

Magnitude 7.3 INDONESIA

Tuesday, December 14, 2021 at 03:20:24 UTC



A magnitude 7.3 earthquake occurred 80.8 km (50.2 miles) north of Maumere, Indonesia at a depth of 18.5 km (11.5 miles) causing only minor damage and injuring one person.

Indonesia is the world's fourth most populous country with 277 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.



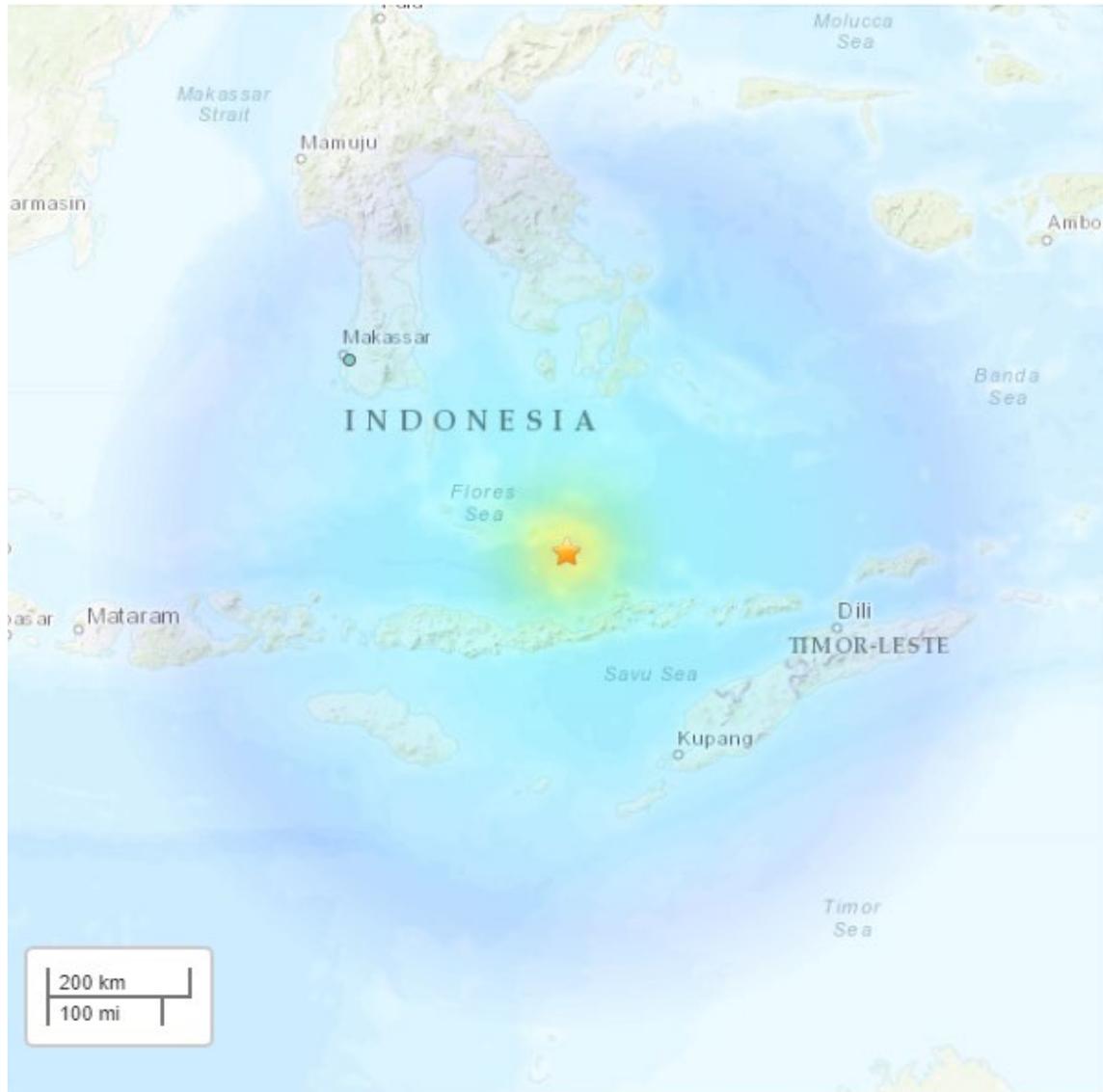
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The Modified-Mercalli Intensity (MMI) scale is a ten-stage scale that indicates the severity of ground shaking. Intensity is dependent on the magnitude, depth, bedrock, and location.

