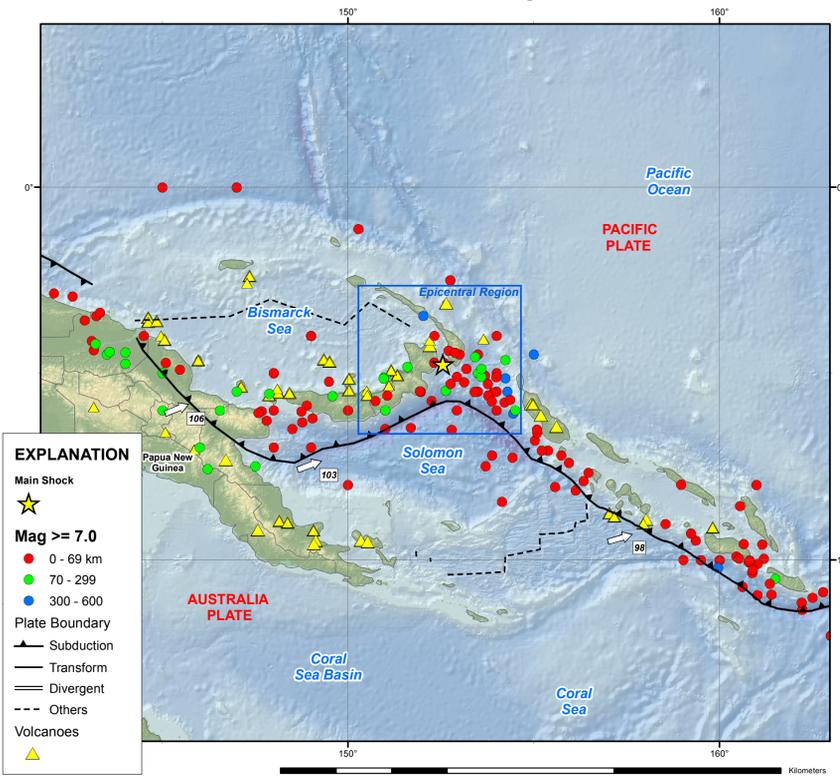


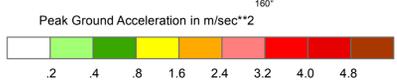
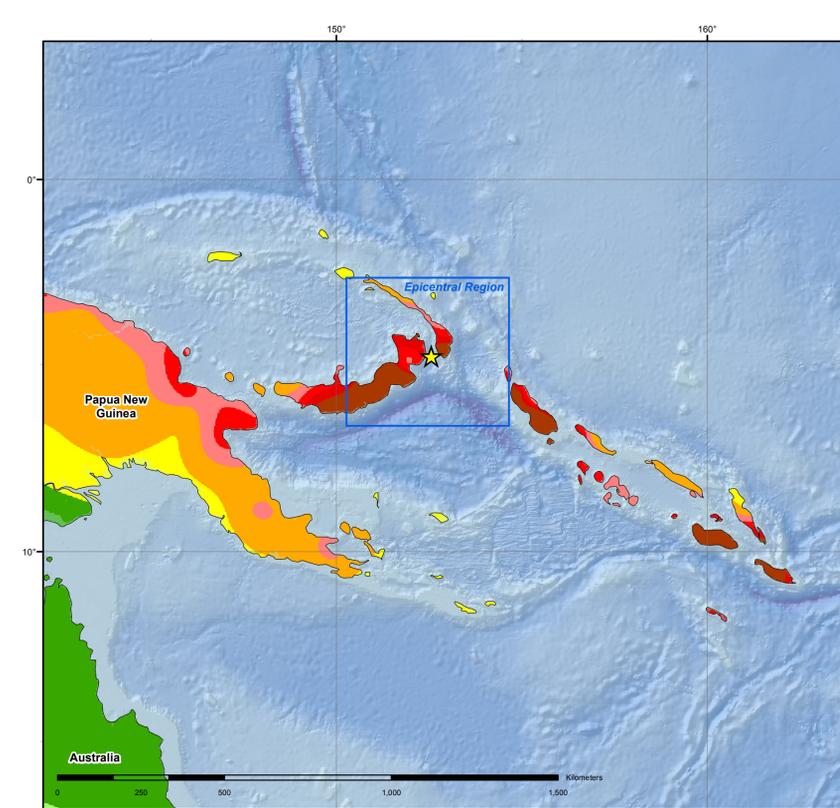
M7.5 Papua New Guinea Earthquake of 29 March 2015



