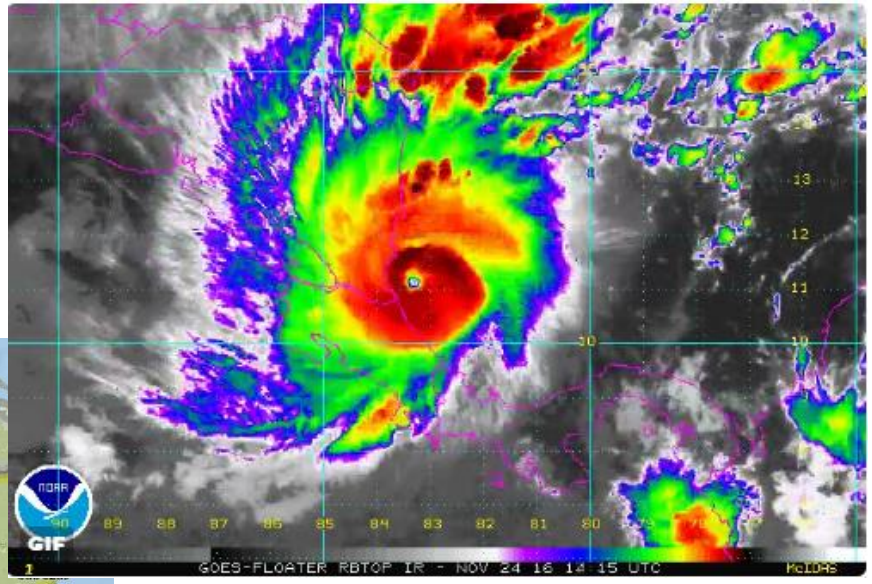
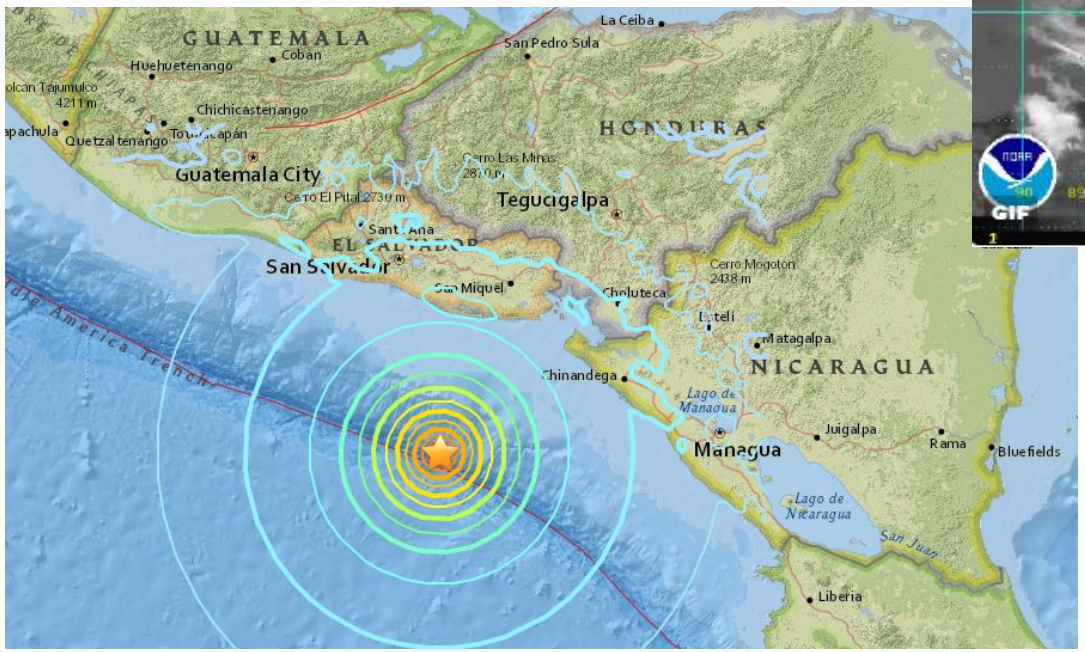
Magnitude 7.0 OFFSHORE EL SALVADOR

Thursday, November 24, 2016 at 18:43:48 UTC

A magnitude 7.0 earthquake struck off the Pacific coast of Central America Thursday at a depth of 10.3 kilometers (6.4 miles). Its epicenter was located 149 km (93 miles) south-southwest of Puerto Triunfo in El Salvador.

