



A magnitude 7.1 earthquake struck in the southeastern Philippines just after 8 am local time Tuesday morning killing 82 people and reducing a 17th century church to rubble. Offices and schools were closed for a national holiday which may have saved lives.

No tsunami was generated, though many ran upslope in response to the shaking in this popular beach area.



A police officer surveys the damage following a 7.1 magnitude earthquake that hit Cebu city in central Philippines Tuesday. The tremor collapsed buildings, cracked roads and toppled the bell tower of the Philippines' oldest church Tuesday morning, causing multiple deaths across the central region and sending terrified residents into deadly stampedes.
(AP Photo/Bullit Marquez)

Ground Shaking Intensity

The Modified-Mercalli Intensity scale is a twelve-stage scale, from I to XII, that indicates the severity of ground shaking.

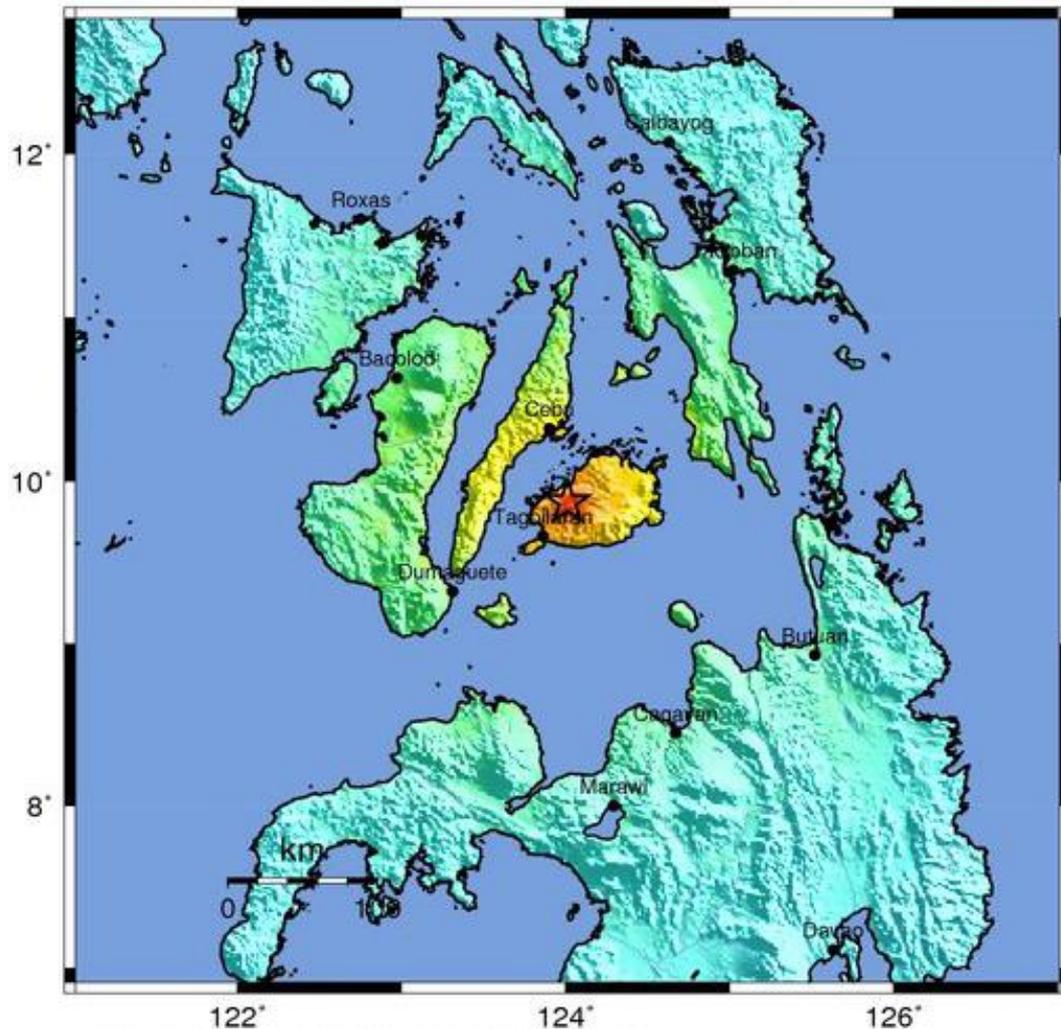
The area nearest the epicenter experienced violent shaking.

