

## Magnitude 7.5 PAPUA NEW GUINEA

Sunday, February 25, 2018 at 17:44:44 UTC

A magnitude 7.5 earthquake occurred 33 kilometers (20 miles) southwest of Tari, Papua New Guinea, at a depth of 35 km (22 miles). Papua New Guinea is located on the eastern half of the island of New Guinea, to the east of Indonesia. It is home to about 7 million people.



There were no immediate reports of injuries.



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

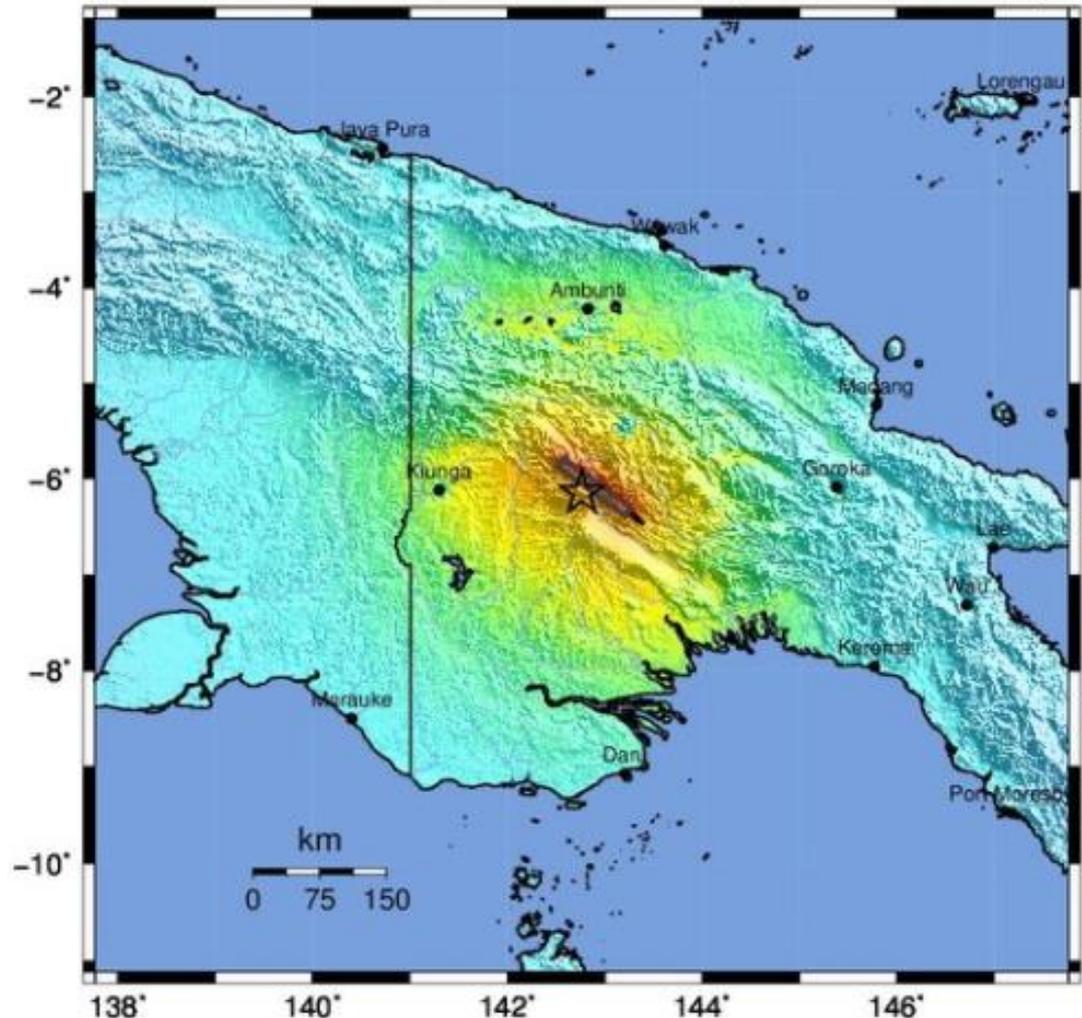
Those nearest the earthquake experienced violent shaking.