There are no immediate reports of damages or injuries. Nicaragua is also dealing with Category 2 Hurricane Otto, which made landfall about an hour before the earthquake.





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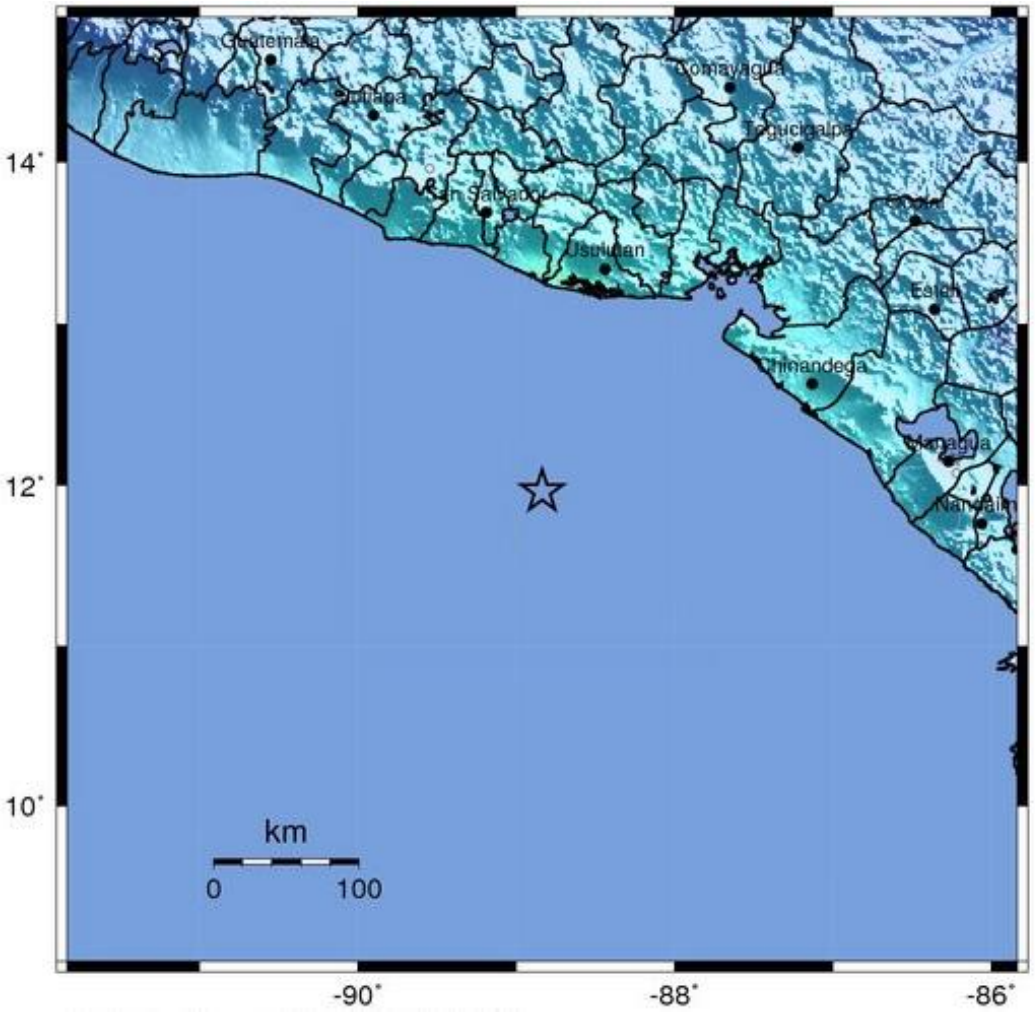
The Modified-Mercalli Intensity scale is a twelve-stage scale, from I to XII, that indicates the severity of ground shaking.

