

Magnitude 7.0 Earthquake in Northern Peru
Wednesday, August 24, 2011 at 17:46:11 UTC (12:46:11 PM local time)
Epicenter: Latitude 7.644°S, Longitude 74.506°W, Depth: 145.1 km

Earthquake Summary:

As reported by the US Geological Survey National Earthquake Information Center (NEIC), a major earthquake occurred beneath northern Peru on Wednesday August 24 at 12:46 PM local time. This earthquake occurred in the subduction zone where the oceanic Nazca Plate dives beneath the continental South American Plate.

The red star on the right-hand map below shows the epicenter of the earthquake while the arrows show the motion of the Nazca Plate toward the South American Plate. Near the epicenter of this earthquake, the two plates converge at a rate of about 8 cm/yr.

The map on the left below shows historic earthquake activity near the epicenter (green star) from 1990 to present. Earthquakes are shallow at the Peru - Chile Trench and increase to > 500 km depth (red circles) towards the eastern portion of this map area as the Nazca Plate subducts deeper beneath the South American Plate.

The epicenter of this M7.0 earthquake is 82 km (50 miles) north of Pucallpa (Quechua for “red earth”), a city of over 300,000 people, and 567 km (350 miles) north-northeast of Lima. Because of the 145 km depth of this earthquake, the ground shaking intensity was moderate even near the epicenter. There have been no immediate reports of major damage, injuries, or deaths resulting from this earthquake.

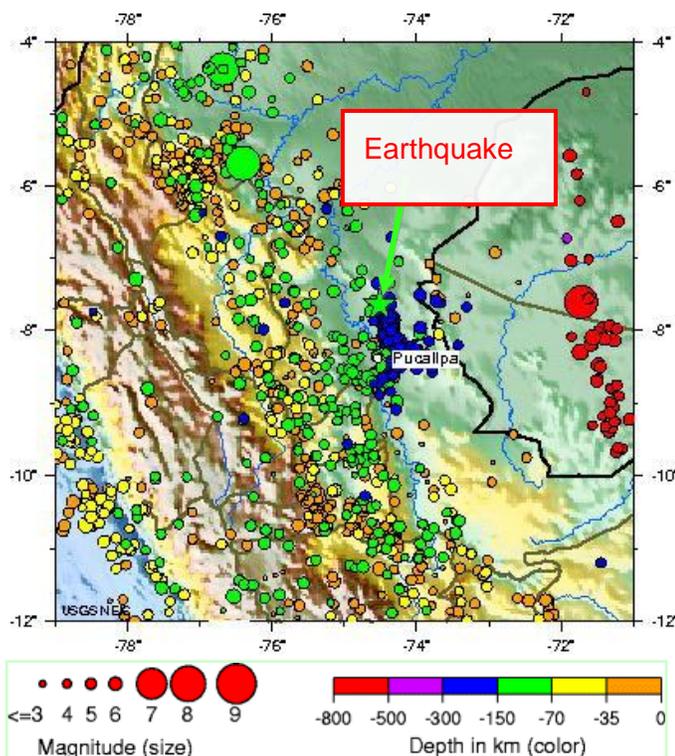
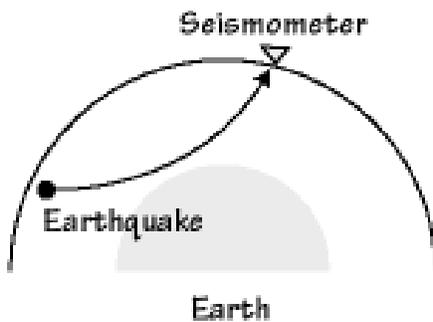
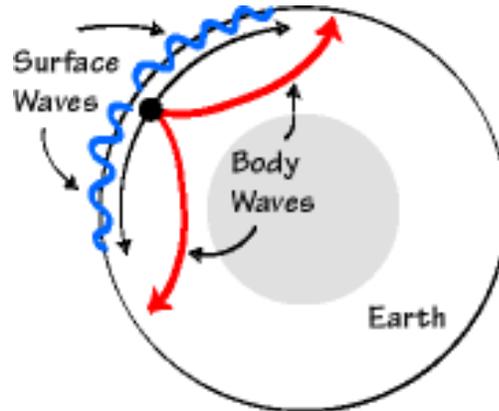


Image courtesy of the US Geological Survey

Seismogram Description:

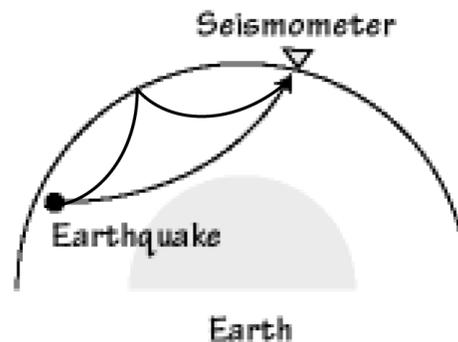
The record of this magnitude 7.0 earthquake on the University of Portland seismometer is illustrated below. This earthquake occurred 68.28 degrees (7579 km, 4709 miles) away from the recording station UPOR in Portland, Oregon.