### Modified Mercalli Intensity



### Perceived Shaking

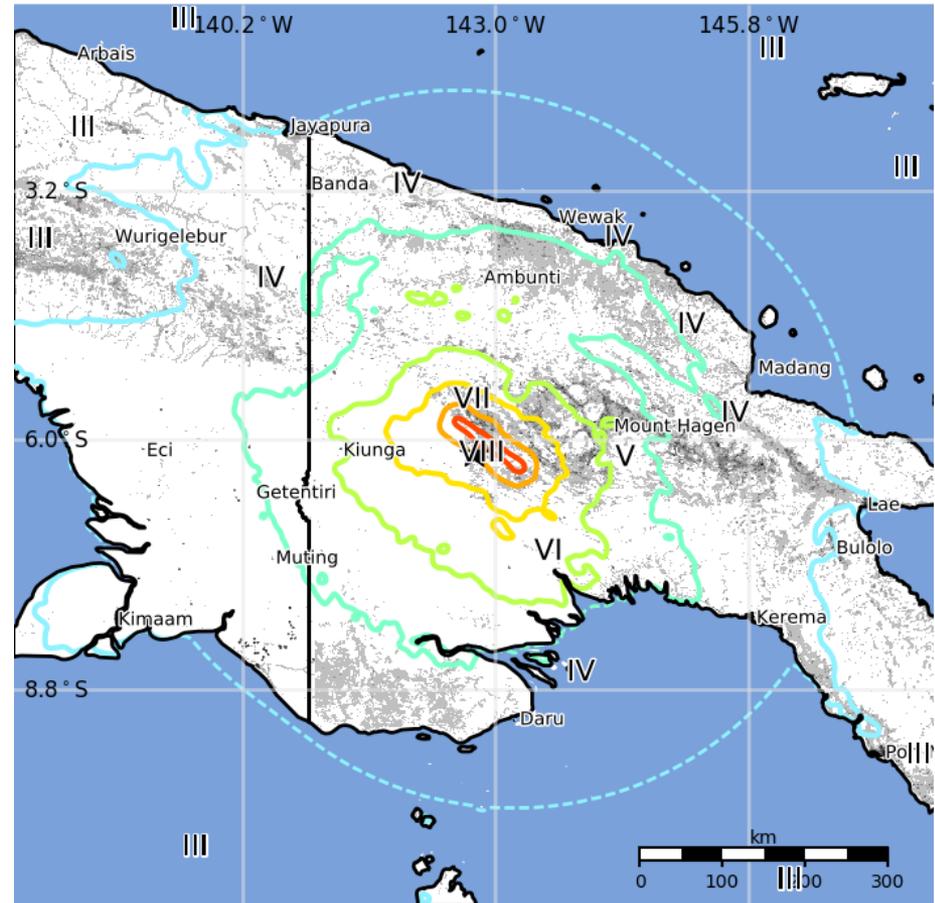
**Extreme**  
**Violent**  
**Severe**  
**Very Strong**  
**Strong**  
Moderate  
Light  
Weak  
Not Felt



USGS Estimated shaking Intensity from M 7.5 Earthquake

The USGS PAGER map shows the population exposed to different Modified Mercalli Intensity (MMI) levels. The USGS estimates that 40,000 people felt violent shaking from this earthquake.

