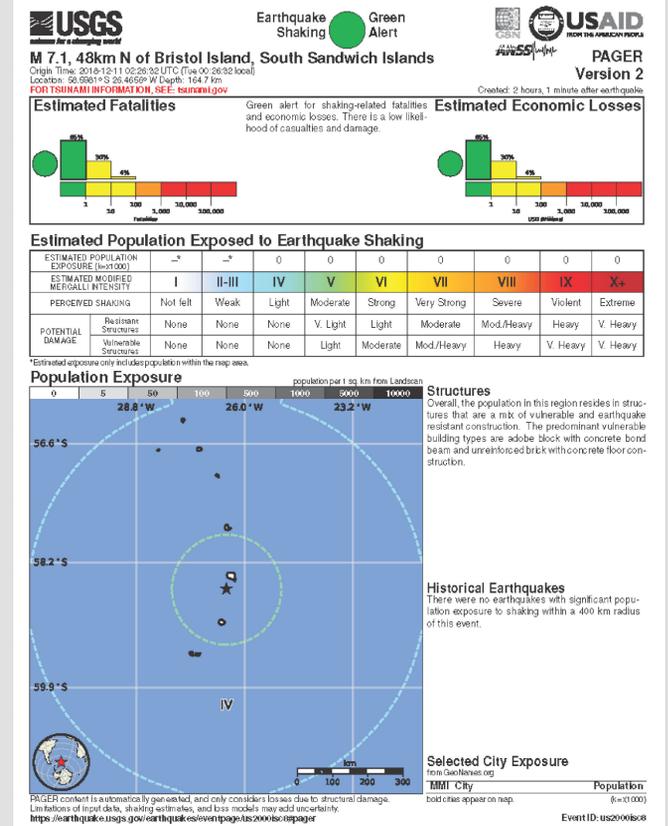


## Tectonic Summary

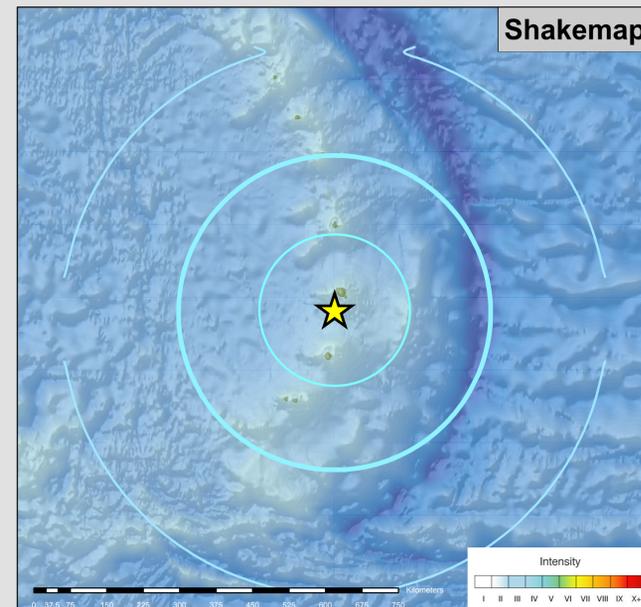
The December 11, 2018 M 7.1 earthquake in the South Sandwich Islands occurred as the result of oblique-reverse faulting at an intermediate depth in the Scotia subduction zone. The focal mechanism solution indicates slip occurred on either a shallowly dipping fault striking southeast, or on a steep fault striking to the north. At the location of this earthquake, the South America plate moves to the west with respect to the South Sandwich plate at a rate of 73 mm/yr, subducting beneath the South Sandwich Islands at the oceanic trench about 140 km east of this earthquake. The depth and focal mechanism solution of this event indicate it occurred as the result of intraplate faulting within the lithosphere of the subducting South America plate, rather than on the shallower thrust faulting plate boundary between the two plates.

Earthquakes such as this event, with focal depths between 70 and 300 km, are commonly termed "intermediate-depth" earthquakes. Intermediate-depth earthquakes represent deformation within subducted slabs rather than at the shallow plate interface between subducting and overriding tectonic plates. They typically cause less damage on the ground surface above their foci than is the case with similar magnitude shallow-focus earthquakes, but large intermediate-depth earthquakes may be felt at great distance from their epicenters. Earthquakes have been reliably located to depths close to 300 km in this region. Over the previous century, there have been 14 M6+ earthquakes within 250 km of today's event, and only 1 other M7+ event – a M 7.3 earthquake in September 1961, 75 km to the south of the December 11, 2018 event. None of these earthquakes are known to have caused fatalities, likely because of their remote location far from population centers that might be vulnerable to earthquake shaking.

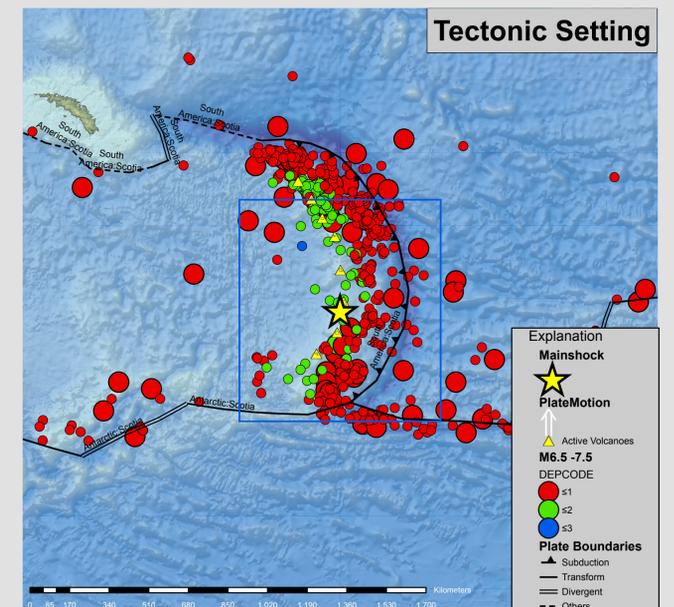
## PAGER



## Shakemap



## Tectonic Setting



**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)  
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, Geophysics, 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: Geochim. 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, 832 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  
11 December 2018  
http://earthquake.usgs.gov/  
Map not approved for release by Director USGS