The coastline near the earthquake experienced light shaking.

Modified Mercalli Intensity	Perceived Shaking
X	Extreme
IX	Violent
VIII	Severe
VII	Very Strong
VI	Strong
V	Moderate
IV	Light
II-III	Weak
I	Not Felt

Image courtesy of the US Geological Survey



USGS Estimated shaking intensity from M 7.0 Earthquake

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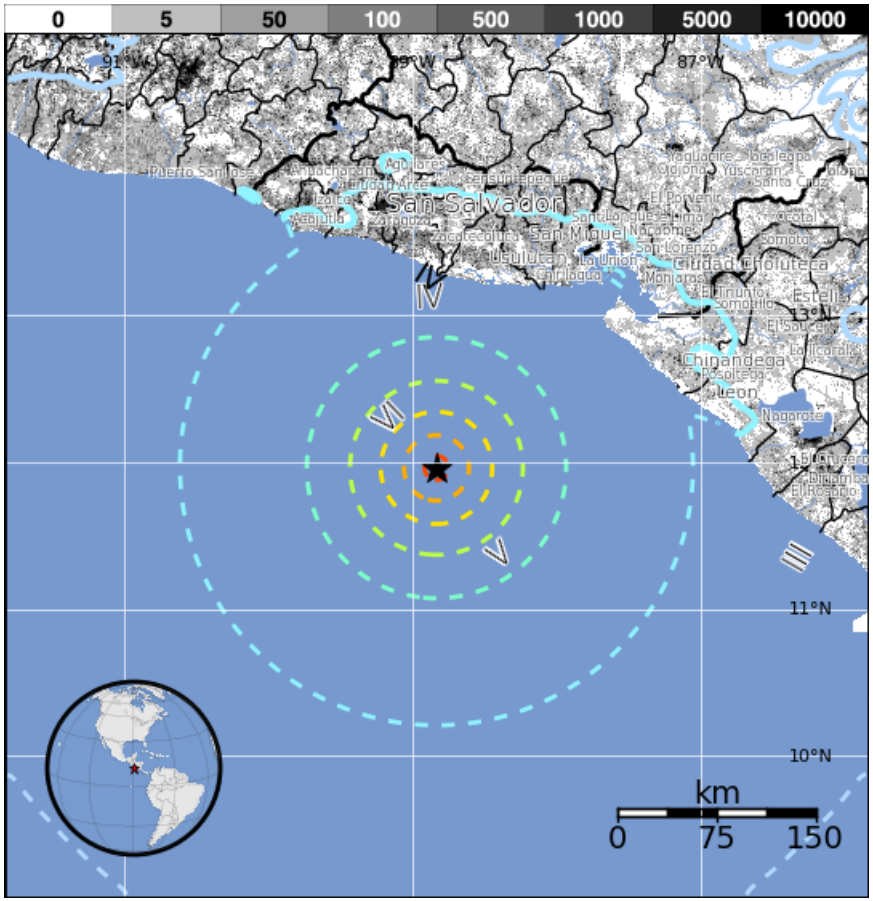
The USGS PAGER map shows the population exposed to different Modified Mercalli Intensity (MMI) levels.

The USGS estimates that nearly 6 million people felt light shaking from this earthquake while almost 19 million people experienced weak ground shaking.

MMI	Shaking	Pop.
I	Not Felt	--*
II-III	Weak	18,821 k*
IV	Light	5,626 k
V	Moderate	0 k
VI	Strong	0 k
VII	Very Strong	0 k
VIII	Severe	0 k

USGS PAGER

Population Exposed to Earthquake 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.