Modified Mercalli Intensity



Perceived Shaking

Extreme
Violent
Severe
Very Strong
Strong
 Moderate
 Light
 Weak
 Not Felt



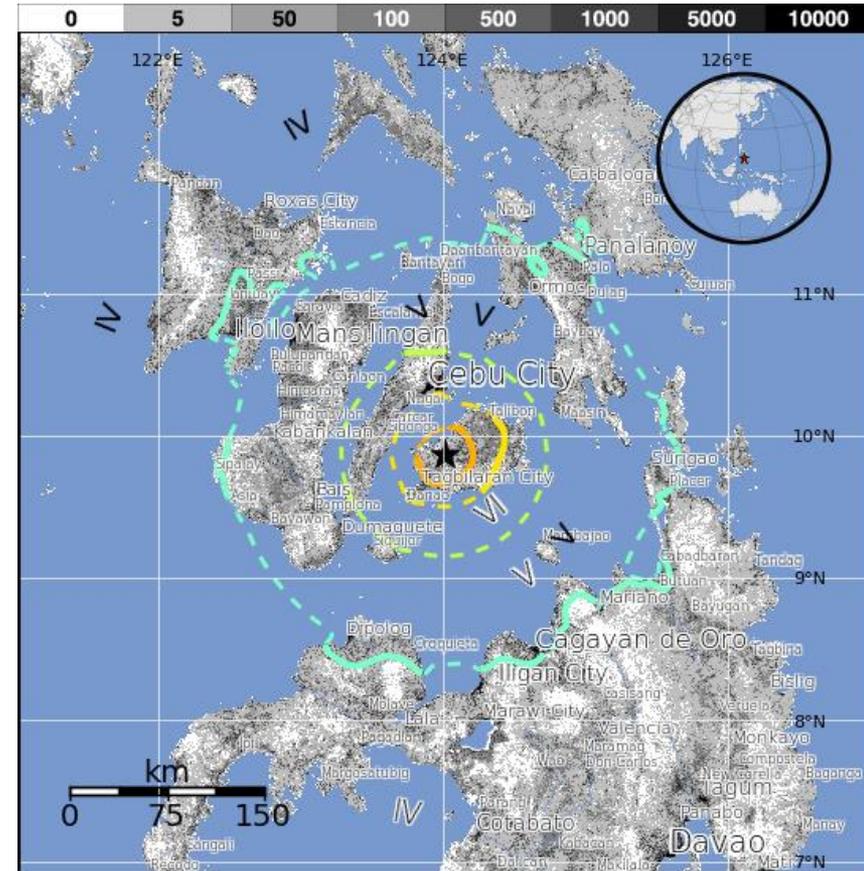
USGS Estimated shaking Intensity from M 7.1 Earthquake

The USGS PAGER map shows the population exposed to different Modified Mercalli Intensity (MMI) levels.

The USGS estimates that 43,000 were exposed to violent shaking, and an additional 453,000 were exposed to severe shaking.

The color coded contour lines outline regions of MMI intensity. The total population exposure to a given MMI value is obtained by summing the population between the contour lines. The estimated population exposure to each MMI Intensity is shown in the table below.

