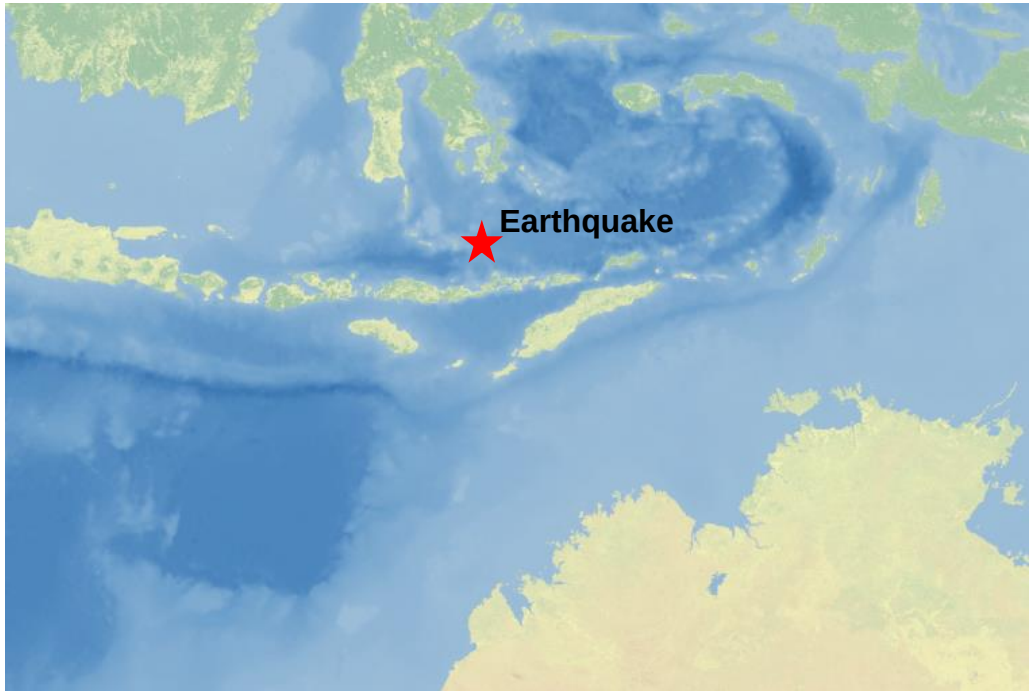
Magnitude 7.0 FLORES SEA
Friday, February 27, 2015 at 13:45:05 UTC

A 7.0 magnitude earthquake shook southern Indonesia, but no major damage or tsunami were expected because of its depth.

The U.S. Geological Service reported the magnitude 7.0 earthquake in the Flores Sea about 132 kilometers (82 miles) north of the town of Nebe. It occurred at a depth of 552 kilometers (342 miles).



