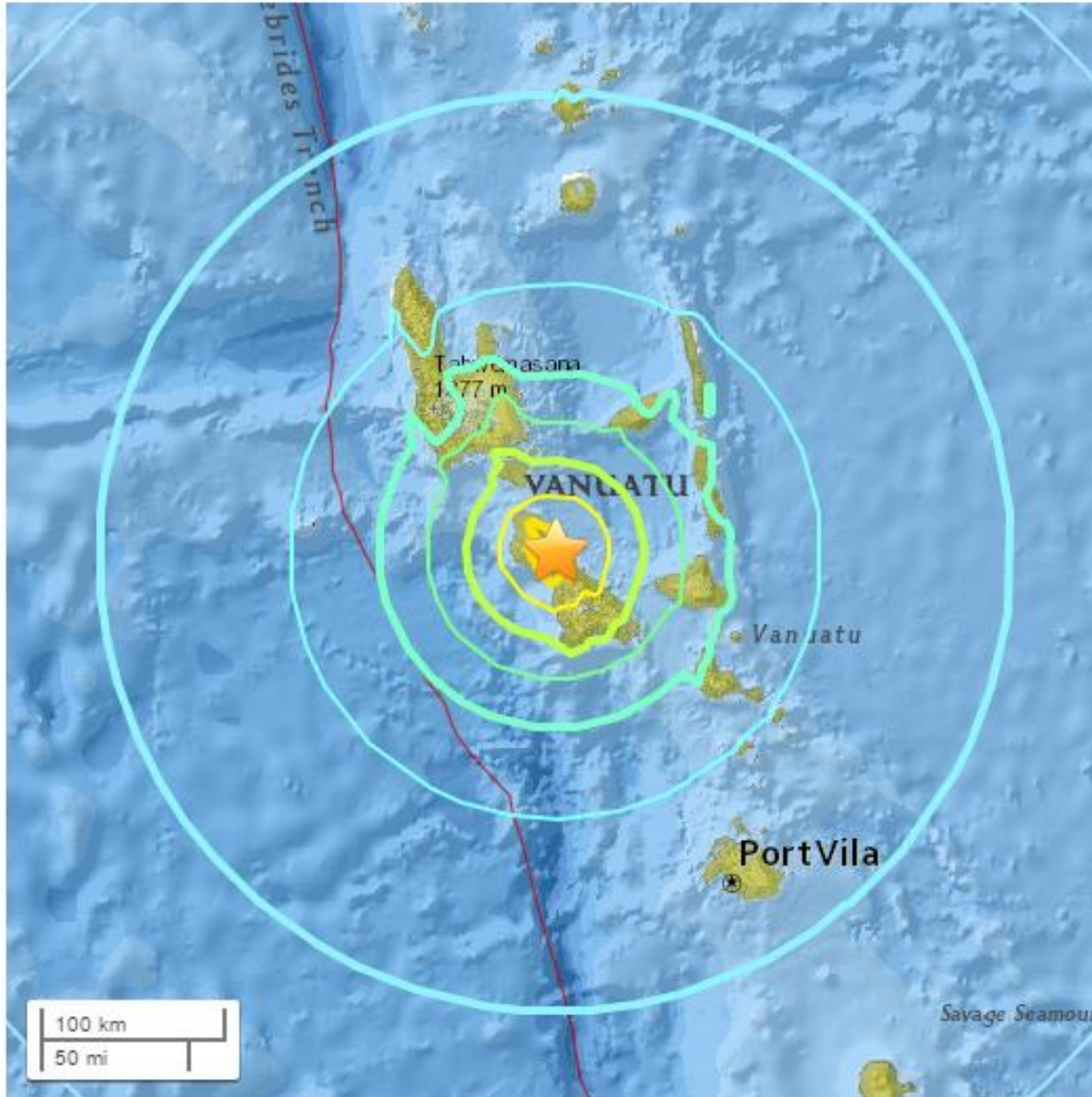


# Magnitude 7.0 VANUATU

Thursday, April 28, 2016, 19:33:24 UTC



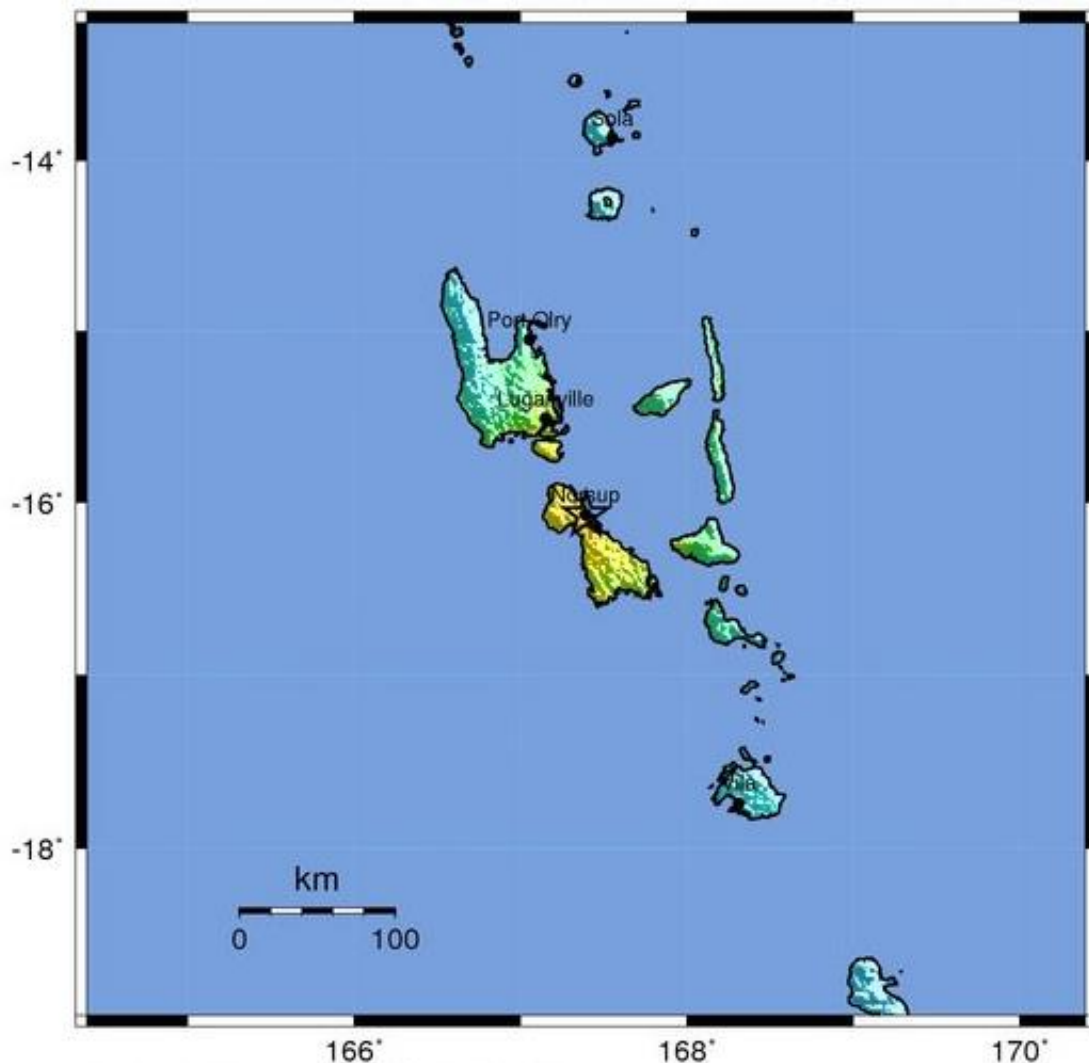
A major earthquake struck in the southwest Pacific Ocean at a depth of 27 km beneath the island of Melampa in the Vanuatu island chain.

