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

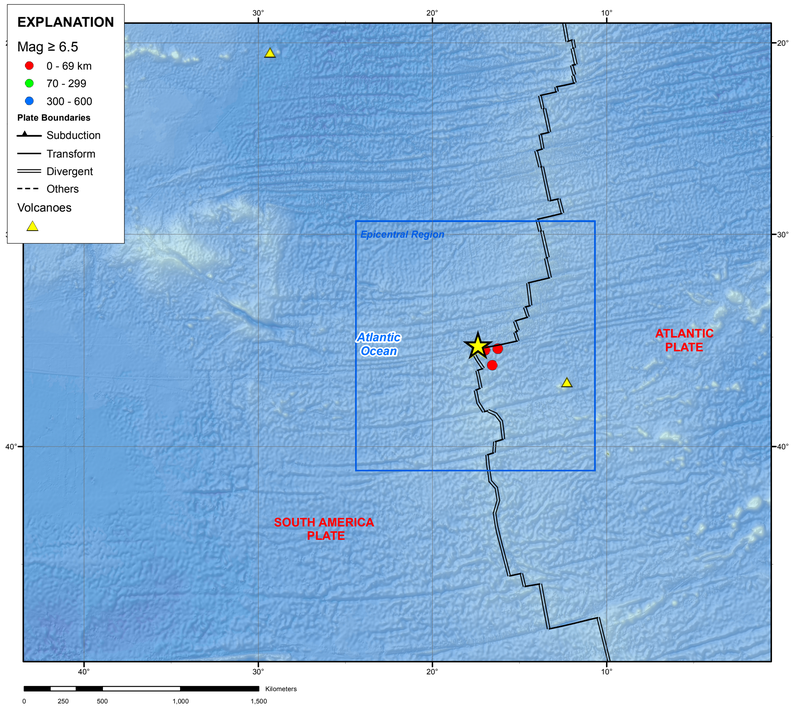
M7.0 Southern Mid-Atlantic Ridge Earthquake of 17 June 2015

EARTHQUAKE SUMMARY MAP

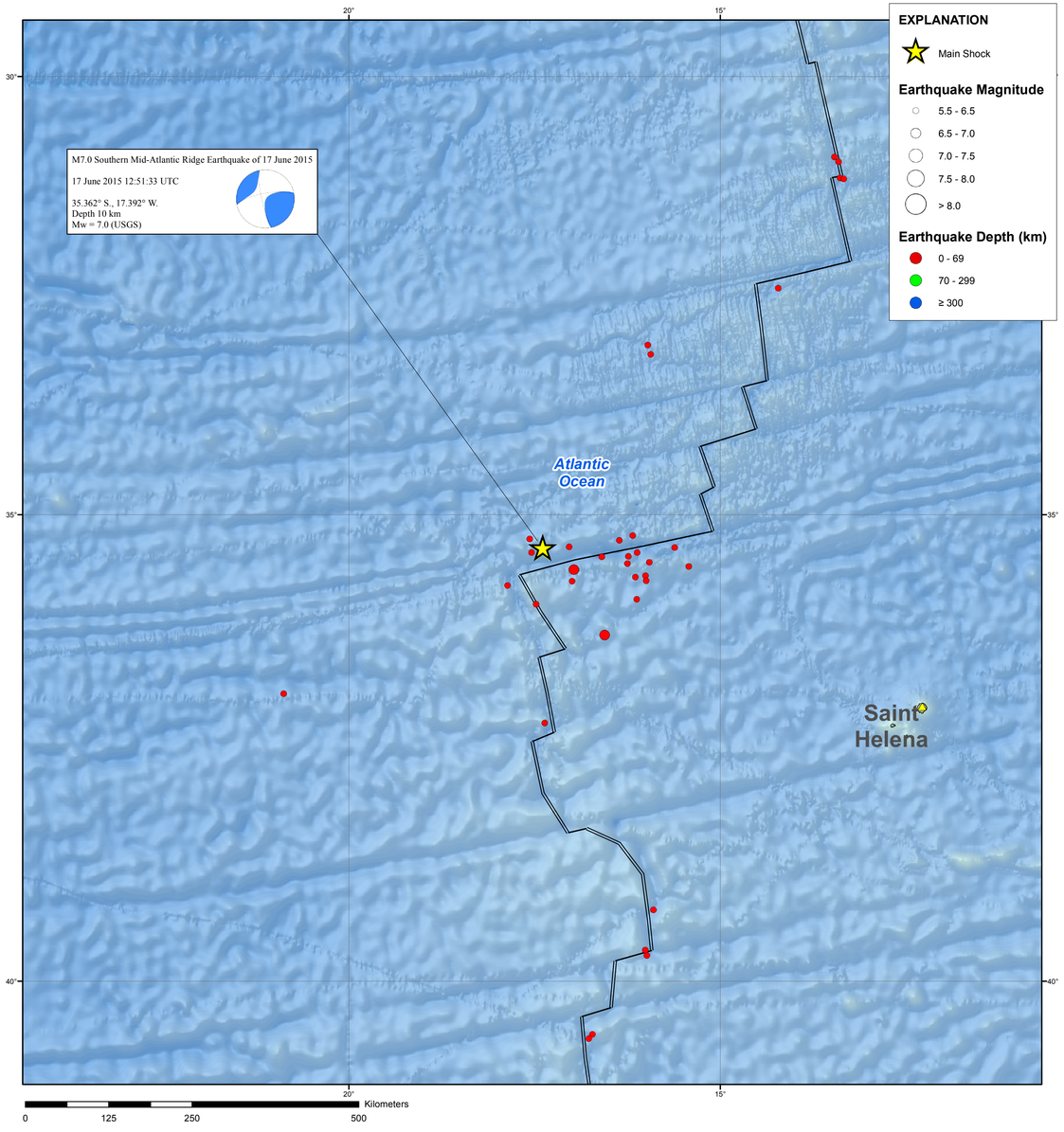
Prepared in cooperation with the Global Seismographic Network

