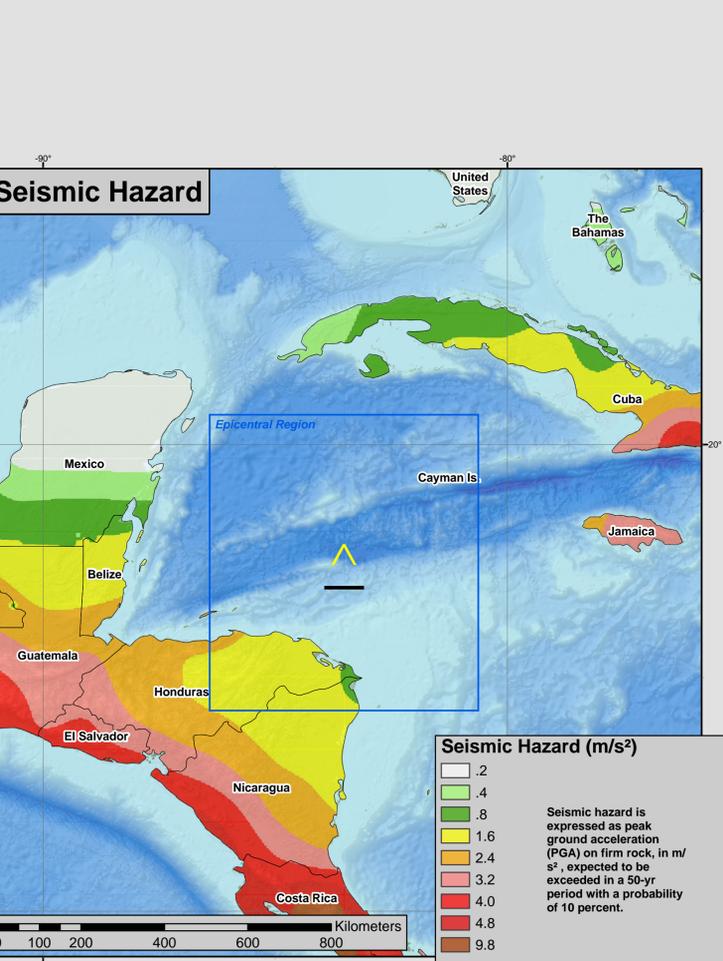
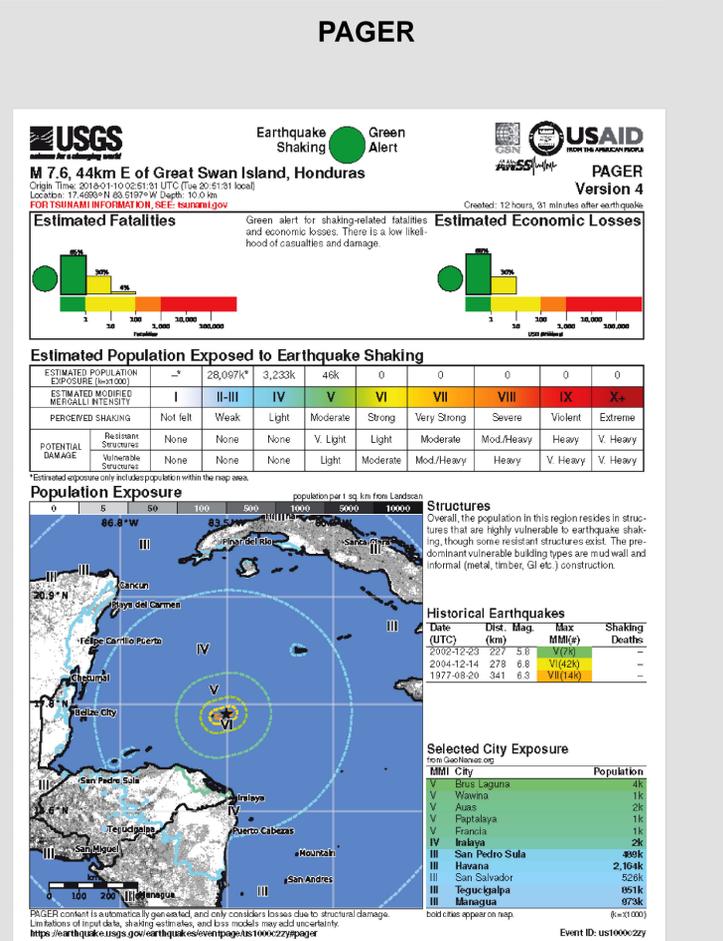
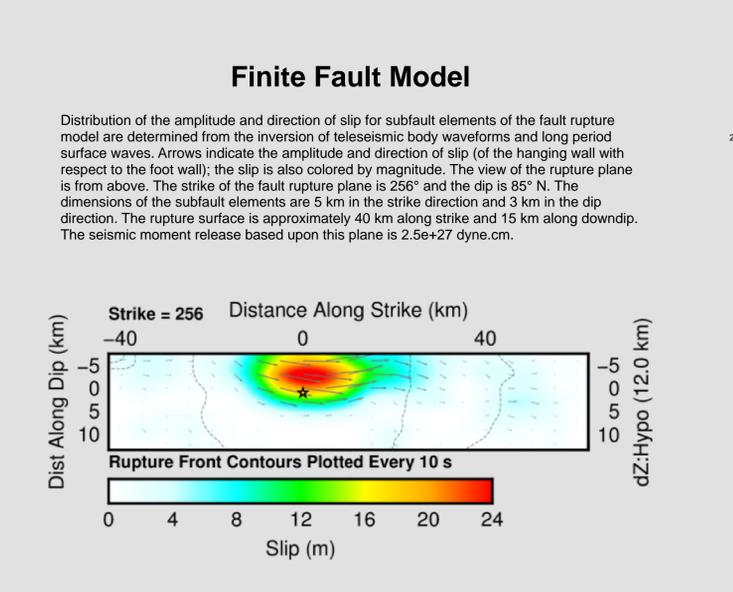
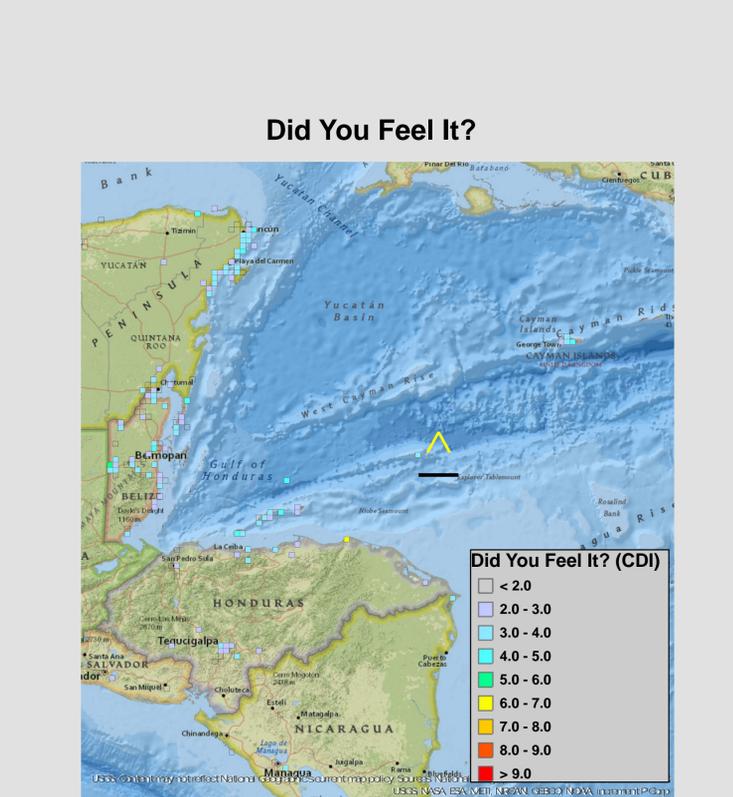