There are no reports of damage.

The Modified Mercalli Intensity (MMI) scale depicts shaking severity.

Very strong ground shaking was felt at the epicenter.

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



USGS Estimated shaking Intensity from M 7.0 Earthquake

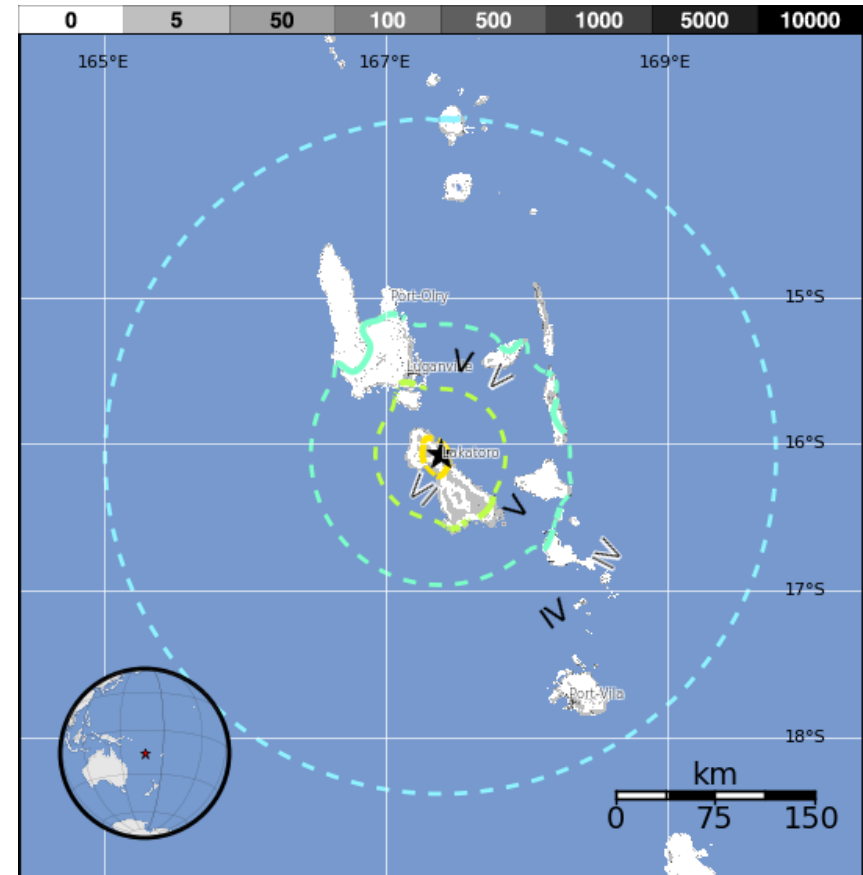
The USGS PAGER map shows the population exposed to different Modified Mercalli Intensity (MMI) levels.

Approximately 6,000 people experienced very strong ground shaking during this earthquake.

MMI	Shaking	Pop.
I	Not Felt	--*
II-III	Weak	9 k*
IV	Light	125 k
V	Moderate	76 k
VI	Strong	30 k
VII	Very Strong	6 k
VIII	Severe	0 k
IX	Violent	0 k