GSN

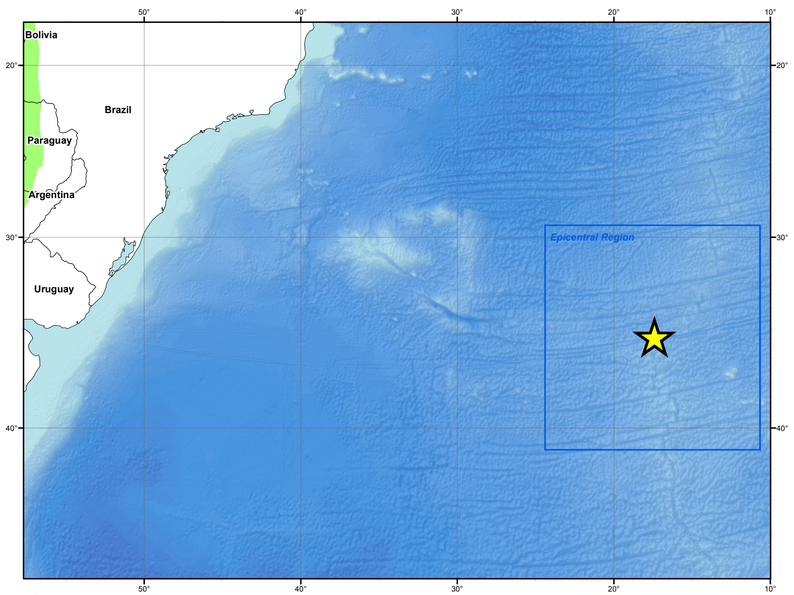
Tectonic Setting



Epicentral Region



Seismic Hazard

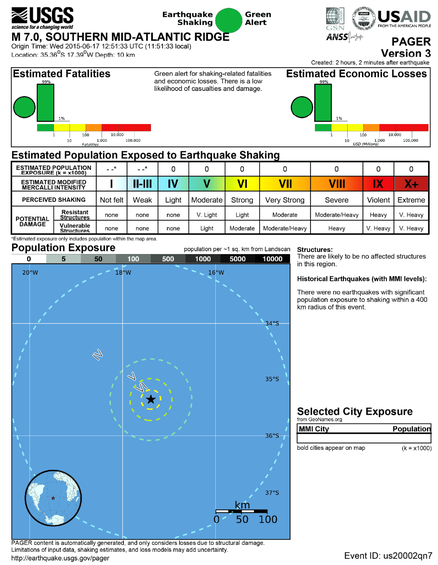


Seismic hazard is expressed as peak ground acceleration (PGA) on firm rock, in meters/sec², expected to be exceeded in a 50-yr period with a probability of 10 percent.

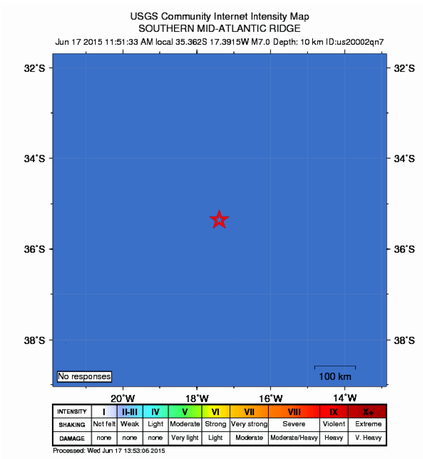
Peak Ground Acceleration in m/sec**2

.2 .4 .8 1.6 2.4 3.2 4.0 4.8

PAGER



Did You Feel It?



TECTONIC SUMMARY

The June 17, 2015 M 7.0 Southern Mid-Atlantic Ridge earthquake occurred as the result of left-lateral strike-slip faulting on or near a transform fault forming part of the South America:Africa (Nubia) plate boundary. At the latitude of this earthquake, the South America plate moves approximately westward at a rate of 33 mm/yr with respect to Nubia. While historic earthquakes have occurred in the same region and likely on the same structure as this earthquake, the fracture zone does not appear to be named.

Moderate-to-large earthquakes in this region of the south Atlantic are not uncommon - over the past century, sixteen other earthquakes of M 6.0-6.6 have occurred within 250 km of the June 17, 2015 event, both along the same fracture zone and in association with other shorter fracture zones to the south. The June 17, 2015 event represents the largest in the region over that time period; the next largest was a M 6.6 event in February 2005, 130 km to the south. None of these historic earthquakes are known to have caused damage. Their remoteness from populated land minimizes potential hazard from shaking damage, and their strike-slip faulting mechanisms produce relatively small vertical tectonic-displacement of the seafloor, which minimizes the risk of their producing destructive tsunami.

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)
Ji, C., D.J. Wald, and D.V. Helmberger, Source description of the 1999 Hector Mine, California earthquake; Part I: Wavelet domain inversion theory and resolution analysis, Bull. Seism. Soc. Am., Vol 92, No. 4, pp. 1192-1207, 2002.
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
17 June 2015
http://earthquake.usgs.gov/
Map not approved for release by Director USGS