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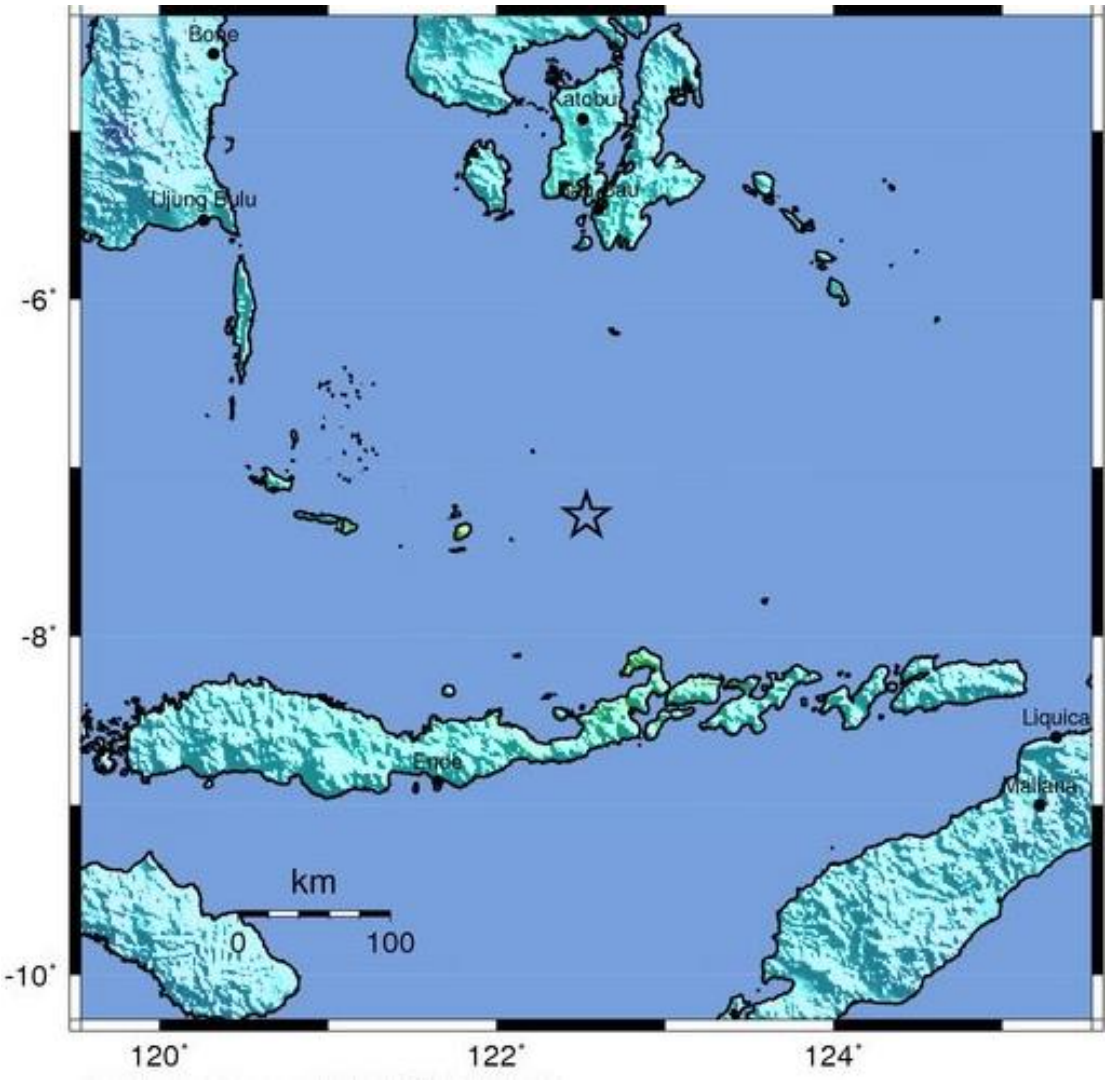
The Modified-Mercalli Intensity scale is a twelve-stage scale, from I to XII, that indicates the severity of ground shaking.

The nearest islands experienced mostly light shaking, primarily because of the depth of this earthquake.