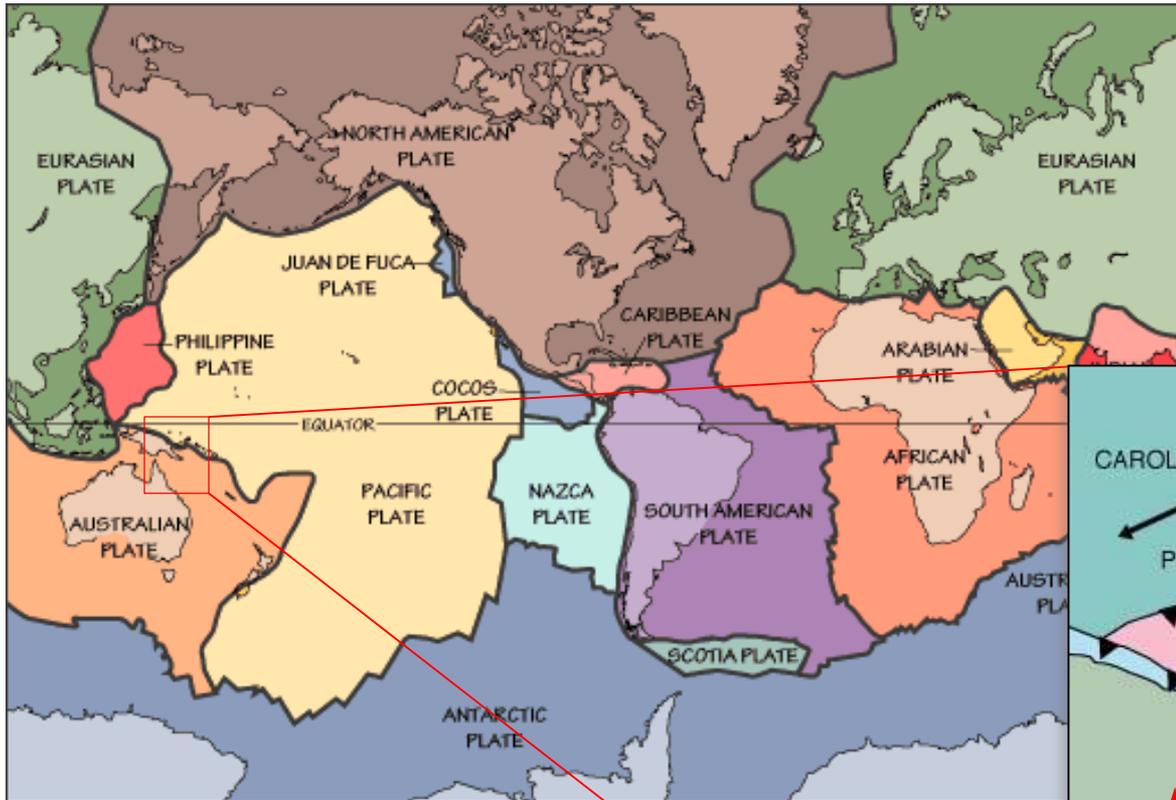
MMI	Shaking	Pop.
I	Not Felt	--*
II-III	Weak	1,387 k*
IV	Light	3,583 k
V	Moderate	1,205 k
VI	Strong	809 k
VII	Very Strong	336 k
VIII	Severe	270 k
IX	Violent	40 k
X	Extreme	0 k



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.

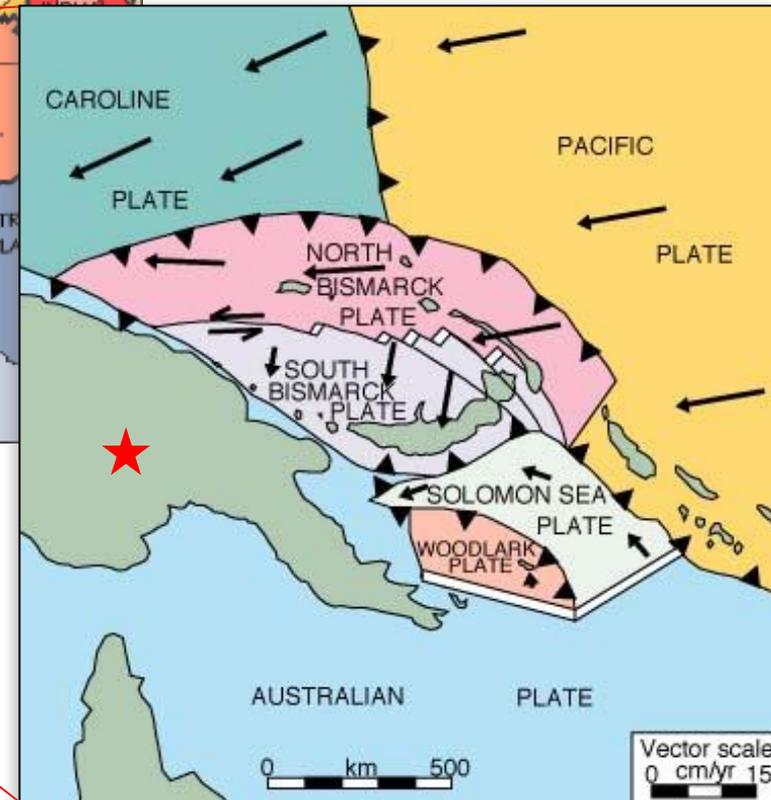
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The NE part of the Australian Plate is broken into microplates that accommodate its convergence with the Pacific Plate. Arrows on the map below show net motions relative to the Australian Plate. The red star shows the location of this earthquake.

