

# Earthquake Events

Case Study:

Santiago, Chile 2010





# Chile:

The western coast of the South American continent is right on the boundary between the South American and Nazca tectonic plates.

Consequently, a lot of earthquake activity occurs along this coastline. There are many historical accounts of major earthquakes. The largest recorded earthquake (9.5 magnitude) occurred in Valdivia in 1960.



# Major Earthquake Event in Chile

**Date:** 27th February 2010

**Magnitude:** 8.8

**Depth:** 30km

**Latitude:** 35.89 S

**Longitude:** 73.04 W

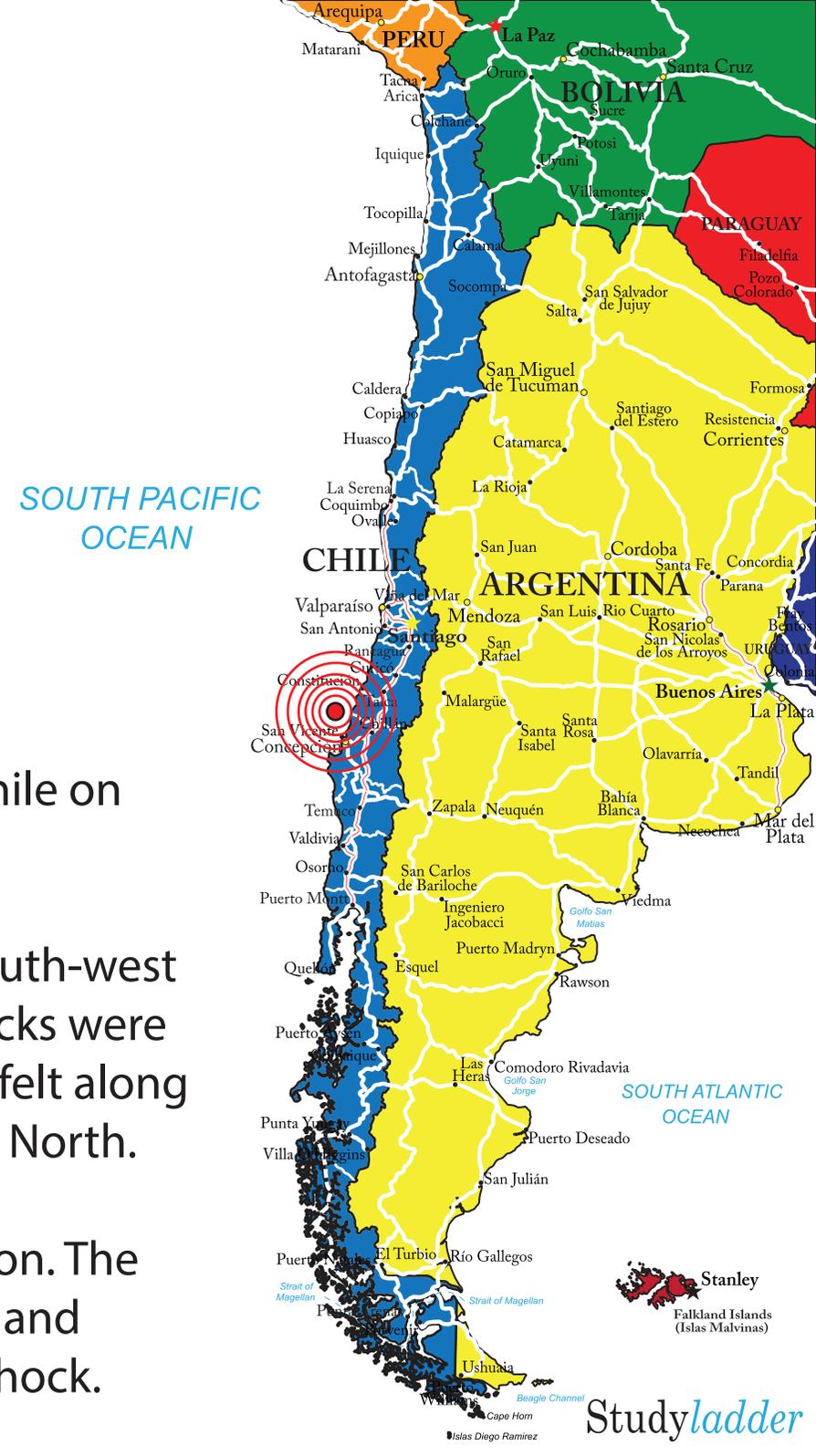
**Location:** (off shore) Maule Region, Chile

**Most Affected City:** Concepcion

A major earthquake struck the Maule/Bio-Bio regions of Chile on Saturday 27th of February, 2010 at 3.34am (local time).

The epicentre of the earthquake was 325km (200 miles) south-west of Santiago at a depth of 35 km (22 miles). Eleven aftershocks were detected in the 2 1/2 hours following the quake. They were felt along the coast as far as Valdivia in the South to Valparaiso in the North.

The quake triggered a tsunami warning for the Pacific region. The first wave hit the Chilean coast 20 minutes after the quake and destructive waves arrived 2 1/2 - 4 1/2 hours after the main shock.



# Earthquake Damage

The church in the picture on the left, the *Iglesia de la Divina Providencia*, was built between 1881 and 1890 in Santiago. The top of the bell tower was destroyed by the earthquake in 2010.

Older buildings are often more vulnerable to earthquake damage. Stricter building and safety laws were introduced after the 2010 earthquake in an effort to reduce damage to buildings.





The rolling movement of the 8.8 magnitude earthquake caused many buildings to topple and collapse as the ground shifted.

Many damaged buildings showed evidence of how strong the shaking was. Look at how the balconies of these buildings have been ripped from their original positions.



The building above doesn't appear to have sustained much damage at first glance. However, serious structural damage occurred, which can be seen in the picture on the right.

The earthquake and tsunami destroyed 81 000 homes and severely damaged 109 000 houses. It affected 1.8 million people.

The total cost of damages for this earthquake was estimated at US\$30 billion.