The area near the epicenter experienced strong shaking from this earthquake.

| MMI | 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 7.3 Earthquake

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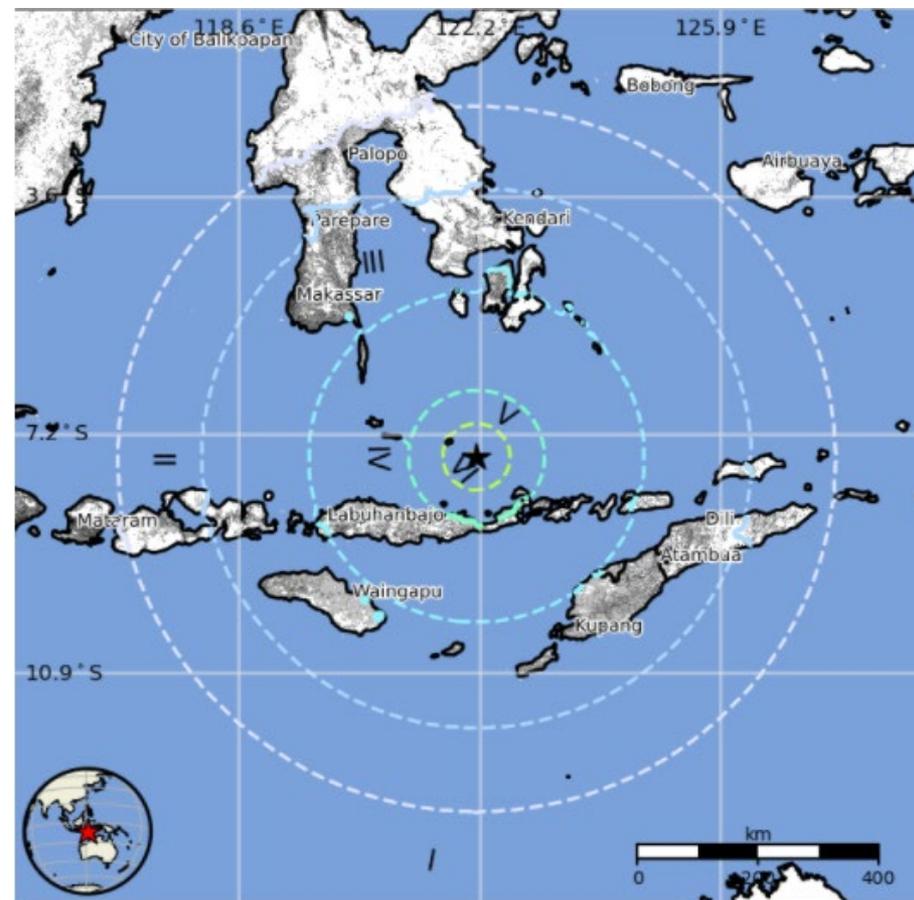
USGS PAGER

Population Exposed to Earthquake Shaking

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

2,000 people were exposed to strong shaking from this earthquake.

| MMI | Shaking | Population |
|--------|-------------|------------|
| I | Not Felt | 12,896 k* |
| II-III | Weak | 17,037 k |
| IV | Light | 3,514 k |
| V | Moderate | 304 k |
| VI | Strong | 2 k |
| VII | Very Strong | 0 k |
| VIII | Severe | 0 k |
| IX | Violent | 0 k |
| X | Extreme | 0 k |