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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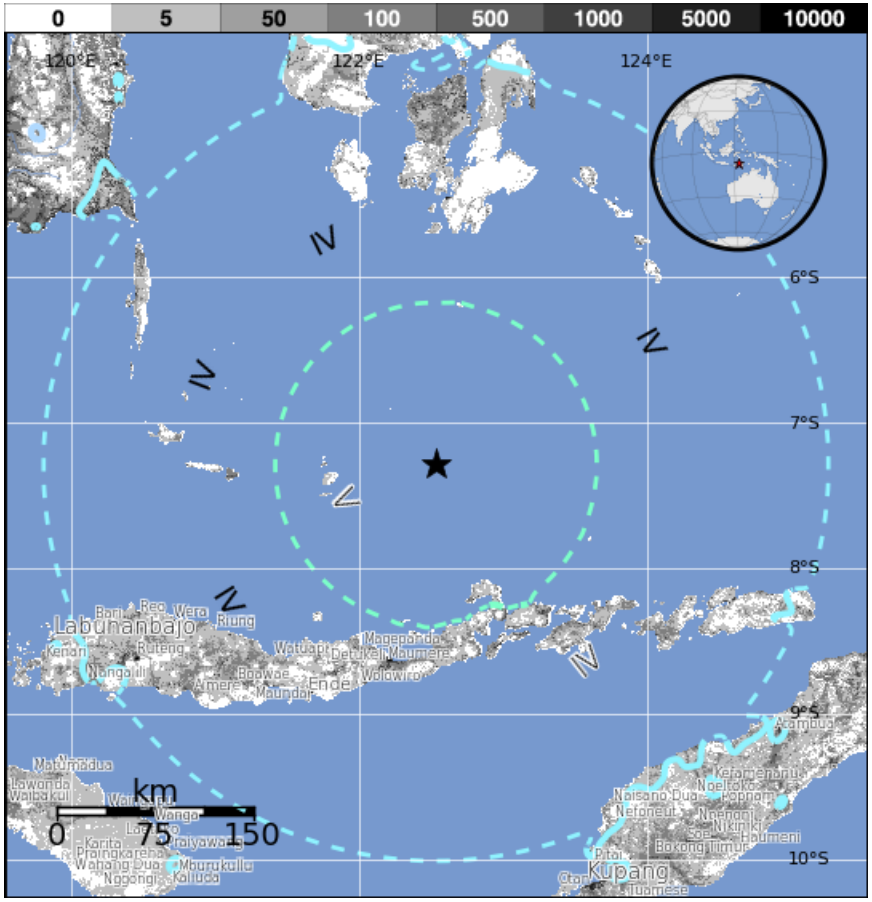
USGS PAGER
Population Exposed to Earthquake Shaking

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

208,000 people were exposed to moderate shaking from this earthquake while 5.1 million experienced light shaking and 4.3 million experienced weak shaking.



MMI	Shaking	Pop.
I	Not Felt	--*
II-III	Weak	4,339k*
IV	Light	5,143k
V	Moderate	208k
VI	Strong	0k
VII	Very Strong	0k

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

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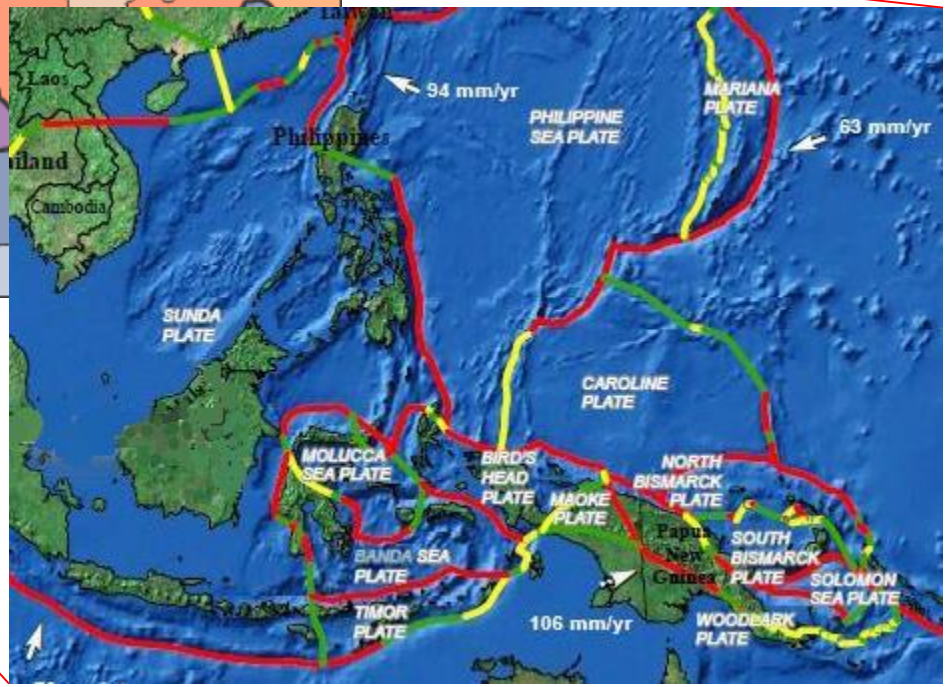
Image courtesy of the US Geological Survey

The Pacific, Philippine, and Australian Plates meet in a complex arrangement of subduction zones in the western Pacific Ocean.