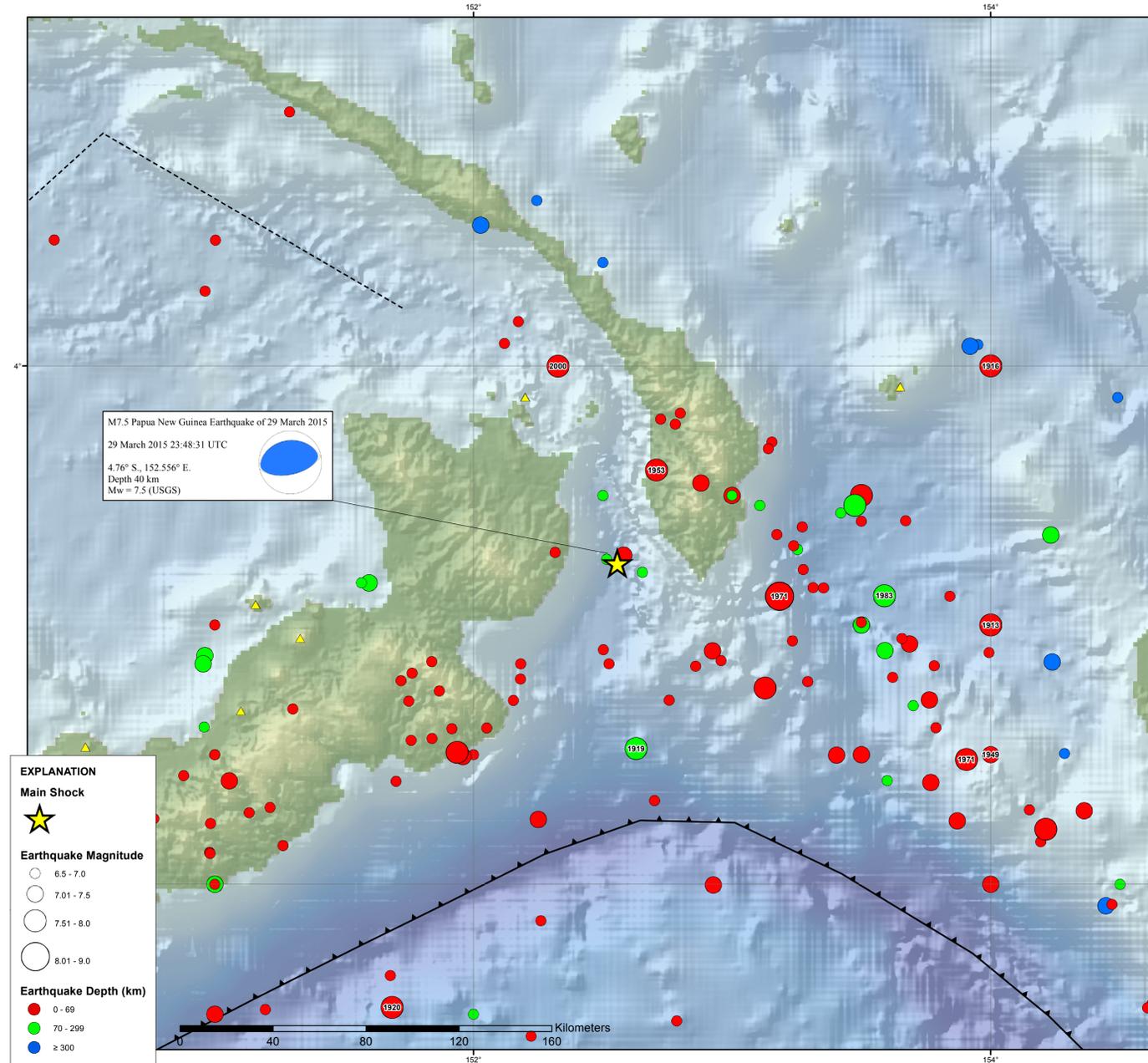
Tectonic Setting



Seismic Hazard



Epicentral Region

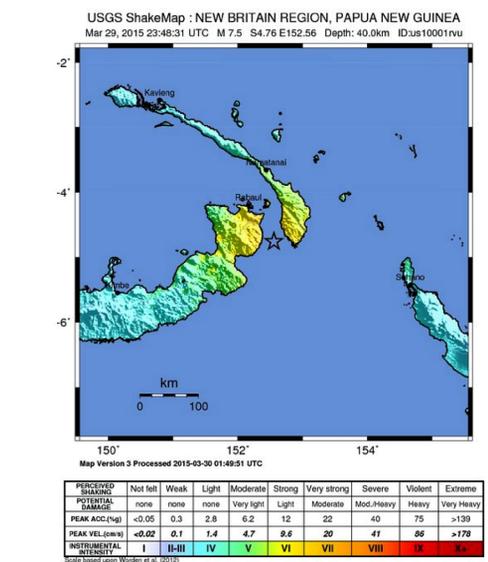


TECTONIC SUMMARY

The March 29, 2015 M 7.5 earthquake southeast of Kokopo, Papua New Guinea, 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 east-northeast at a velocity of 105 mm/yr with respect to the Pacific plate, and begins its subduction into the mantle beneath New Britain and New Ireland at the New Britain Trench south of the earthquake. The moment tensor and depth of the event are consistent with thrust-type motion on the interface between these two plates. Note that at the location of the earthquake, some researchers divide the edges of the Australia and Pacific plates into several microplates that take up the overall convergence between Australia and the Pacific, including the Solomon Sea and South Bismark microplates local to this event. The Solomon Sea plate moves slightly faster and more northeasterly with respect to the Pacific plate than does Australia due to sea-floor spreading in the Woodlark Basin several hundred kilometers to the south of the March 29 earthquake, facilitating the classic subduction evident beneath New Britain and New Ireland.

The plate boundary between the Australia and Pacific plates in the Papua New Guinea region is very active seismically; 36 M 7+ events have occurred within 250 km of the March 29, 2015 earthquake over the past century. Few are known to have caused shaking-related fatalities because of the remoteness of the region, though a M 8.0 earthquake in November 2000 – one of three similarly sized events over a 2-day period – did cause several deaths. The largest nearby earthquake was an M 8.1 event, 70 km to the east of the March 29, 2015 earthquake, one of two M8+ earthquakes 140 km apart in July 1971.

ShakeMap



PAGER

USGS Earthquake Shaking **Green Alert**

USAID ANSS PAGER Version 3

M 7.5, NEW BRITAIN REGION, PAPUA NEW GUINEA
Origin Time: Sun 2015-03-29 23:48:31 UTC (08:48:31 local)
Location: 4.76° S, 152.56° E, Depth: 40 km
FOR TSUNAMI INFORMATION, SEE: tsunami.gov

Created 2 hours, 3 minutes after earthquake

Estimated Fatalities
Green alert for shaking-related fatalities and economic losses. There is a low likelihood of casualties and damage.

Estimated Economic Losses

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSED (N = 2,100)	0	1	2	3	4	5	6	7	8	9	10