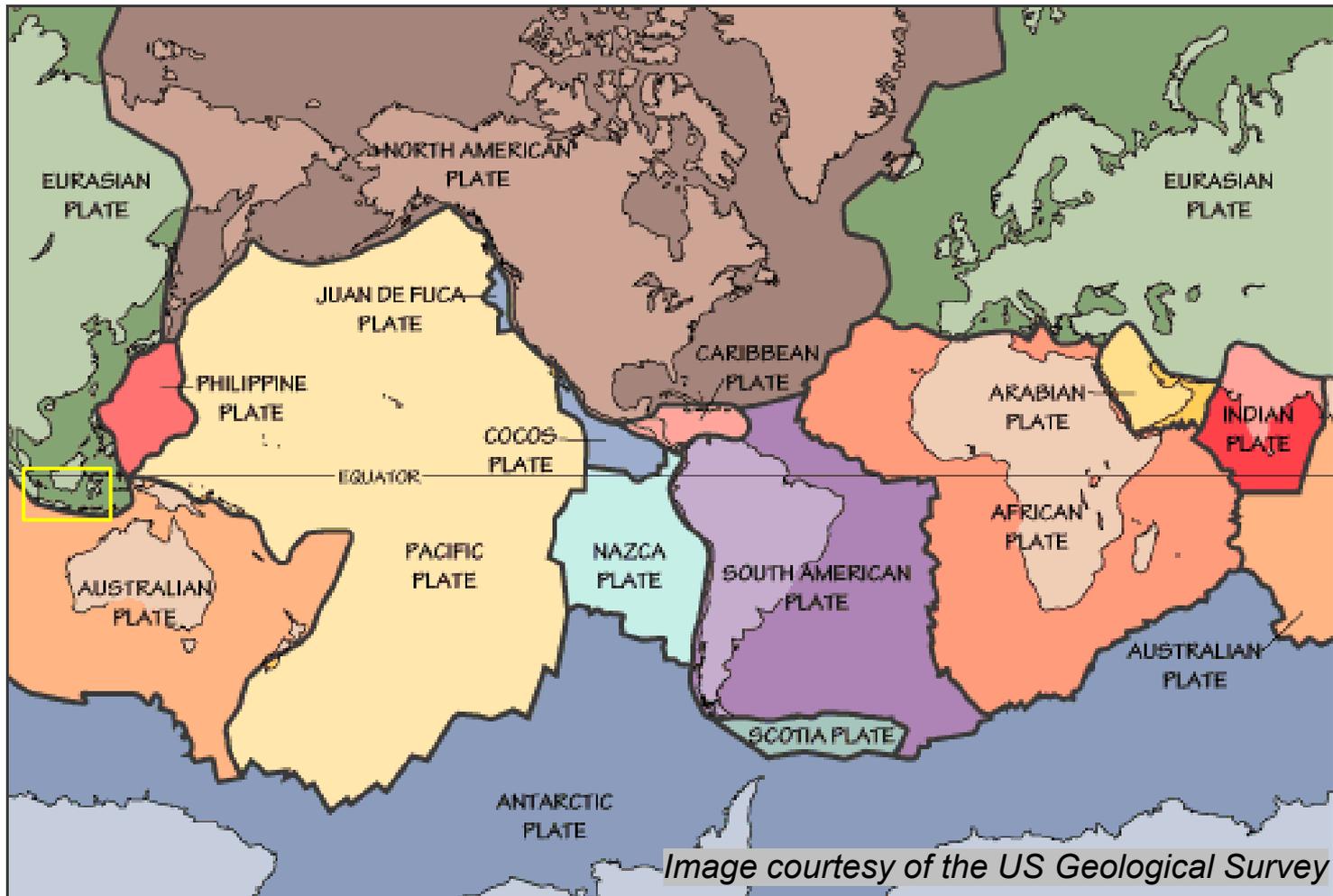


The color coded contour lines outline regions of MMI intensity. The total population exposure to a given MMI value is obtained by summing the population between the contour lines. The estimated population exposure to each MMI Intensity is shown in the table.