Convergent plate boundary

Divergent plate boundary

Transform plate boundary



In detail, there are numerous microplates (fragments of larger plates) with convergent, divergent, and transform (strike-slip) boundaries between them.

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Indonesia is the world's fourth most populous country with 238 million people distributed over more than 17,000 islands. Because of its location within the Sunda Subduction Zone region, Indonesia experiences frequent earthquakes and volcanic eruptions.

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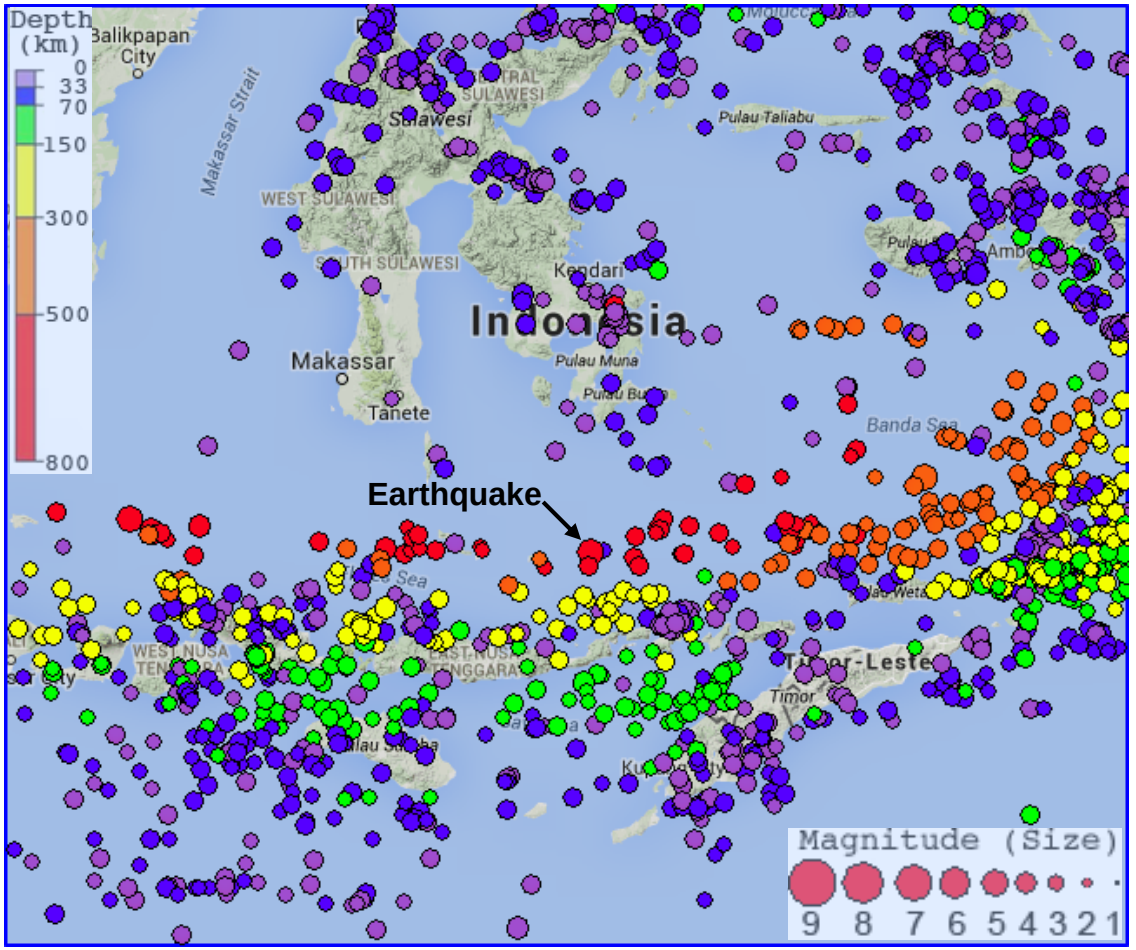
Regional seismicity in the Flores Sea area north and east of the Java Trench is shown on the map with earthquakes color coded by depth.