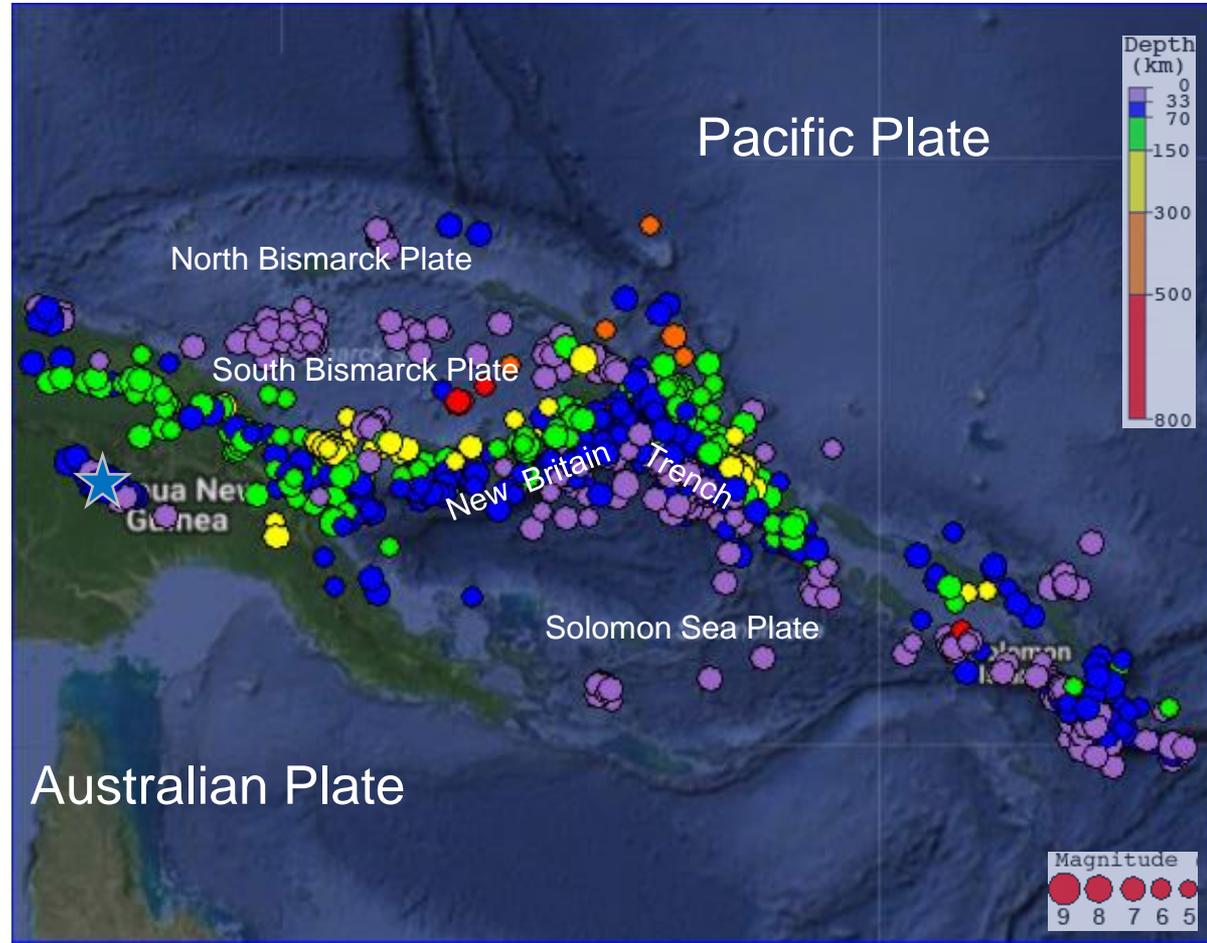
The Pacific Plate converges rapidly with the Australian Plate. Earthquakes in this region are generally associated with the large-scale convergence of these two major plates and with the complex interactions of the associated microplates. Due to the location and the depth of 35 km (21 miles), this earthquake likely occurred within the crust of the Australian Plate.