Image courtesy of the US Geological Survey

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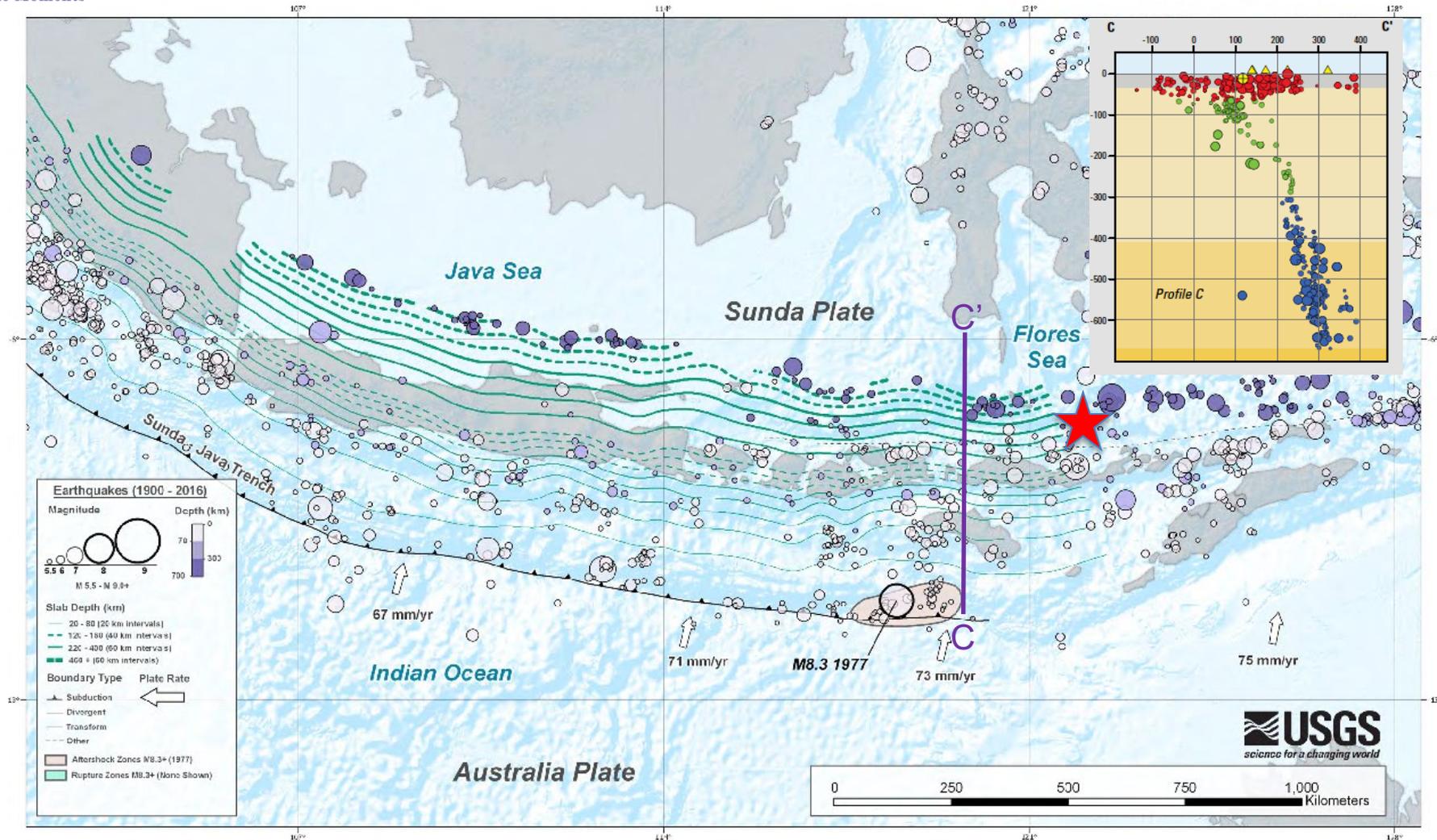
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The Sunda – Java Trench is the convergent plate boundary where the Australia Plate subducts beneath the southeastern promontory on the Eurasian Plate. The tectonics and seismicity of the area within the yellow rectangle are shown on the next slide.

