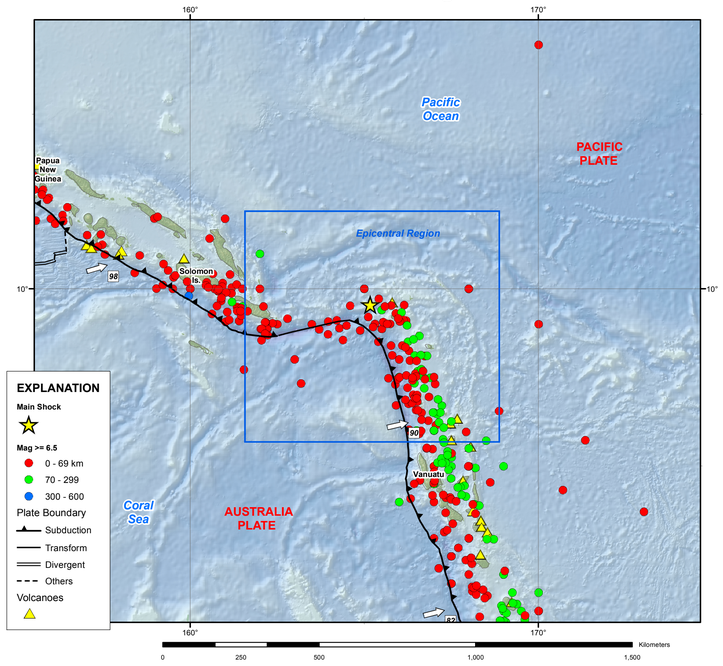
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