Image courtesy of the US Geological Survey

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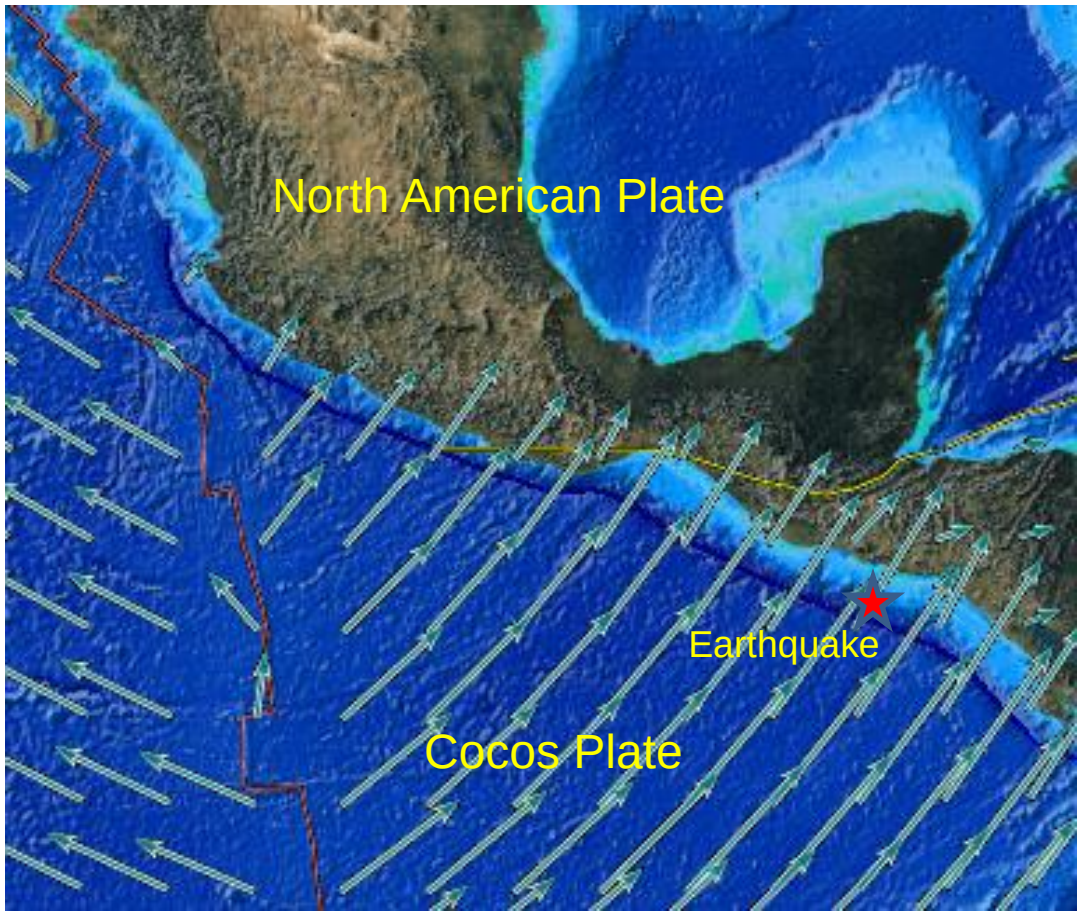

Arrows show plate motion relative to the North American Plate.

The Cocos Plate subducts along the Middle America Trench, under the North America Plate in the north, and under the Caribbean Plate in the south.

At the latitude of this event, the Cocos Plate is converging with the Caribbean Plate at a rate of roughly 8 cm/yr in an east-northeast direction.

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Earthquake and Historical Seismicity

This regional map shows epicenters of the 510 M≥5.0 earthquakes that have occurred since 1980 in the region of the November 24, 2016 event.

