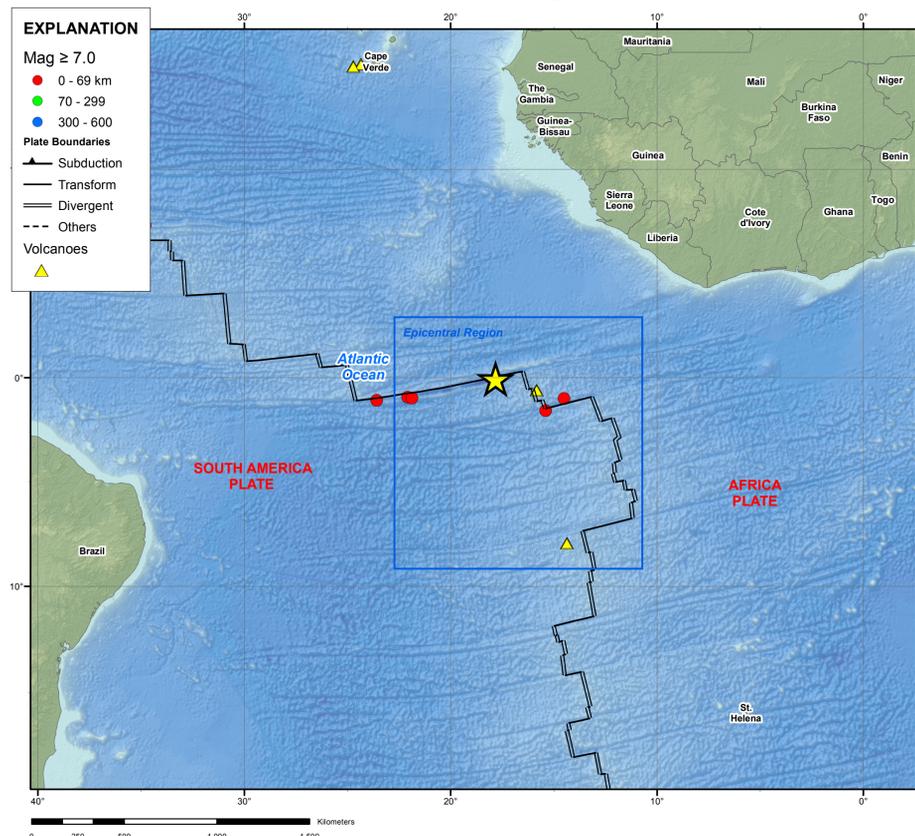


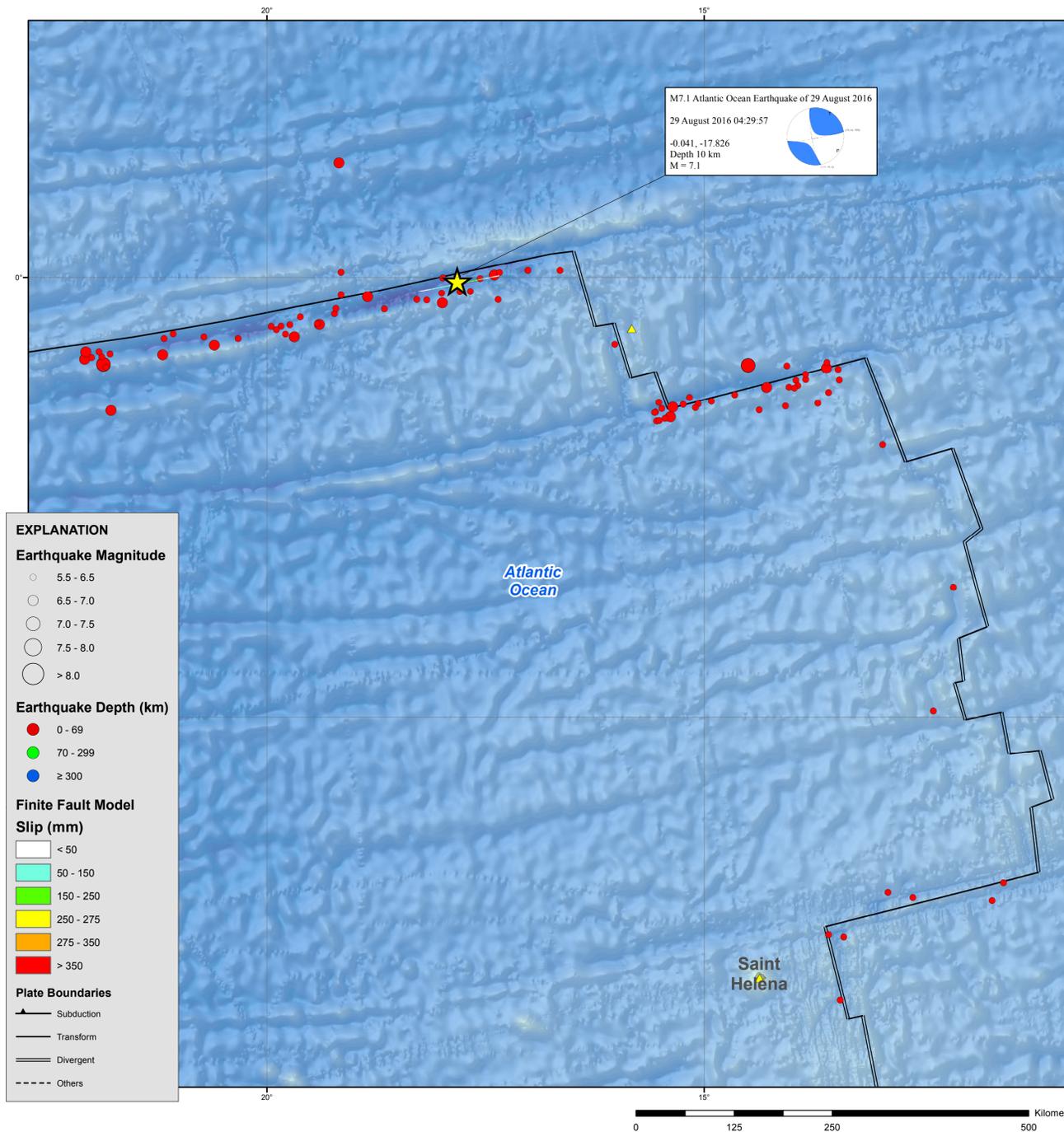
M7.1 Atlantic Ocean Earthquake of 29 August 2016