M7.0 Santa Cruz Islands Earthquake of 18 July 2015

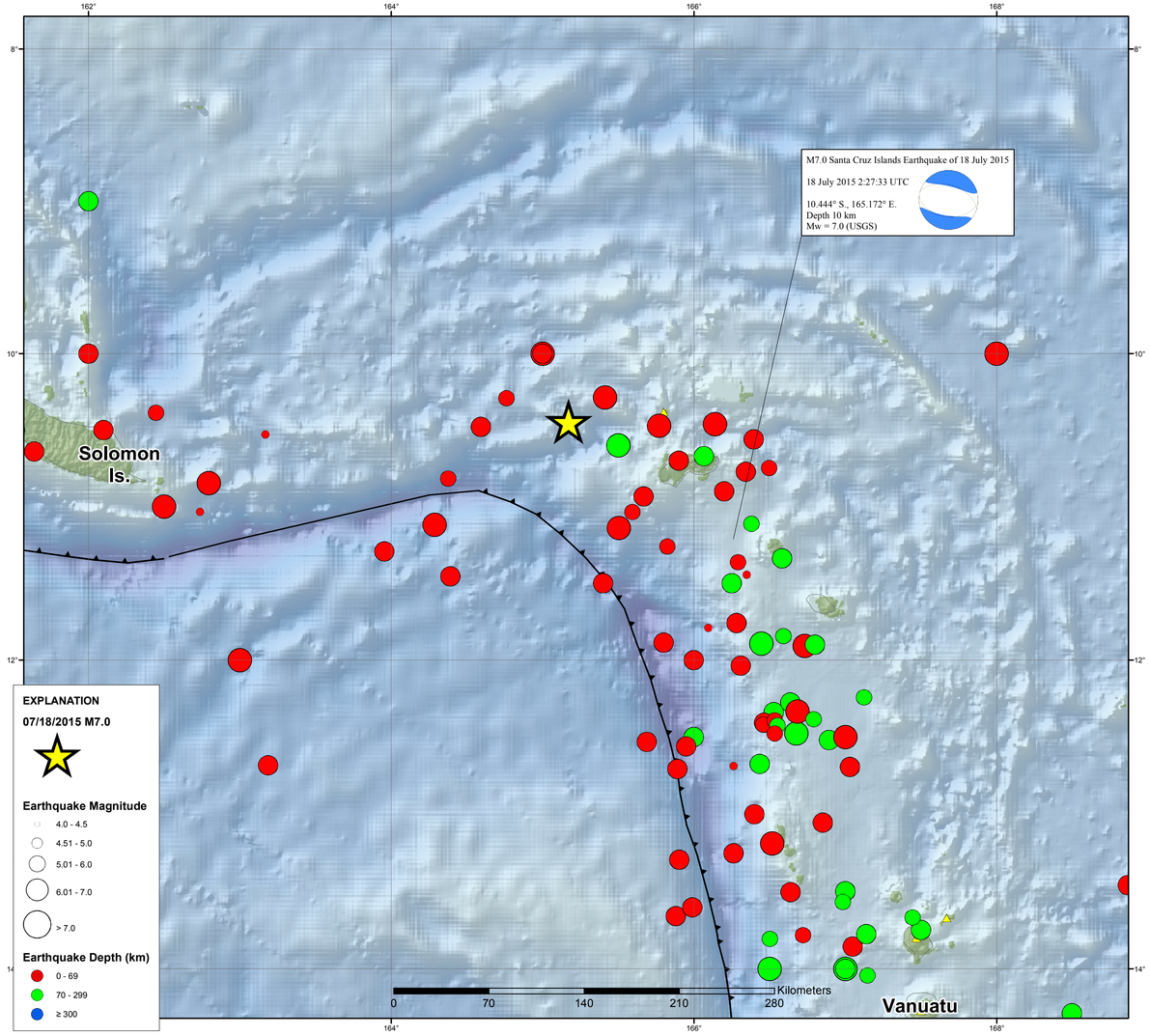
EARTHQUAKE SUMMARY MAP

Prepared in cooperation with the Global Seismographic Network

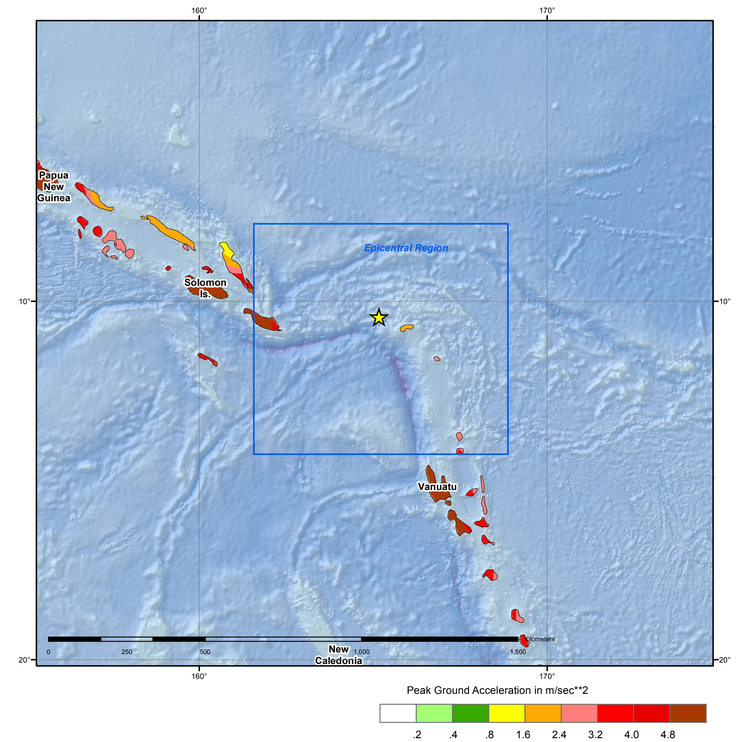
Tectonic Setting



Epicentral Region



Seismic Hazard



PAGER

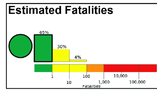
USGS science for a changing world
Earthquake Shaking Green Alert
ANSS
USAID FROM THE AMERICAN PEOPLE

M 7.0, SANTA CRUZ ISLANDS
Origin Time: Sat 2015-07-18 02:27:33 UTC (13:27:33 local)
Location: 10.44°S 165.17°E Depth: 10 km

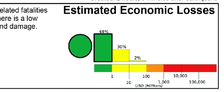
PAGER Version 3
Created: 2 hours, 3 minutes after earthquake

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

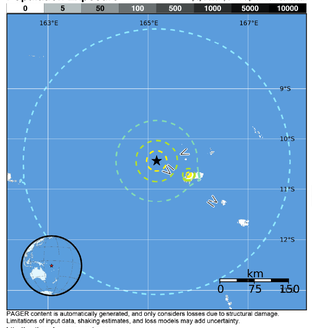
ESTIMATED POPULATION EXPOSURE (k = x1000)		-.*	4k*	16k	7k	5k	5k	0	0	0
ESTIMATED MODIFIED MERCALLI INTENSITY		I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING		Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area

Population Exposure

population per ~1 sq. km from Landscan

0	5	50	100	500	1000	5000	10000



Structures:
Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though some resistant structures exist.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max MMI(#)	Shaking Deaths
1992-04-29	106	5.9	VII(2k)	0
2004-10-08	334	6.7	VIII(5k)	0
1989-10-27	313	6.9	VIII(7k)	0

Selected City Exposure
from GeoNames.org

MMI	City	Population

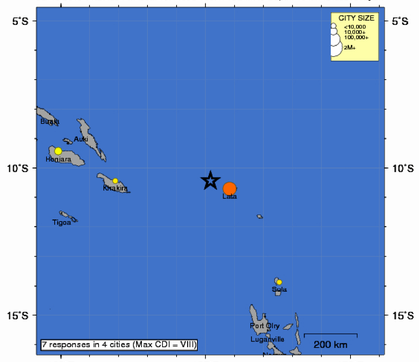
bold cities appear on map (k = x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.
http://earthquake.usgs.gov/pager

Event ID: us20002yaw

DYFI?

USGS Community Internet Intensity Map
SANTA CRUZ ISLANDS
Jul 18 2015 01:27:33 PM local 10.4436S 165.1715E M7.0 Depth: 10 km ID:us20002yaw



INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy

Processed: Sat Jul 18 03:34:08 2015

Tectonic Summary

The July 18, 2015 M 7.0 earthquake northwest of Lata, in the Solomon Islands, occurred as the result of normal faulting, on either an east-west striking structure dipping moderately to the north, or on a southeast-northwest striking structure dipping more steeply towards the southwest. At the latitude of this earthquake, the Australia plate moves towards the east-northeast at a rate of 95 mm/yr with respect to the Pacific plate. The location and mechanism of this event are consistent with its occurrence within the oceanic crust of the Pacific plate, 500 km to the northeast of the major local plate boundary between the Australia and Pacific plates, and directly above the northern edge of the Australia slab that subducts from the North New Hebrides Trench to the east beneath the Santa Cruz Islands.

The Australia:Pacific plate boundary system from the Solomon Islands towards Vanuatu is one of the most seismically active regions of the planet, and frequently hosts major earthquakes. 18 other M7+ events have occurred within 250 km of the July 18, 2015 earthquake over the preceding century. The July 2015 earthquake is located at the northern end of the earthquake sequence associated with the February 6th, 2013 M8.0 earthquake, which struck 45 km to the south of the July 18, 2015 event. The 2013 event caused several fatalities, injuries and significant damage on local islands, mostly associated with the tsunami spawned by the earthquake.

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 globalsubduction 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 Villasenor, 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
18 July 2015
http://earthquake.usgs.gov/
Map not approved for release by Director USGS