Image courtesy of the US Geological Survey

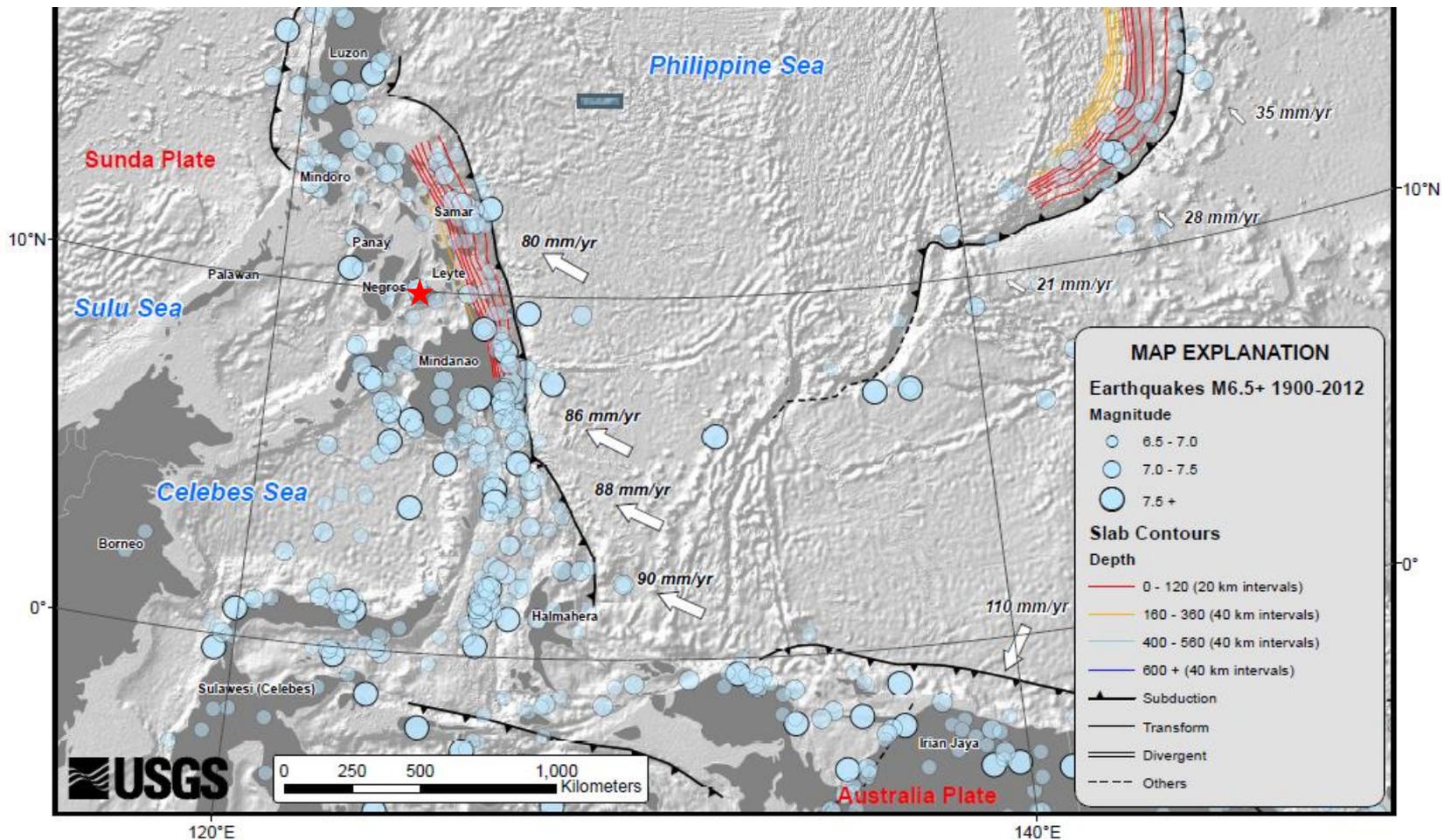


Estimated Modified Mercalli Intensity	I	II-III	IV	V	VI	VII	VIII	IX	X
Est. Population Exposure	--*	--*	21,869k*	14,184k	4,199k	1,286k	453k	43k	0k
Perceived Shaking	Not Felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme