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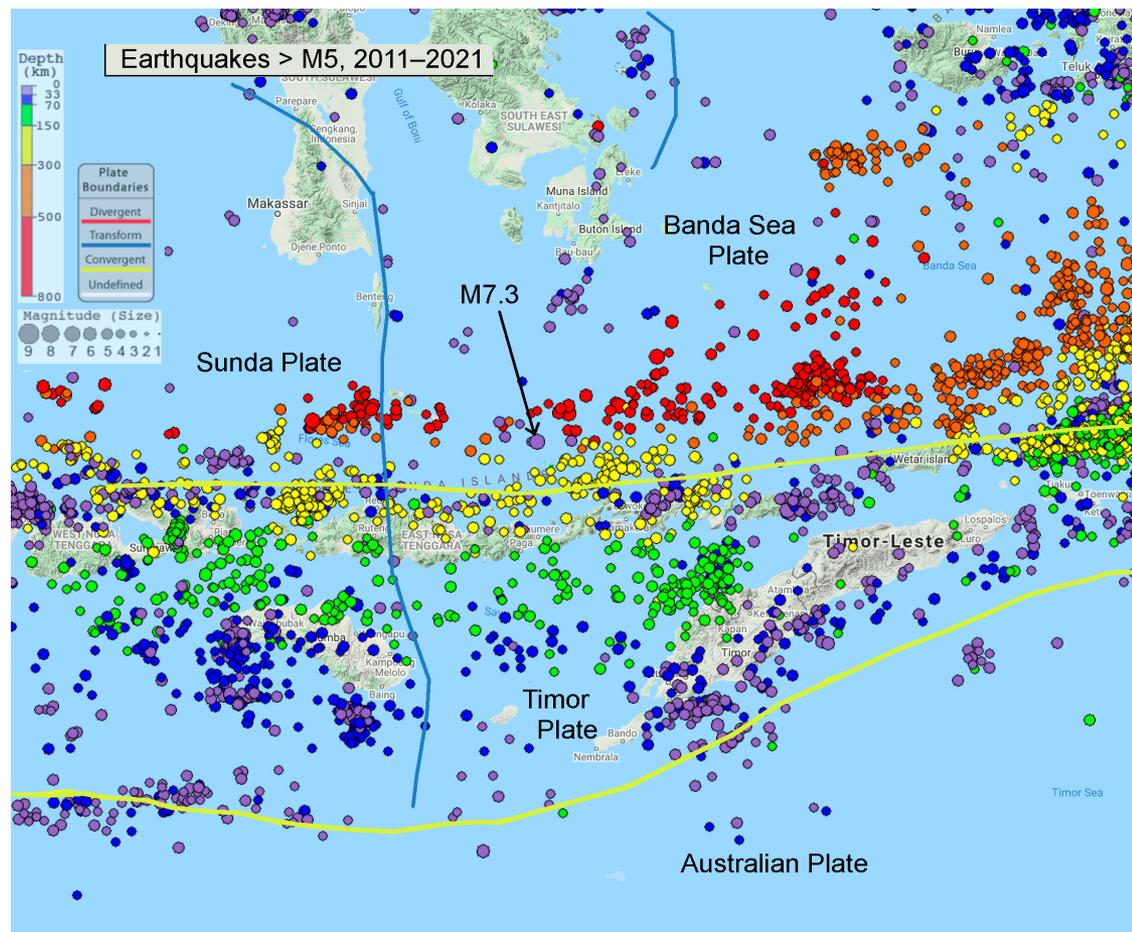
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The earthquake history from 1900 to 2016 and rates of subduction of the Australia Plate beneath the Sunda Plate are shown on the map above. The red star indicates the epicenter of the December 14 2021 earthquake. A south-to-north cross section of the subduction zone from C to C' is shown in the upper right. Earthquakes deeper than 50 km are within the subducting Australia Plate. With a depth of 18.5 km, the December 14 earthquake occurred within the overriding Sunda Plate.

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.

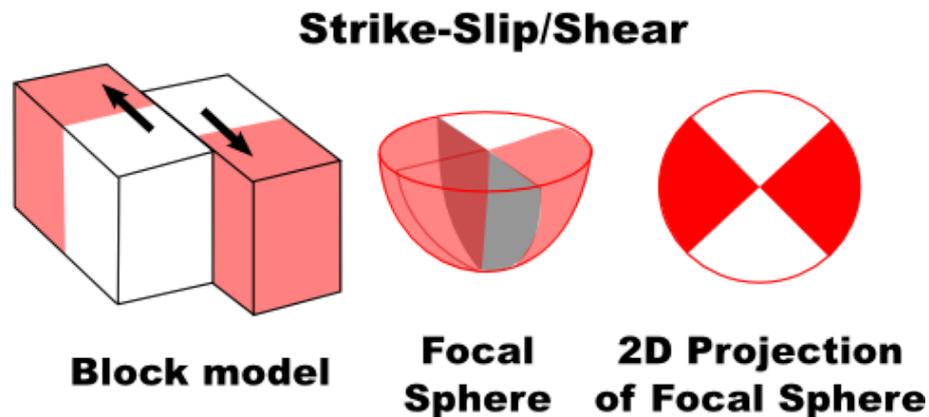
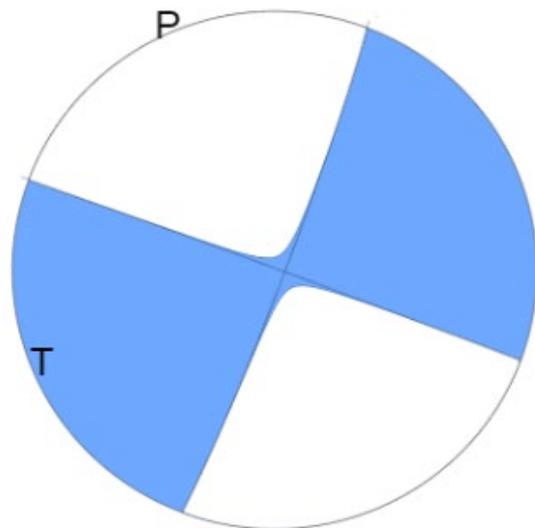
Since December 2011, 2,600 earthquakes of magnitude 4 or larger have occurred within the map area. Notice that earthquakes are shallow on the south edge of the map area. As the oceanic portion of the Australian Plate subducts towards the north beneath the Timor Micro Plate, earthquakes within the Australia Plate increase in depth from south to north.