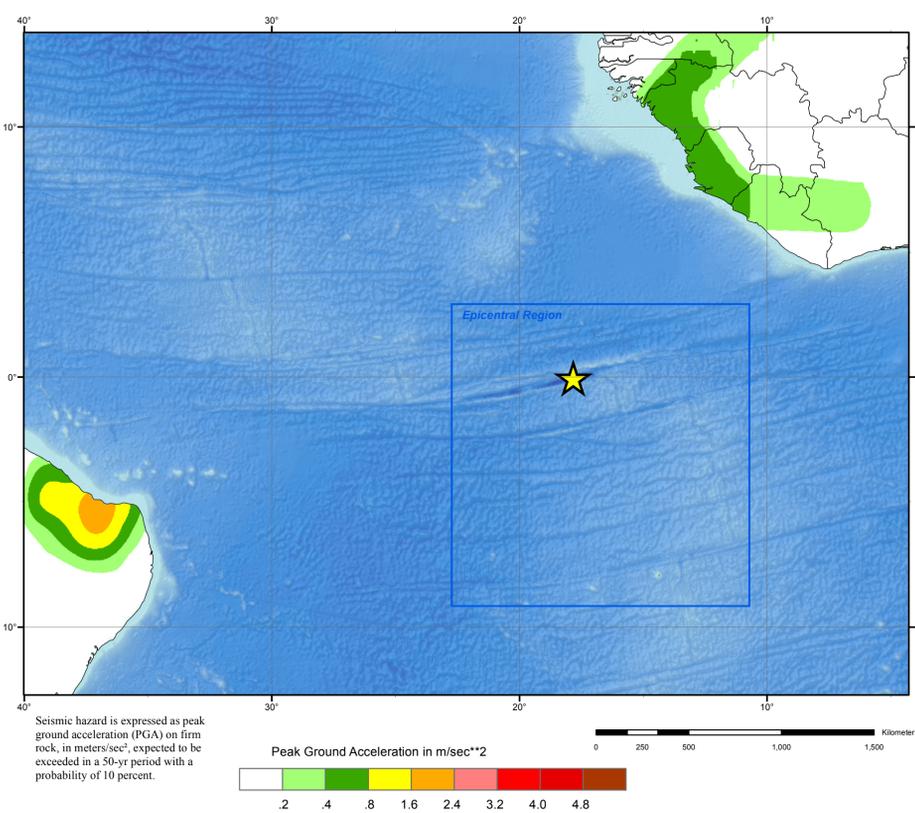
Tectonic Setting



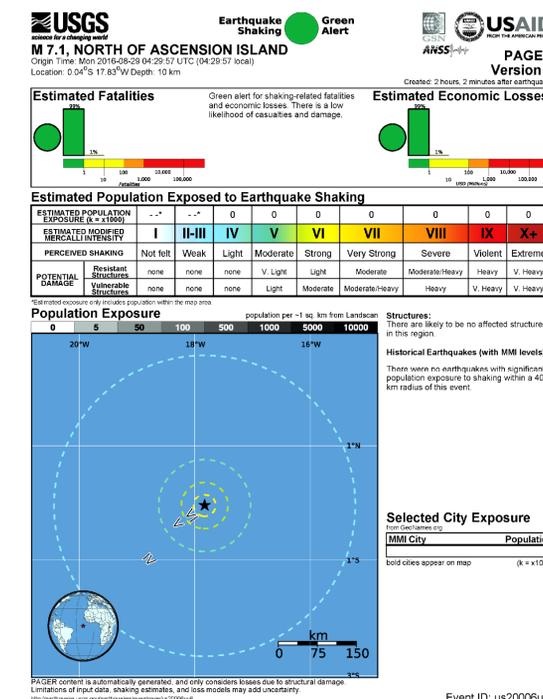
Epicentral Region



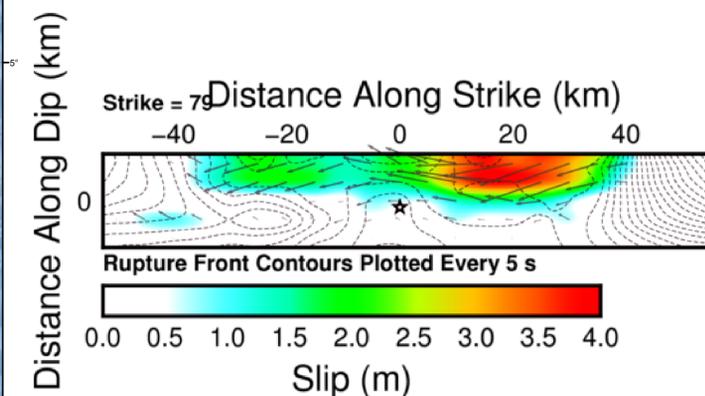
Seismic Hazard



PAGER



Finite Fault Model



Distribution of the amplitude and direction of slip for subfault elements of the fault rupture model are determined from the inversion of teleseismic body waveforms and long period surface waves. Arrows indicate the amplitude and direction of slip (of the hanging wall with respect to the foot wall); the slip is also colored by magnitude. The view of the rupture plane is from above. The strike of the fault rupture plane is 79° and the dip is 85°. The dimensions of the subfault elements are 5 km in the strike direction and 3.3 km in the dip direction. The rupture surface is approximately 80 km along strike and 10 km down-dip. The seismic moment release based upon this plane is 5.8e+26 dyne-cm.

TECTONIC SUMMARY

The August 29, 2016 M 7.1 earthquake north of Ascension Island, in the south Atlantic Ocean, occurred as the result of strike-slip faulting on or near the plate boundary separating the Nubia (Africa) and South America plates, part of the Mid-Atlantic Ridge System. The preliminary location and focal mechanism solution of the earthquake are consistent with the event being associated with right lateral transform faulting on the Romanche Transform (the seismically active section of the Romanche Fracture Zone), though more detailed analyses of the event will be required to definitively determine the causative fault. At the location of this earthquake, the Nubia and South America plates diverge at a rate of approximately 29 mm/yr, on an east-west axis.

Moderate-to-large earthquakes on the Romanche Transform are common – over the past century, six other earthquakes of M 6.5-6.8 have occurred within 250 km of the August 29, 2016 event, likely along the same fault. The largest of these was a M 6.8 event on August 28, 1973, 43 years and 1 day before today's M 7.1 earthquake and approximately 30 km to the southwest. Because of their strike-slip mechanisms and locations in the remote south Atlantic (about 950 km north-northwest of Ascension Island), none of these historic events are known to have caused damage.

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
Volcanoes of the World (Siebert and Simkin, 2002)

PLATE TECTONICS AND FAULT MODEL
PB2002 (Bird, 2003)
Li, 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 ESR1, 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 August 2016
<http://earthquake.usgs.gov/>
Map not approved for release by Director USGS