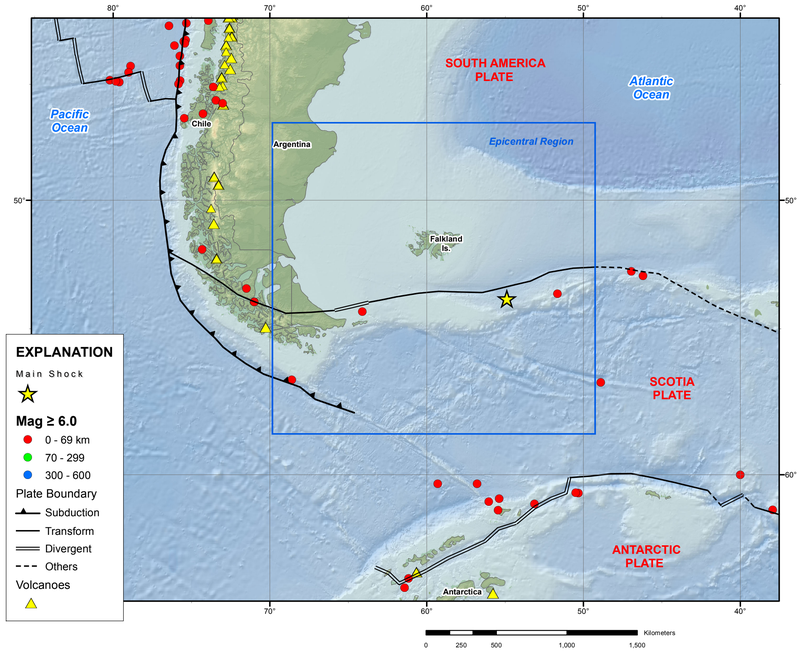
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

EARTHQUAKE SUMMARY MAP

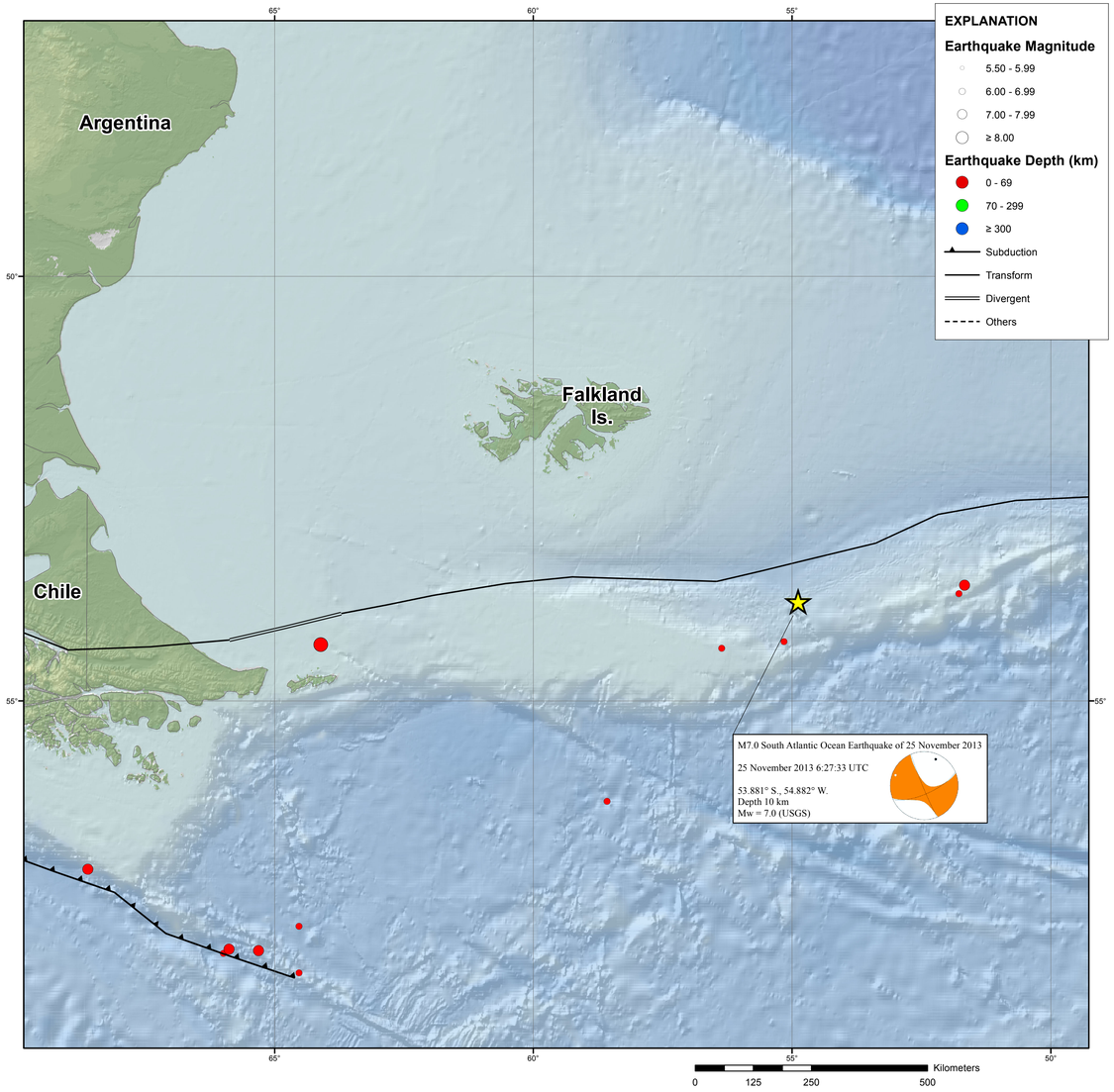
Prepared in cooperation with the Global Seismographic Network