USGS PAGER

*Population Exposed to Earthquake Shaking*



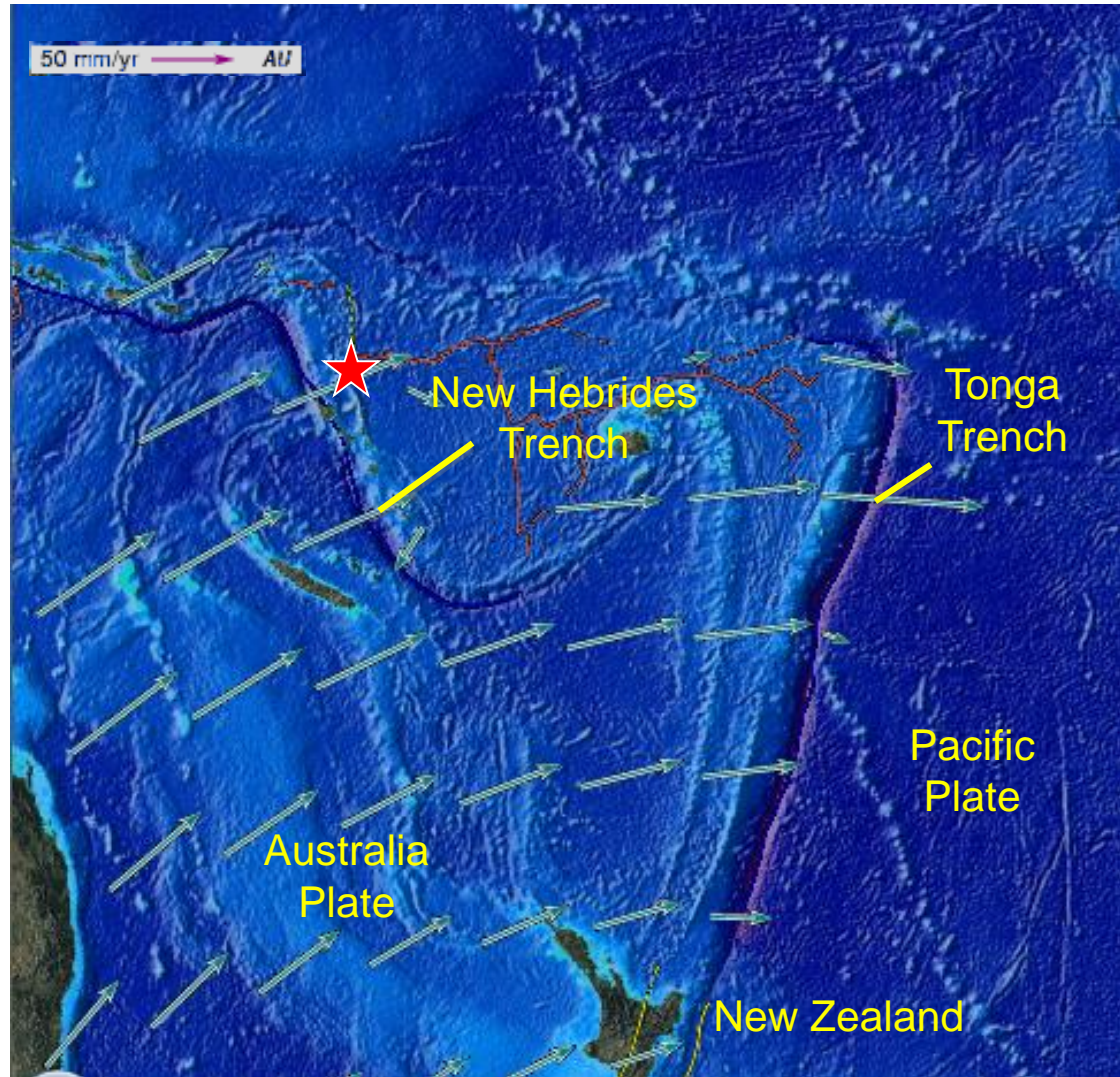
The color coded contour lines outline regions of MMI intensity. The total population exposure to a given MMI value is obtained by summing the population between the contour lines. The estimated population exposure to each MMI Intensity is shown in the table.