ESTIMATED MODIFIED MERGALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+		

Population Exposure

Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though some resistant structures exist. The predominant vulnerable building types are unreinforced brick masonry and informal (metal, timber, GI etc.) construction.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max Shaking (MMI)	Deaths
2000-10-29	174	8.0	VIII(41)	0
1985-05-10	191	7.2	VIII(28)	1
1983-12-21	107	6.2	VIII(5)	10

Selected City Exposure

MMI City	Population
VI Kokopo	26k
VI Rabaul	8k
V Namatanai	1k
IV Kavieng	14k
IV Kimbe	19k
III Panguna	5k
III Agwa	40k

DATA SOURCES

EARTHQUAKES AND SEISMIC HAZARD
USGS, National Earthquake Information Center
NOAA, National Geophysical Data Center
IASPEI, Centennial Catalog (1900 - 1999) and extensions (Engdahl and Villaseñor, 2002)
EHB catalog (Engdahl et al., 1998)
HDF (unpublished earthquake catalog, Engdahl, 2003)
Global Seismic Hazard Assessment Program

PLATE TECTONICS AND FAULT MODEL
PB2002 (Bird, 2003)
Hayes, G. P., Wald, D. J., and Johnson R. L., 2012, A three-dimensional model of global subduction zone geometries: Journal of Geophysical Research, v. 117, B01302, doi:10.1029/2011JB008524.
DeMets, C., Gordon, R.G., Argus, D.F., 2010, Geologically current plate motions, Geophys. J. Int. 181, 1-80.

BASE MAP
NIMA and ESRI, Digital Chart of the World
USGS, EROS Data Center
NOAA GEBCO and GLOBE Elevation Models

REFERENCES

Bird, P., 2003, An updated digital model of plate boundaries: Geochem. Geophys. Geosyst., v. 4, no. 3, pp. 1027-80.

Engdahl, E.R., and Villaseñor, A., 2002, Global Seismicity: 1900-1999, chap. 41 of Lee, W.H.K., and others, eds., International Earthquake and Engineering Seismology, Part A: New York, N.Y., Elsevier Academic Press, 932 p.

Engdahl, E.R., Van der Hilst, R.D., and Buland, R.P., 1998, Global teleseismic earthquake relocation with improved travel times and procedures for depth determination, Bull. Seism. Soc. Amer., v. 88, p. 722-743.

DISCLAIMER

Base map data, such as place names and political boundaries, are the best available but may not be current or may contain inaccuracies and therefore should not be regarded as having official significance.

Map updated by U.S. Geological Survey National Earthquake Information Center
29 March 2015
<http://earthquake.usgs.gov/>
Map not approved for release by Director USGS

Event ID: us10001rvu