M7.0 South Atlantic Ocean Earthquake of 25 November 2013

Tectonic Setting



Epicentral Region



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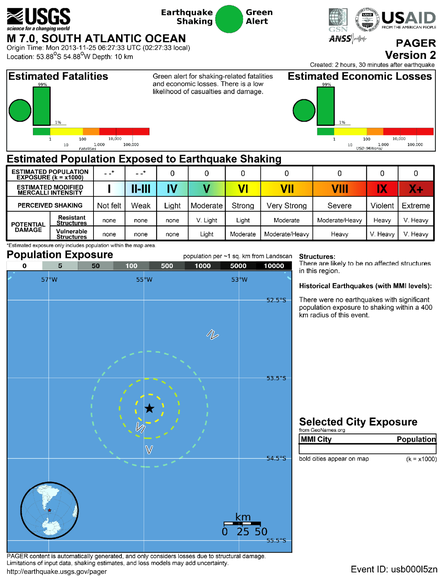
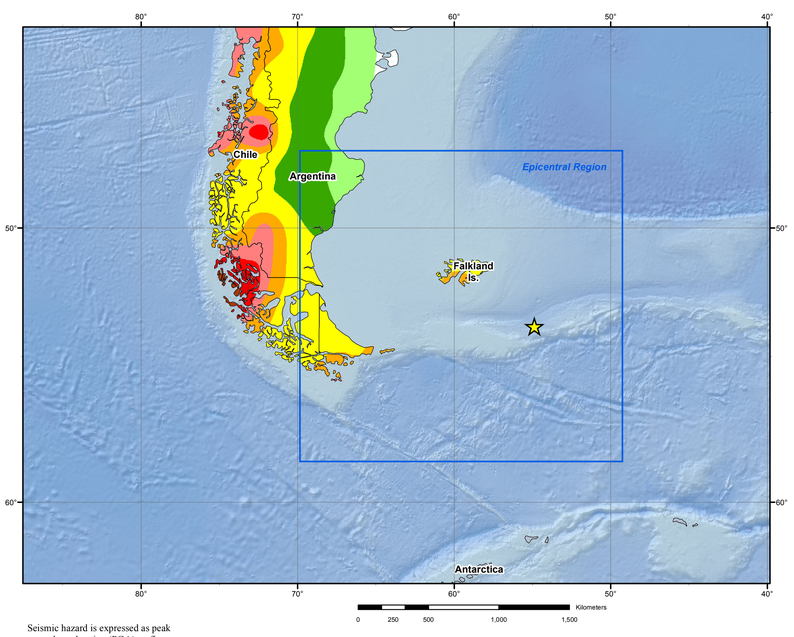


Seismic Hazard

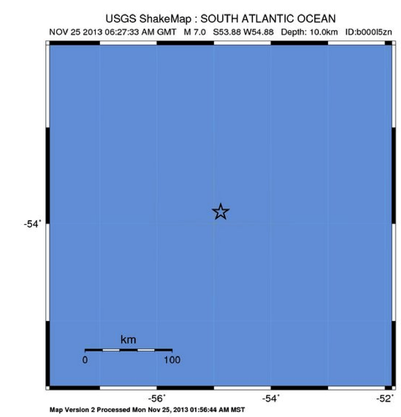


Seismic hazard is expressed as peak ground acceleration (PGA) on firm rock, in meters/sec^2, expected to be exceeded in a 50-yr period with a probability of 10 percent.

Peak Ground Acceleration in m/sec**2

.2 .4 .8 1.6 2.4 3.2 4.0 4.8

ShakeMap



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2011)

TECTONIC SUMMARY

The November 25, 2013 M7.0 earthquake (06:27:33 UTC) southwest of the Falkland Islands in the South Atlantic Ocean occurred as the result of strike slip faulting, on either a left-lateral fault striking ENE-WSW, or a right-lateral structure striking NNW-SSE. The location of the earthquake, near the ENE-WSW trending plate boundary between the South America and Scotia tectonic plates, suggests it is likely associated with left-lateral faulting along this margin. At the location of this earthquake, the Scotia plate moves ENE with respect to South America at a rate of approximately 9.5 mm/yr.

The November 25, 06:27:33 earthquake was the largest of 5 M5+ events that occurred in a similar area over an approximate 2-hour period, including a M5.6 earthquake 24 seconds prior to the M7.0 mainshock. Though this region experiences moderate-sized earthquakes relatively frequently – 15 M5+ events have occurred within 250 km of the November 25 earthquake over the past 40 years – large events are fairly uncommon. The largest nearby earthquake over the same time period was a M6.6 event in September 1993, 210 km to the east of the November 25 earthquake.

Significant Earthquakes Mag >= 6

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1970	06	15	1114	-54.370	-64.108	3.3	7.0
1975	12	29	0339	-56.826	-68.606	11.7	6.5
1993	09	27	1337	-53.693	-51.662	13	6.6
2010	01	17	1200	-57.664	-65.879	5	6.3
2012	04	14		-57.679	-65.308	15	6.2
2013	11	25	0627	-53.881	-54.882	10	7.0

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 signifiance.

Map updated by U.S. Geological Survey National Earthquake Information Center
25 November 2013
http://earthquake.usgs.gov/
Map not approved for release by Director USGS