*Image courtesy of the US Geological Survey*

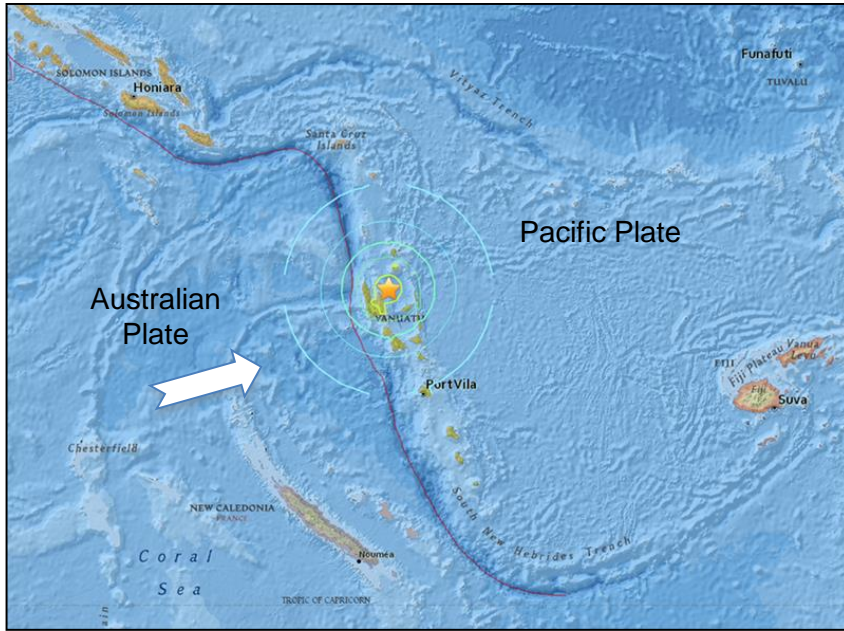


The earthquake epicenter is located just 100 km east of the New Hebrides Trench, the bathymetric expression of the boundary between the Australia and Pacific Plates, where lithosphere of the Australia Plate subducts into the mantle beneath the North Fiji Basin.

At the location of this earthquake, the Australia Plate moves east-northeast with respect to the Pacific Plate at a velocity of approximately 84 mm/yr.

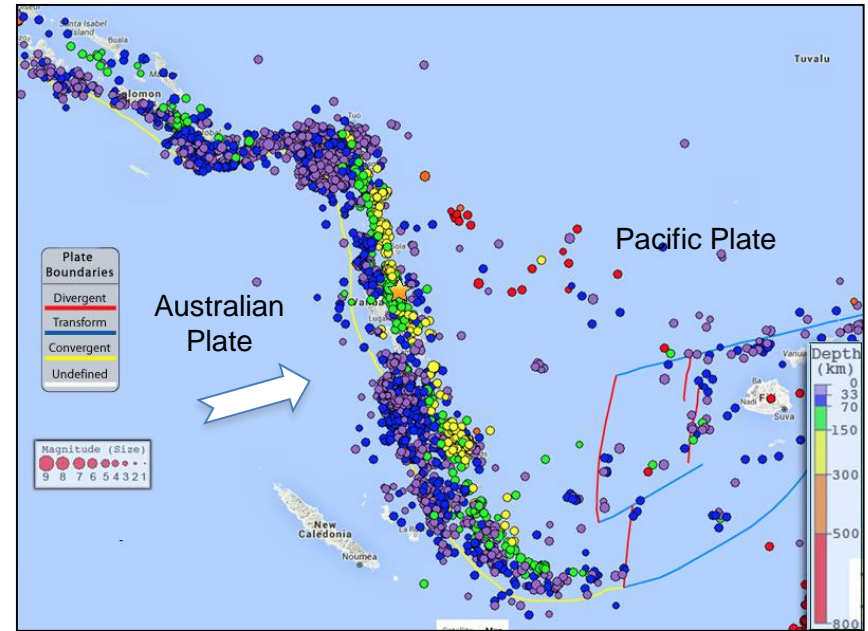


Arrows show plate motion relative to the Pacific Plate.



*Image courtesy of the USGS*

The Vanuatu Islands sit above the subduction zone where the Australian Plate dives beneath the Pacific Plate.