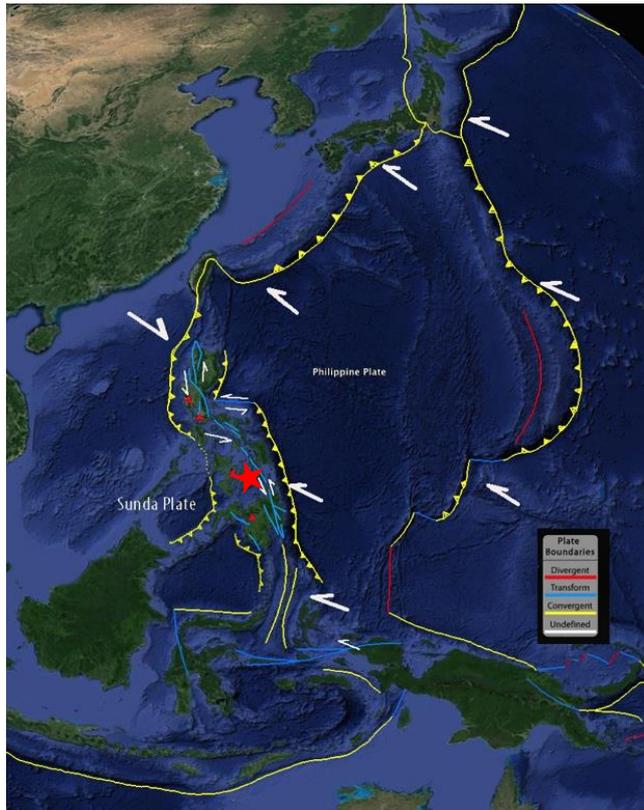
Magnitude 7.1 PHILIPPINES

Tuesday, October 15, 2013 at 00:12:32 UTC

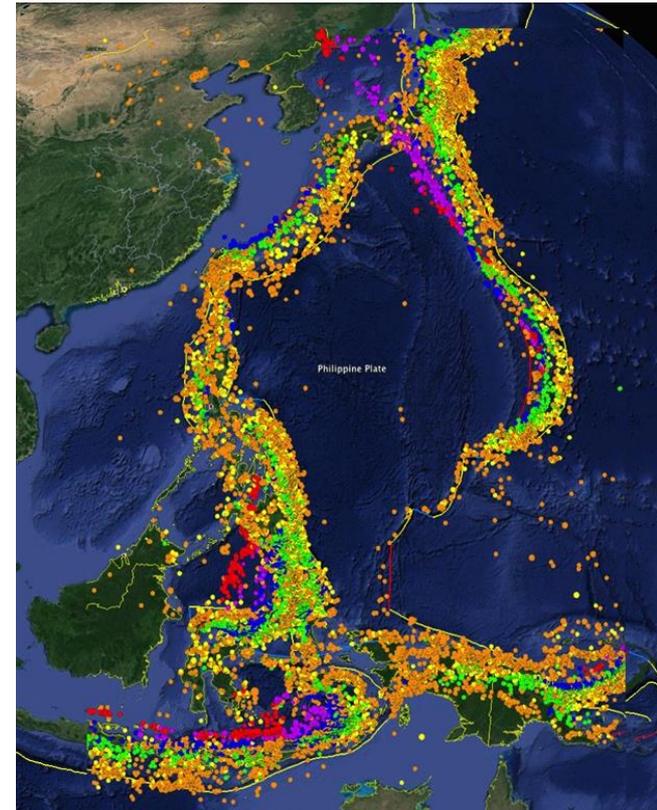
At the latitude of this earthquake, the Philippine Sea Plate moves towards the west-northwest with respect to the Sunda Plate at a rate of approximately 8 cm/yr. The Philippine Sea Plate subducts beneath the Philippine Islands at the Philippine Trench several hundred kilometers to the east of this earthquake.