Since the beginning of 2010, 1544 earthquakes of magnitude 4 or larger have occurred within the map area. Notice that earthquakes are shallow on the south edge of the map area. As the oceanic portion of the Australian Plate subducts towards the north beneath the Sunda Plate, earthquakes within the Australia Plate increase in depth from south to north.



Map created using the IRIS Earthquake Browser: *www.iris.edu/ieb*

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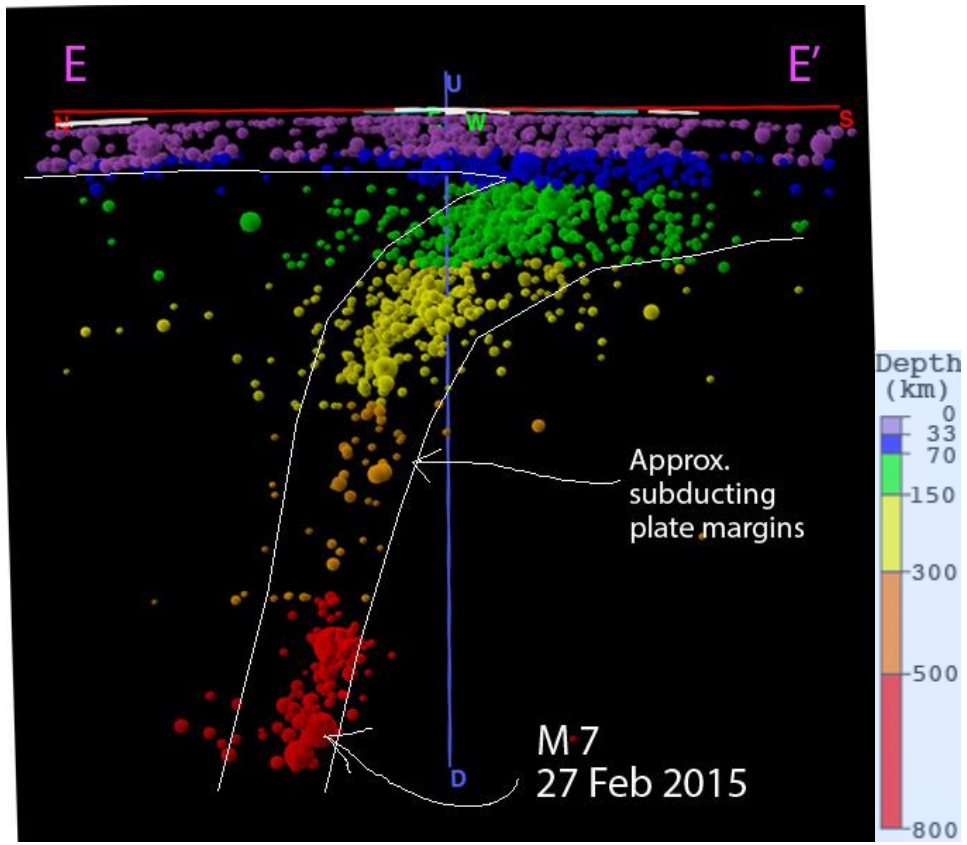
To produce earthquakes, rocks must be brittle so they can accumulate elastic energy as they bend then rapidly release that energy during earthquake rupture. Rocks are brittle at low temperatures but become viscoelastic when they reach temperatures of about 600 ° C.

With the exception of subducting oceanic plates, rock in Earth's mantle below about 100 km depth is viscoelastic and cannot rupture to produce earthquakes.

However, rapidly subducting cool oceanic plates can reach depths up to about 700 km into the hot mantle and continue to produce earthquakes. The deepest earthquakes are thought to be due to phase changes of minerals in the high pressure and temperature conditions at those depths.



Exploring a three-dimensional view from the IRIS Earthquake Browser. Historical regional seismicity plotted tracking the descent of the Australian Plate. This earthquake occurred at a depth of 552 km.

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