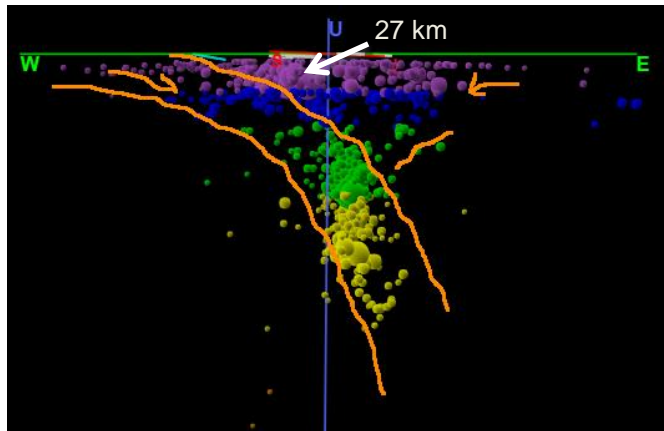


*Image from IRIS Internet Earthquake Browser (IEB)*

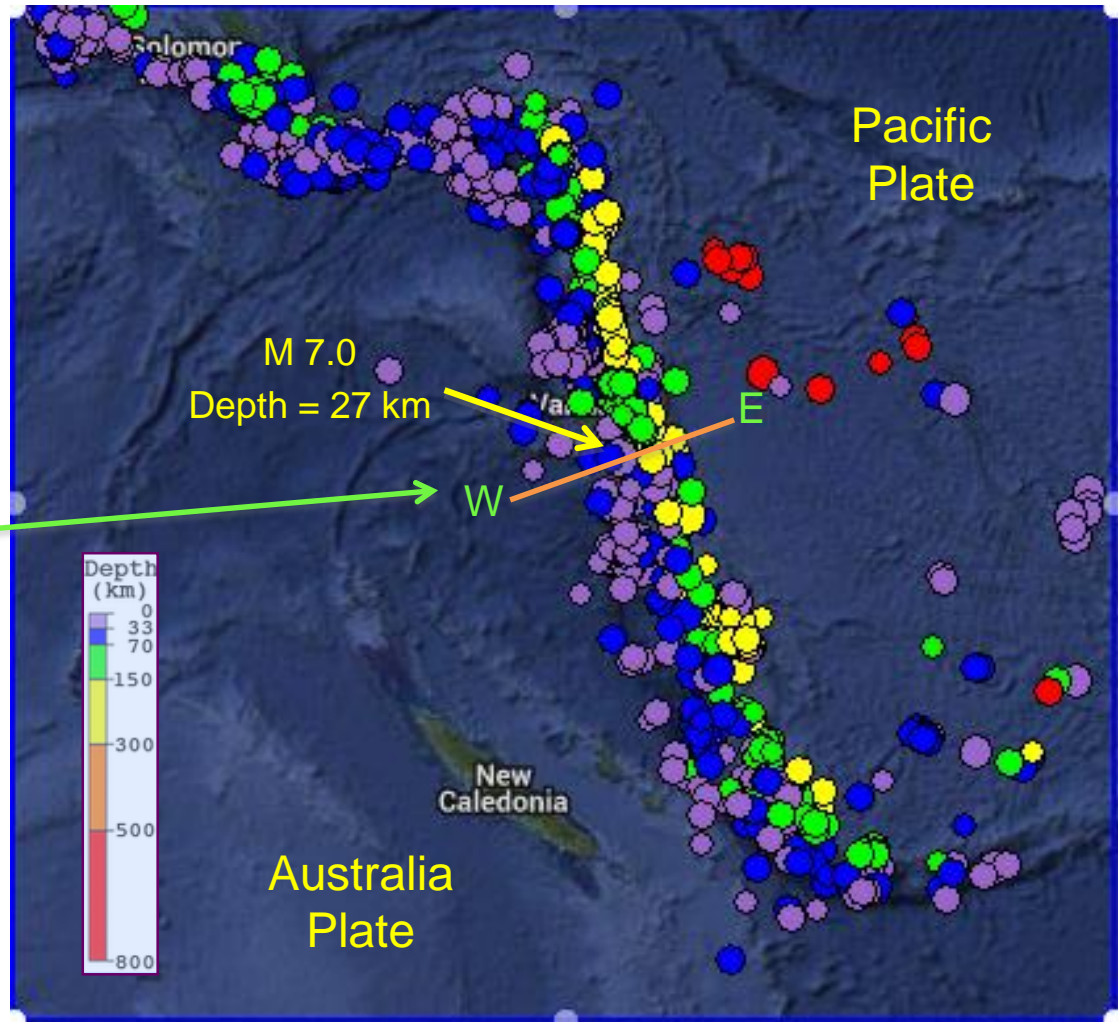
Earthquakes occur as the plates grind past each other. They are shallow on the west near the surface contact between the plates, and deeper to the east. are shallow on the west near the plate contact, and deeper to the east.



