken from i-aXs®, Guy Carpenter's web-based risk management platform. i-aXs users can view impacted areas on any map as well as see how their portfolios were affected. Please go to <http://www.i-axs.info> for further information and to <http://www.guycarp.com> for up to date CAT-i reports and other resources.

Marsh Risk Consulting resources regarding emergency planning and risk quantification can be found at [http://www.marshriskconsulting.com/st/PSEV\\_C\\_228051\\_SC\\_228059\\_NR\\_303.htm](http://www.marshriskconsulting.com/st/PSEV_C_228051_SC_228059_NR_303.htm) or contact your local Marsh office.

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*Information sources for this report include: USGS, WSI, Reuters News, Associated News, Agence France Presse, CNN News, BBC News, EQECAT, AIR Worldwide.*

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