Seismic waves can be distinguished by a number of properties including the speed the waves travel, the direction that the waves move particles as they pass by, and where and where they don't propagate, and the zones of the Earth through which they propagate. For this earthquake, we will describe P and S waves, both called body waves because they travel or propagate through the body of the Earth. Additionally, we will describe surface waves that travel along Earth's surface.



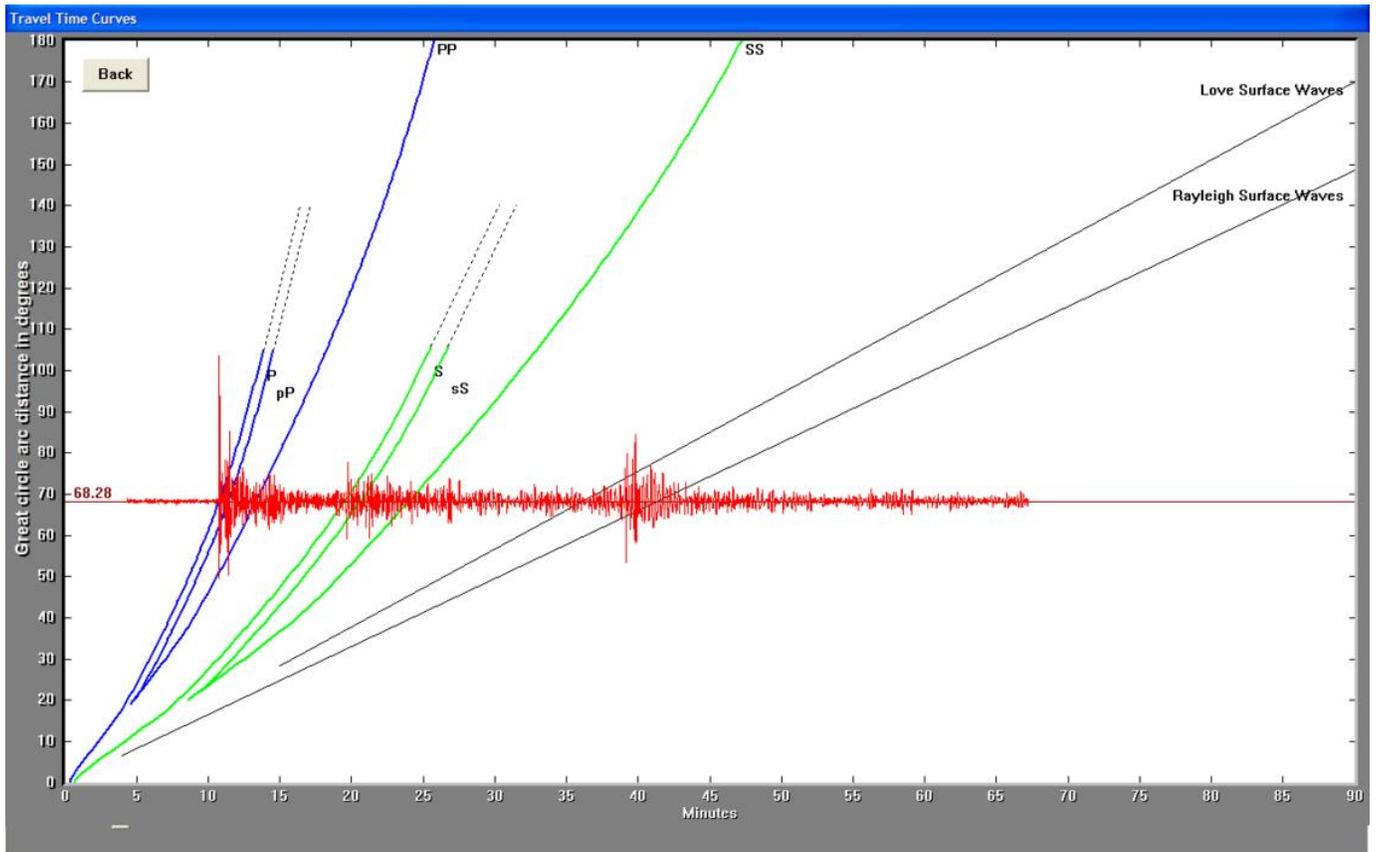
P-waves are compressional waves that travel a curved path through the mantle. The P-waves arrived to the seismometer in Portland, Oregon 10 minutes and 45 seconds (645 seconds) after the earthquake.

PP waves are compressional waves that bounce off the Earth's surface halfway between the earthquake and the seismic station. PP energy arrived 13 minutes and 17 seconds (797 seconds) after the earthquake.



Traveling the same path as the P-wave, the S-waves (shear waves) travel at a slower velocity, arriving 19 minutes and 34 seconds (1174 seconds) after the earthquake.

The Surface waves traveled from the earthquake to Portland around the perimeter of the Earth and arrived 28 minutes and 53 seconds (1733 seconds) after the earthquake.



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