Tectonic Summary

The January 10, 2018, M7.6 Great Swan Island, Honduras earthquake occurred as the result of strike slip faulting in the shallow crust near the boundary between the North America and Caribbean plates. Early focal mechanism solutions indicate that rupture occurred on a steeply dipping structure striking either west-northwest (right-lateral), or west-southwest (left-lateral). At the location of this earthquake, the North America plate moves to the west-southwest with respect to the Caribbean plate at a rate of approximately 19 mm/yr. Local to the January 10, 2018 earthquake, this motion is predominantly accommodated along the Swan Islands transform fault, a left-lateral structure. The location, depth and focal mechanism solution of today's earthquake are consistent with rupture occurring along this plate boundary structure, or on a nearby and closely related fault.

While commonly plotted as points on maps, earthquakes of this size are more appropriately described as slip over a larger fault area. Strike-slip-faulting events of the size of the January 10, 2018, earthquake are typically about 140x20 km (length x width).

Nine other earthquakes of M 6 or larger have occurred within 400 km of the January 10, 2018 event over the preceding century. Previous strong earthquakes along the North America-Caribbean plate boundary in this region include the destructive M 7.5 Guatemala earthquake of February 4, 1976, which resulted in more than 23,000 fatalities. The 1976 earthquake occurred on the Motagua fault, a segment of the plate boundary that lies in southern Guatemala, about 650 km west-southwest of the hypocenter of the January 10, 2018, event. In May 2009, a M 7.3 earthquake occurred along the Swan Islands transform fault approximately 300 km west of the January 10, 2018 event. The 2009 earthquake (which was much closer to land than the 2018 event) resulted in 7 fatalities, 40 injuries and 130 buildings being damaged or destroyed.



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. Helmlinger, 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.
Delmets, C., Gordon, R.G., Argus, D.F., 2010. Geologically current plate motions, Geophysics, J. Int. 181, 1-80.

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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
10 January 2018
<http://earthquake.usgs.gov/>
Map not approved for release by Director USGS