Earthquakes along the plate boundary in the Middle America Trench region increase in depth from southwest to northeast as the Cocos Plate dives beneath the Caribbean Plate.

The November 24, 2016 earthquake is the 5th largest in this area since 1980.

Map created with the IRIS Earthquake Browser

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This map shows plate boundaries between the North American, Caribbean, Cocos, Nazca, and South American Plates. The location of this earthquake is shown by the red star.

Near the location of this earthquake, the Cocos Plate subducts into the Middle America Trench beneath the Caribbean Plate.

While many earthquakes in the Middle America Trench region result from thrust faulting along the Cocos – Caribbean convergent plate boundary, this earthquake resulted from normal faulting. This earthquake may have occurred within the top of the Cocos Plate due to extensional forces as the subducting plate bends into the Middle America Trench.

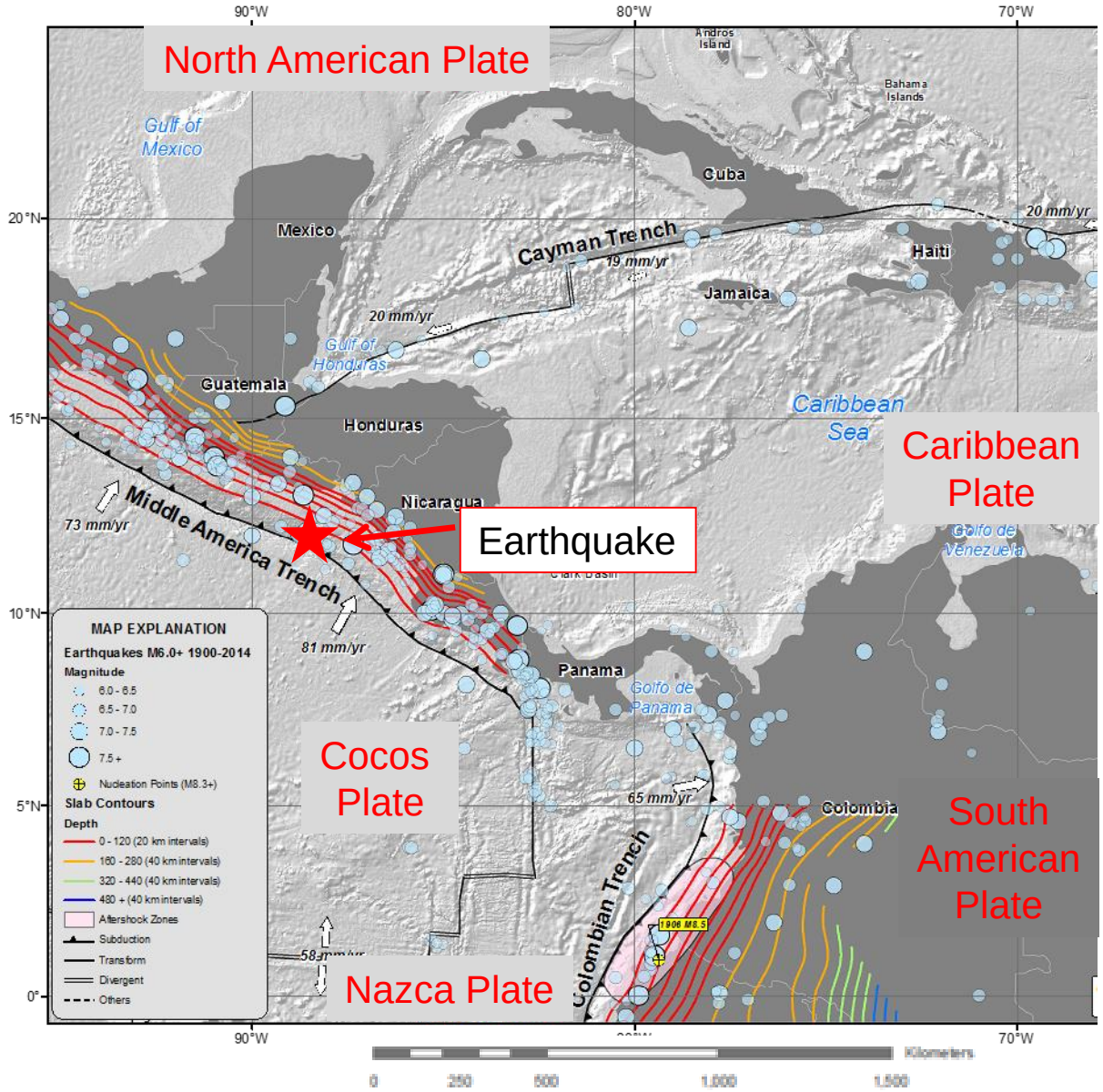

Image courtesy of the US Geological Survey

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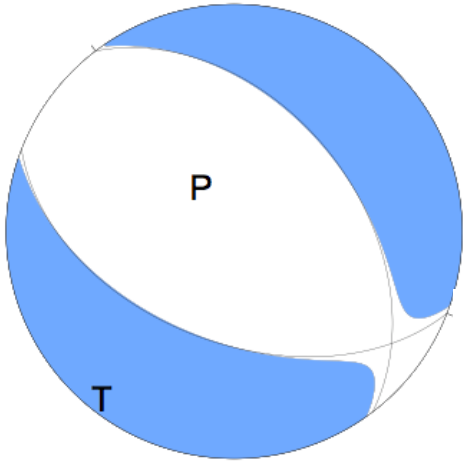
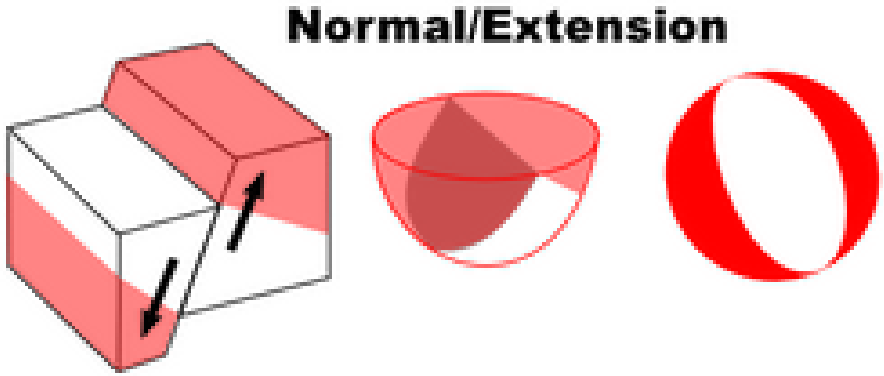
The focal mechanism is how seismologists plot the 3-D stress orientations of an earthquake. Since an earthquake occurs as slip on a fault, it generates primary (P) waves in quadrants of compression (shaded) and extension (white). The orientation of these quadrants determined from recorded seismic waves determines the type of fault that produced the earthquake.



USGS W-phase Moment Tensor Solution

The tension axis (T) reflects the minimum compressive stress direction. The pressure axis (P) reflects the maximum compressive stress direction.



In this case, the focal mechanism indicates this earthquake occurred as the result of normal faulting.