Along its western margin, the Philippine Plate is complicated where it converges with, and dives beneath the Sunda Plate. Caught in the crunch, the Philippines archipelago has opposite-facing subduction systems bordering its east and west sides, and the arc complex itself is marked by active volcanism (red triangles), as well as high seismic activity.



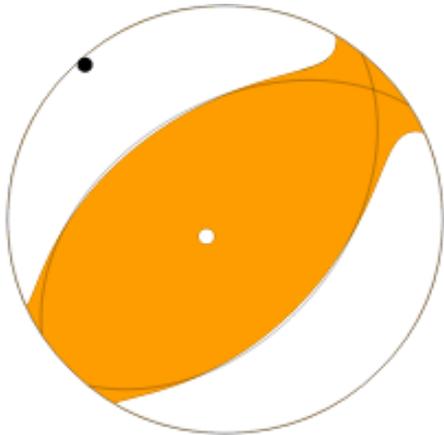
Simplified tectonic contacts



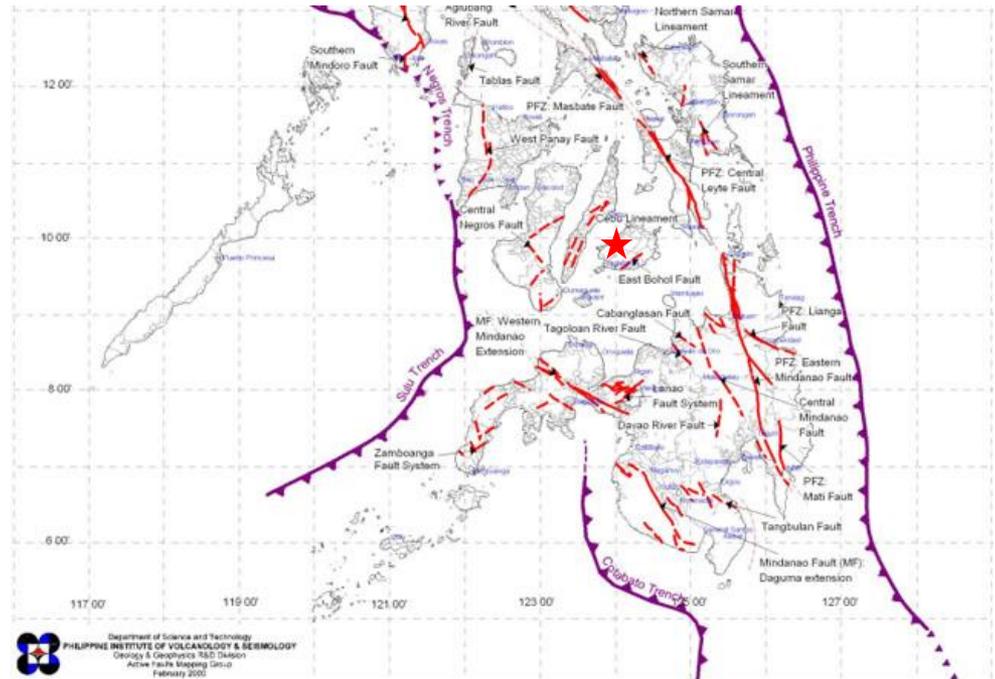
Magnitude 6–8 earthquakes 2000-2012

This earthquake occurred as the result of shallow reverse (or thrust) faulting. The earthquake depth indicates it ruptured a fault within the crust of the Sunda Plate, rather than on the deeper subduction zone plate boundary interface.

The region within 500 km of this earthquake has hosted 19 events of M6 or greater, a dozen of which have been shallow (0-70 km).