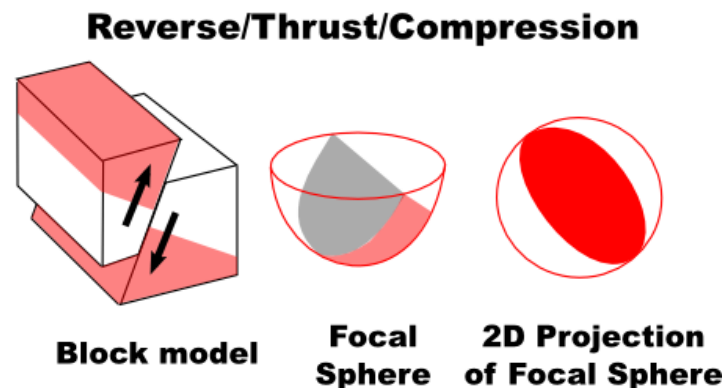
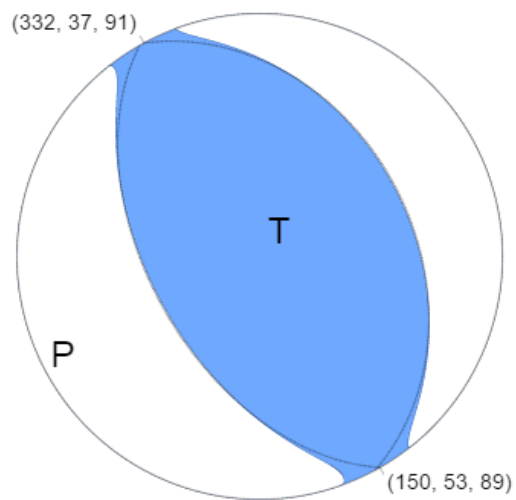
This map shows locations of the 1000 most recent earthquakes along the New Hebrides Trench where the Australian Plate subducts beneath the North Fiji Basin part of the Pacific Plate. The hypocenter of this earthquake fits the general pattern of increasing depths of earthquakes from west to east across the subduction zone.



Hand-drawn lines on the 3-D cross-sectional view from the IEB reveal a steeply dipping plate.

