

A magnitude 7.5 earthquake struck off the eastern coast of Papua New Guinea on Sunday, approximately 54 km (33 miles) southeast of Kokopo. Residents reported strong ground shaking for about five minutes. The Pacific Tsunami Warning Centre reported that tsunami waves reaching 1 to 3 meters above the tide level were possible along some coasts of Papua New Guinea.









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 very strong shaking from this earthquake.



Perceived Shaking Extreme Violent Severe Very Strong Moderate Light Weak Not Felt



USGS Estimated shaking Intensity from M 7.5 Earthquake

Image courtesy of the US Geological Survey



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

31,000 people were exposed to very strong shaking while 198,000 experienced strong shaking from this earthquake.

MMI	Shaking	Pop.
I	Not Felt	_*
II-III	Weak	9k*
IV	Light	398k
V	Moderate	79k
VI	Strong	<mark>1</mark> 98k
VII	Very Strong	<mark>31</mark> k

Population Exposed to Earthquake Shaking

USGS PAGER



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







This region of tectonic microplates accommodate convergence between the larger Australia and the Pacific Plates. The Solomon Sea Plate moves slightly faster and more northeasterly with respect to the Pacific Plate than does the Australia Plate due to seafloor spreading in the Woodlark Basin.







Cross-section of the subduction zone below New Britain.

From Johnson (1976)



300–700 km

This earthquake is shown by the blue star on the map at the right. It is a seismically active area with frequent large earthquakes.

The Australian Plate subducts at a steep angle towards the north beneath the Pacific Plate at the New Britain Trench shown below in a S-N cross section.





Image source: U.S. Geological Survey Open-File Report 2010–1083-H



This earthquake occurred as the result of thrust faulting on or near the plate boundary interface between the subducting Australia and overriding Pacific Plates.

At the location of the earthquake, the Australia plate moves towards the eastnortheast at a velocity of 105 mm/yr with respect to the Pacific plate, and begins its subduction into the mantle beneath New Britain at the New Britain Trench south of the earthquake.



Regional tectonic complexities involving the convergence of the Australian and Pacific Plates.



The tension axis (white dot) reflects the minimum compressive stress direction. The pressure axis (black dot) reflects the maximum compressive stress direction.

USGS Centroid Moment Tensor Solution

Images courtesy of the U.S. Geological Survey



The record of the earthquake on the University of Portland seismometer (UPOR) is illustrated below. Portland is 9960 km (6189 miles, 89.73°) from the location of this earthquake.





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