USGS Centroid Moment Tensor Solution

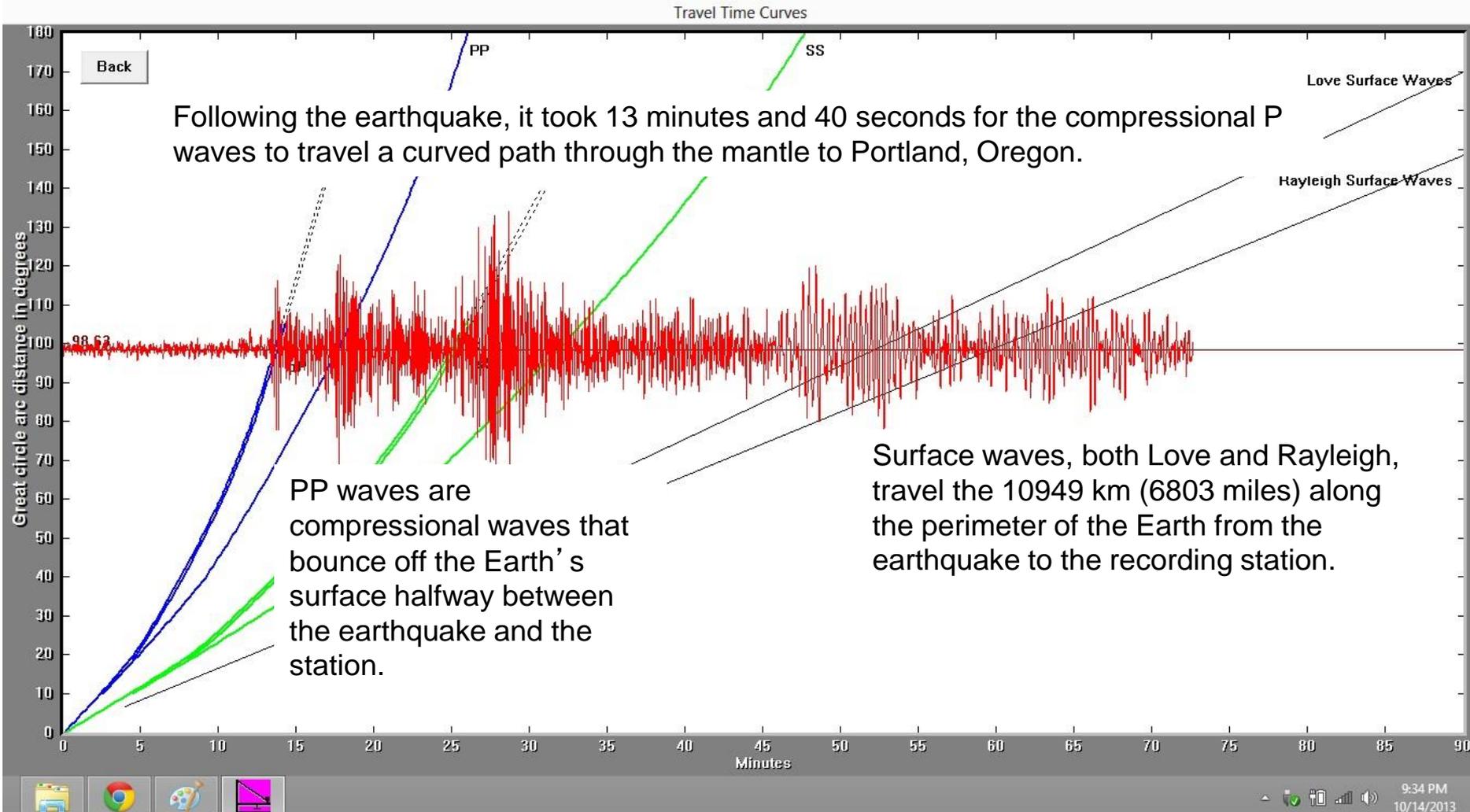


The Philippine Institute for Volcanology and Seismology's overview map of the country's active faults and trenches.

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The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 10949 km (6803 miles, 98.64°) from the location of this earthquake.



Teachable Moments are a service of

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