This seismicity map covers the same region as the microplate tectonic map of the previous slide. Locations of the most recent 1000 earthquakes of magnitude (M)  $\geq 5$  are shown.

Earthquake depths increase from southwest to northeast across the New Britain Trench where the Solomon Sea microplate subducts beneath the much larger Pacific Plate.

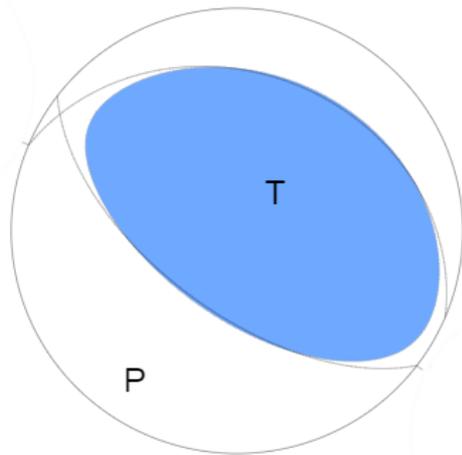
Away from this complexity, this earthquake occurred as intraplate faulting within the crust of the Australian Plate as is shown with a blue star.



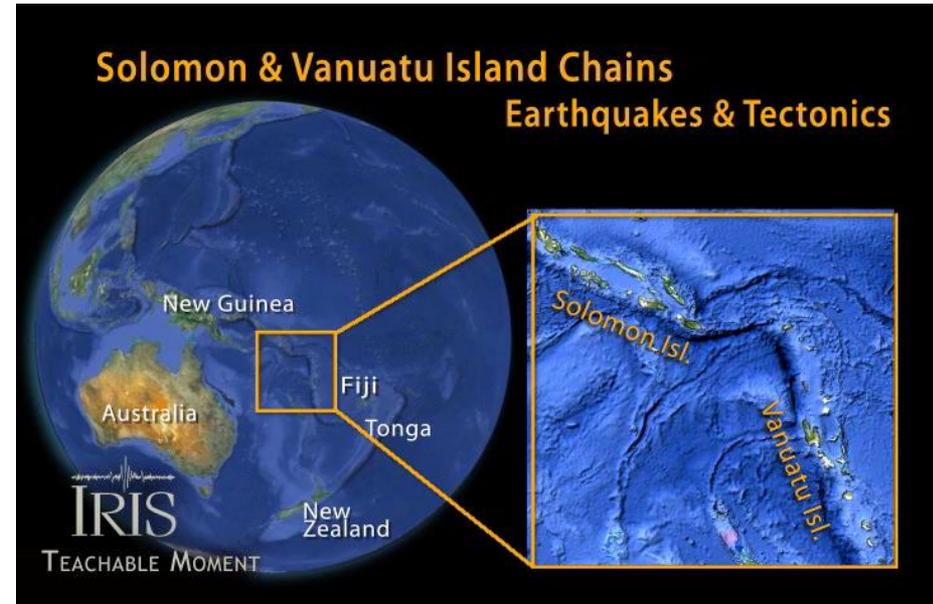
*Map created with the IRIS Earthquake Browser*

According to the USGS, the location, depth and focal mechanism solution all indicate the earthquake occurred as a result of intraplate compressional faulting within Australian Plate.

At the location of this earthquake, the Australian Plate is converging with the Pacific Plate, moving towards the east-northeast with respect to the Pacific Plate at a velocity of approximately 107 mm/yr.