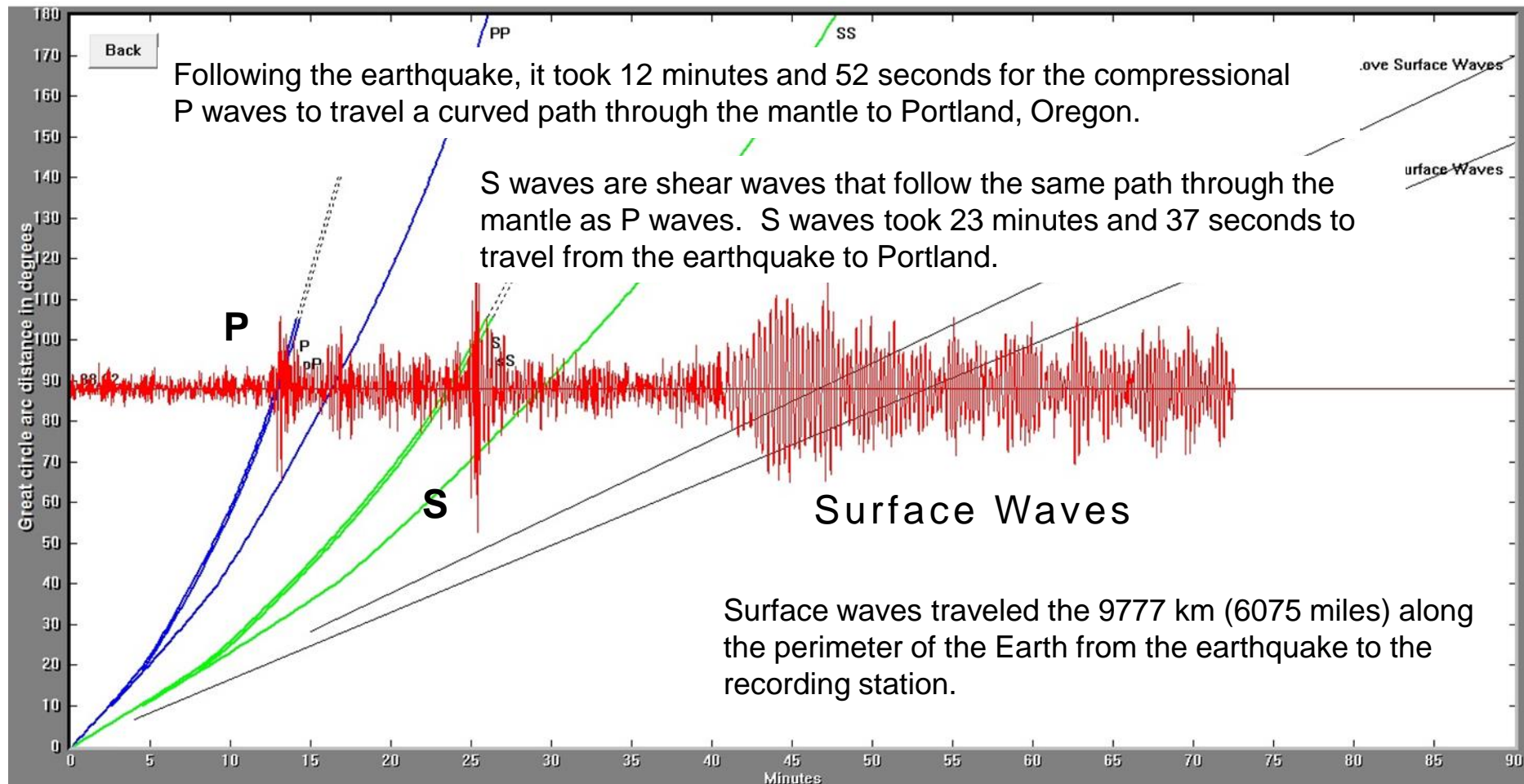


According to the USGS, the preliminary location, depth and focal mechanism of the event indicate rupture occurred on an east-dipping thrust fault consistent with the location and orientation of the subduction zone interface at depth in this region.



Shaded areas show quadrants of the focal sphere in which the P-wave first-motions are away from the source, and unshaded areas show quadrants in which the P-wave first-motions are toward the source. The letters represent the axis of maximum compressional strain (P) and the axis of maximum extensional strain (T) resulting from the earthquake.

The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 9777 km (6075 miles,  $88.09^\circ$ ) from the location of this earthquake.





**Teachable Moments are a service of**

The Incorporated Research Institutions for Seismology  
Education & Public Outreach  
and  
The University of Portland

Please send feedback to [tkb@iris.edu](mailto:tkb@iris.edu)