Map created using the IRIS Earthquake Browser: www.iris.edu/ieb
Microplate boundaries from Google Earth

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

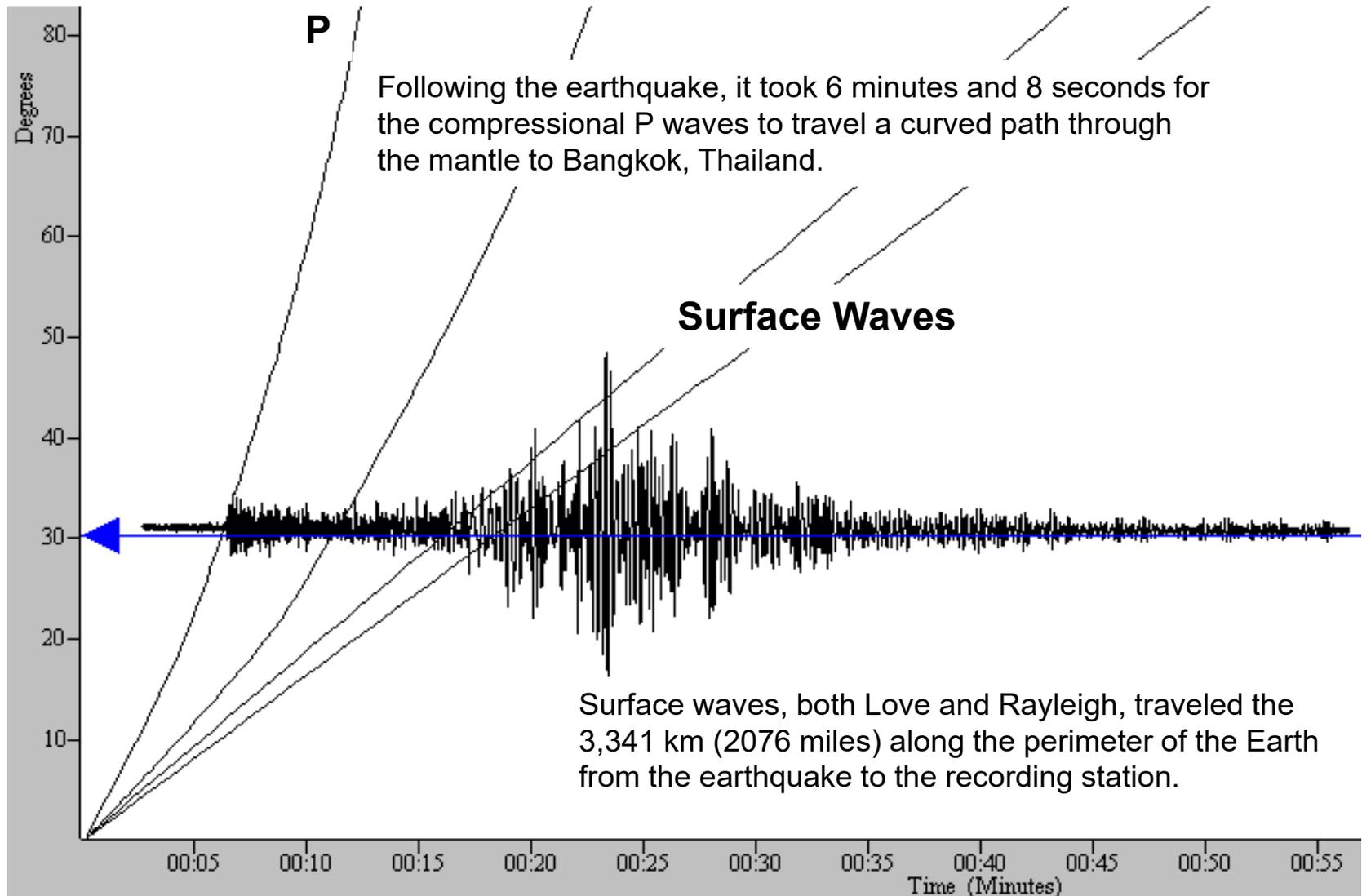
This earthquake occurred as the result of strike-slip faulting within the Sunda Plate.



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The record of the earthquake in Bangkok, Thailand (UTTH) is illustrated below. Bangkok is 3,341 km (2076 miles, 30.1°) from the location of this earthquake.



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