W-phase Moment Tensor Solution



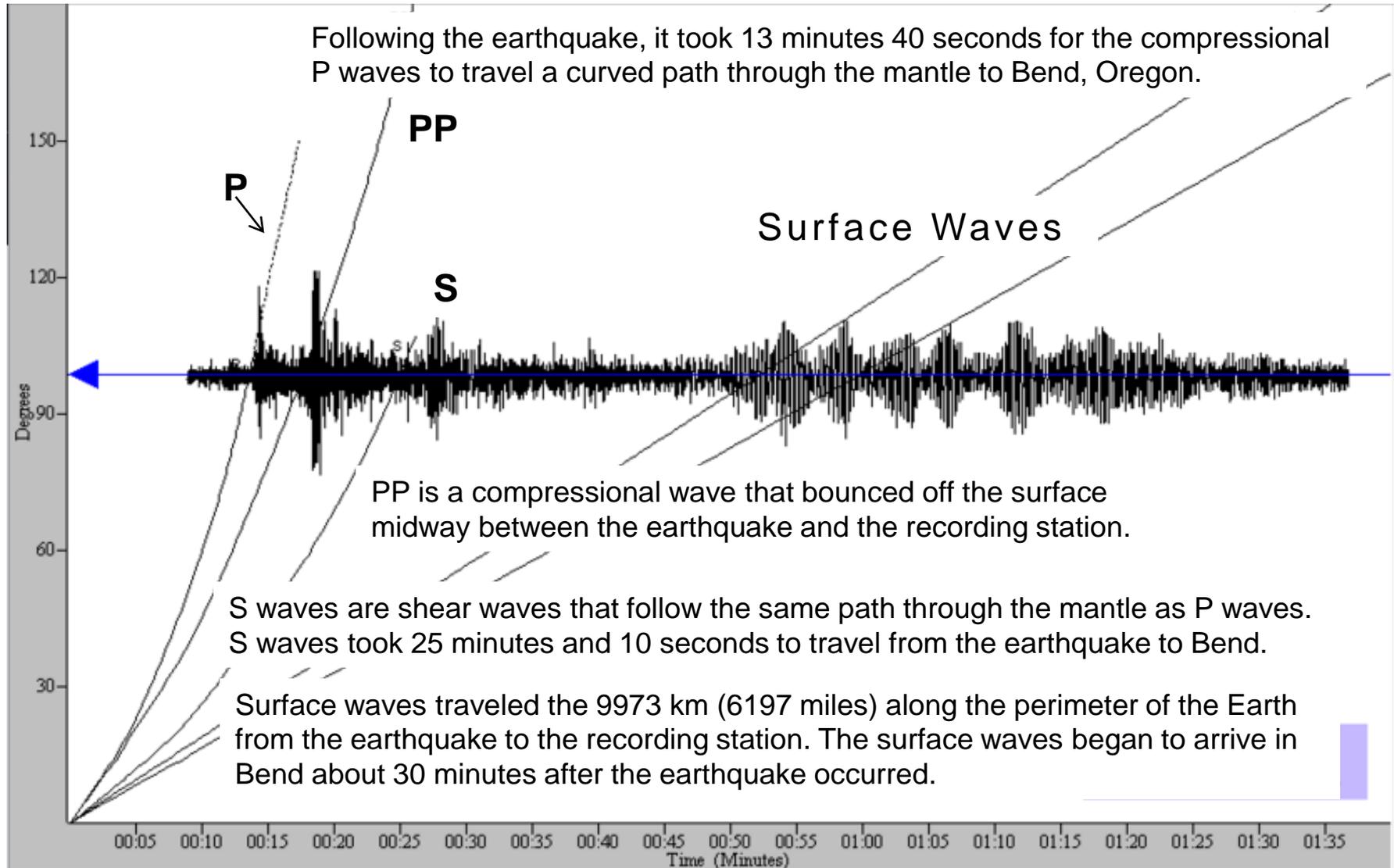
Regional tectonic complexities involving the convergence of the Australian and Pacific Plates  
(click for animation)

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

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The record of the earthquake in Bend, Oregon (BNOR) is illustrated below. Bend is 10933 km (6793 miles,  $98.5^\circ$ ) from the location of this earthquake.



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