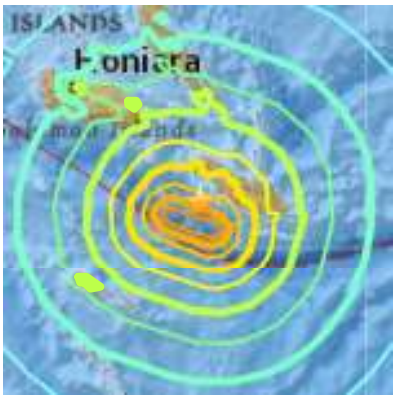
M7.8 – 69km WSW of Kirakira, Solomon Islands

2016-12-08 17:38:46 UTC

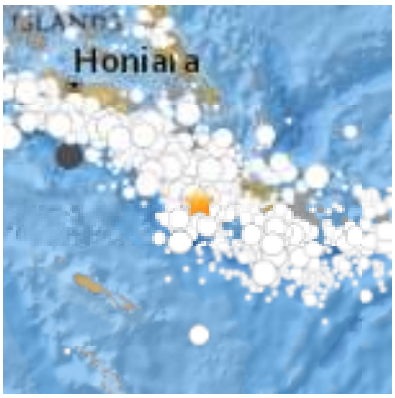
10.676°S 161.330°E | 41.0 km depth

Interactive Map



Contributed by US[3]

Regional Information



Contributed by US[3]

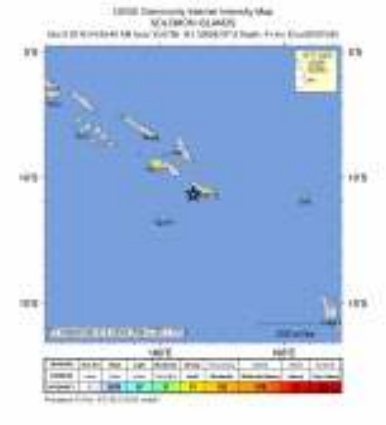
0	0	0	0	2	1

Responses

Contribute to citizen science. Please tell us about your experience.

Citizen Scientist Contributions

Did You Feel It? VIII



Contributed by US[3]

ShakeMap VIII

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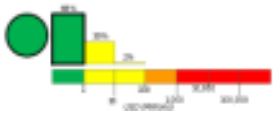
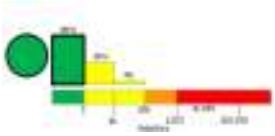
PAGER **GREEN**

Estimated Economic Losses



Estimated Fatalities



Contributed by US [3]

Origin

Review Status
REVIEWED
Magnitude
7.8 mww
Depth
41.0 km
Time
2016-12-08
17:38:46.380 (UTC)

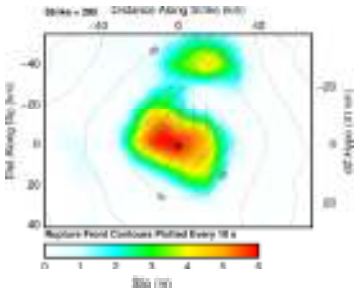
Contributed by US [3]

Moment Tensor

Contributed by US [3]

Finite Fault

Cross-section of slip distribution



Contributed by US [3]

Tsunami

To view any current tsunami advisories for this and other events, please visit http://www.tsunami.gov.

NOAA

Tectonic Summary

The December 8, 2016, M 7.8 Solomon Islands earthquake occurred as the result of shallow, slightly oblique reverse faulting on or near the plate boundary between the Australia and Pacific plates. Focal mechanism solutions indicate that rupture occurred on either a northwest or north-south-striking, moderately dipping reverse fault. At the location of the earthquake, the Australia plate subducts beneath the Pacific plate towards the east-northeast at a velocity of about 96 mm/yr. The location, depth, and focal mechanism solutions of the December 8th earthquake are consistent with its relation to under-thrusting of the Australia plate beneath the Pacific plate (the northwest-striking plane of the focal mechanism solution).

While commonly plotted as points on maps, earthquakes of this size are more appropriately described as slip over a larger fault area. Reverse faulting events of the size of the December 8, 2016 earthquake are typically about 120x55 km (length x width).

The December 8th earthquake occurred about 100 km northwest of where the Australia:Pacific plate boundary transitions from thrust to transform tectonics between the New Britain Trench to the northwest and the New Hebrides Trench farther east. A pair of large earthquakes (M 7.6 and M 7.4) occurred in that plate boundary transition region in April 2014. More broadly, the Solomon Islands Arc is very seismically active, with 53 earthquakes of M 6.5+ occurring within 250 km of the December 8th event over the preceding century. The largest of these was a M 7.9 earthquake about 50 km to the southwest in October 1931, near the New Britain Trench. In 1979, a M 7.1 earthquake occurred in an almost identical location (8 km northwest) to the December 8, 2016 event. None of these historic earthquakes are known to have caused shaking-related fatalities, likely because of their remote location far from population centers that might be vulnerable to earthquake shaking.

Downloads

Summary Poster

- PDF (33.1 MB)
- JPG (25.4 MB)
- JPG (56.0 KB)
- JPG (118.8 KB)
- JPG (421.1 KB)

Contributors

1. National Tsunami Warning Center
2. Pacific Tsunami Warning Center
3. USGS National Earthquake Information Center, PDE

Additional Information

- ANSS Comprehensive Earthquake Catalog (ComCat) Documentation
- Technical terms used on event pages