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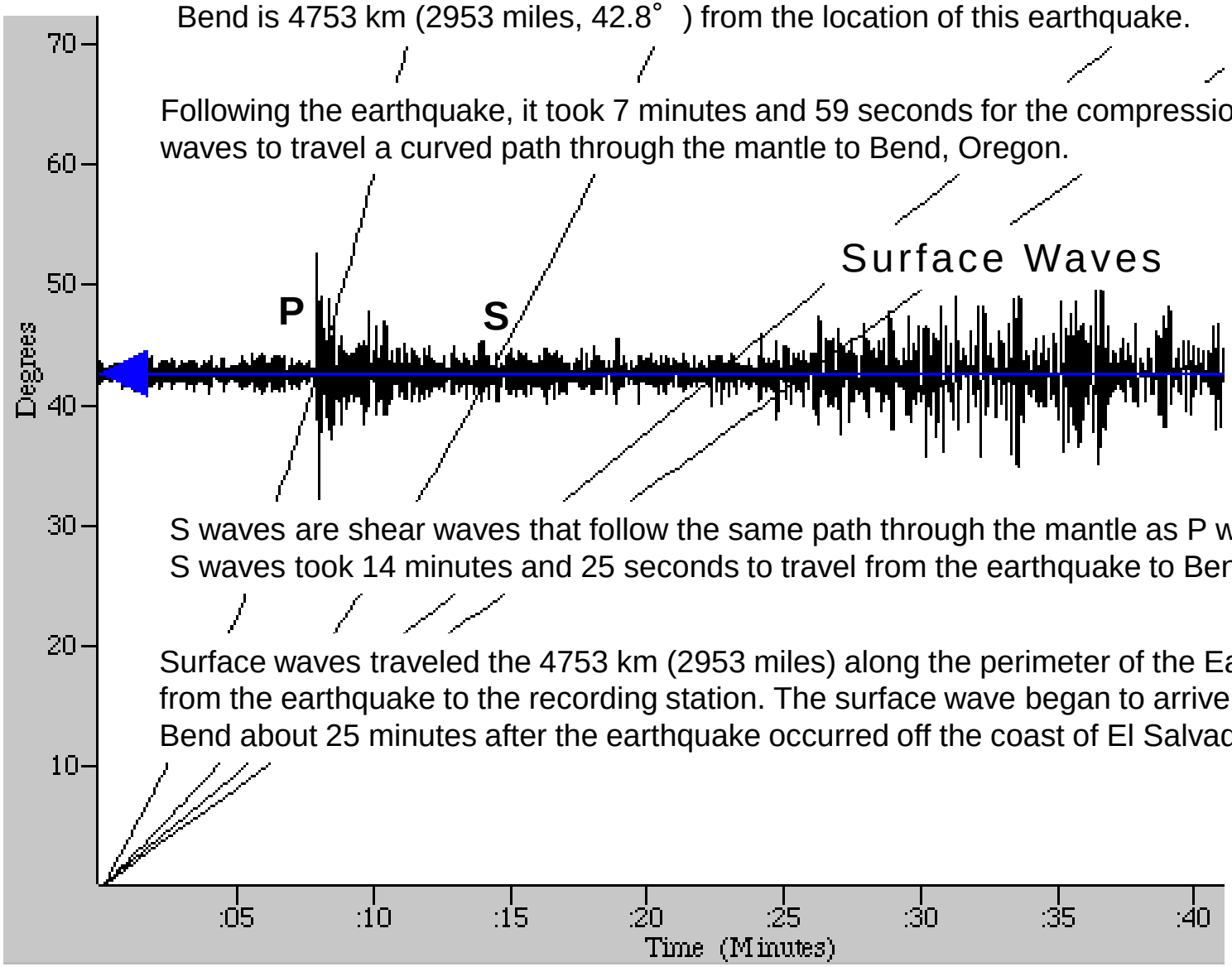
The record of the earthquake in Bend, Oregon (BNOR) is illustrated below. Bend is 4753 km (2953 miles, 42.8˚) from the location of this earthquake.

Following the earthquake, it took 7 minutes and 59 seconds for the compressional P waves to travel a curved path through the mantle to Bend, Oregon.



S waves are shear waves that follow the same path through the mantle as P waves. S waves took 14 minutes and 25 seconds to travel from the earthquake to Bend.

Surface waves traveled the 4753 km (2953 miles) along the perimeter of the Earth from the earthquake to the recording station. The surface wave began to arrive in Bend about 25 minutes after the earthquake occurred off the coast of El Salvador.

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