

Aftershock Distribution and the Mainshock's Fault Plane by the MJHD Method: Application to the Offshore Guatemala Earthquake on November 7, 2012

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Earthquake Information (USGS)

Origin Time: November 7, 2012 at 16:35:50 UTC

Hypocenter: 14.083°N, 91.916°W, 41.6 km (depth)

Magnitude: $M_w = 7.4$

Data: 'Latest Earthquakes in the World - Past 7 days' by the US Geological Survey

Events Relocated: Mainshock and aftershocks until November 8, 2h26m

Method: Modified Joint Hypocenter Determination (MJHD) by Hurukawa and Imoto

Results: Size of concentrated aftershock area: 40 km x 50 km

Fault plane: Nodal plane striking NW-SE dipping NE gently

Comments: This is an interplate thrust earthquake between the subducting Cocos and overlying North America plates.

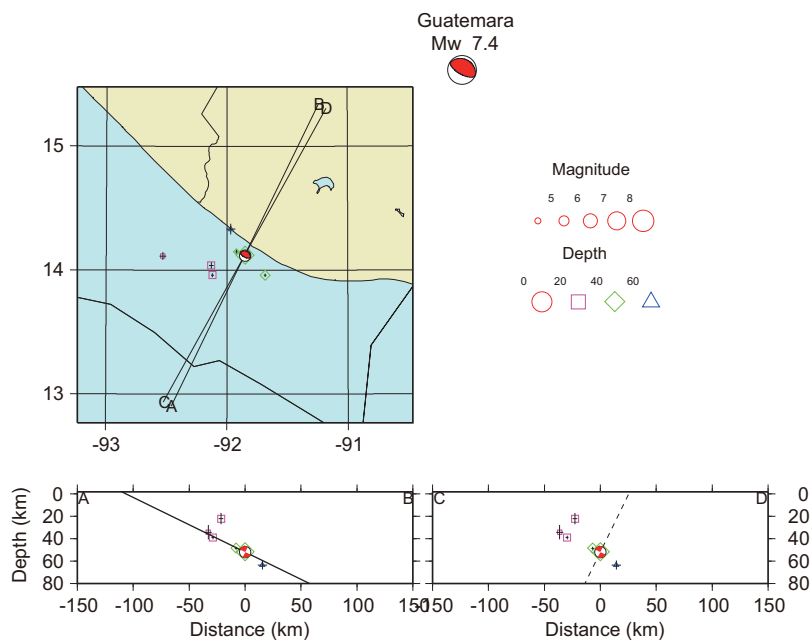


Figure 1. Hypocenters relocated by the MJHD method. Global CMT solution of the mainshock is also shown. Epicentral distribution and two vertical cross sections along A-B and C-D lines, which are perpendicular to strikes of the two nodal planes of the mainshock, are shown. Two nodal planes are shown by lines in cross sections. The nodal plane corresponding to the fault plane is shown by a thick solid line.

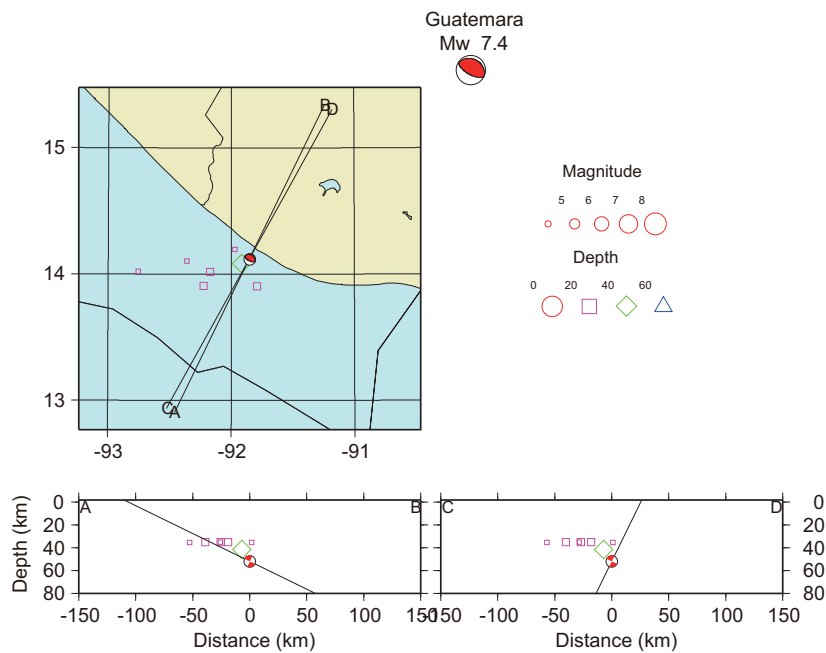


Figure 2. Hypocenters located by the USGS. Two nodal planes of the mainshock are also shown by solid lines in cross sections.

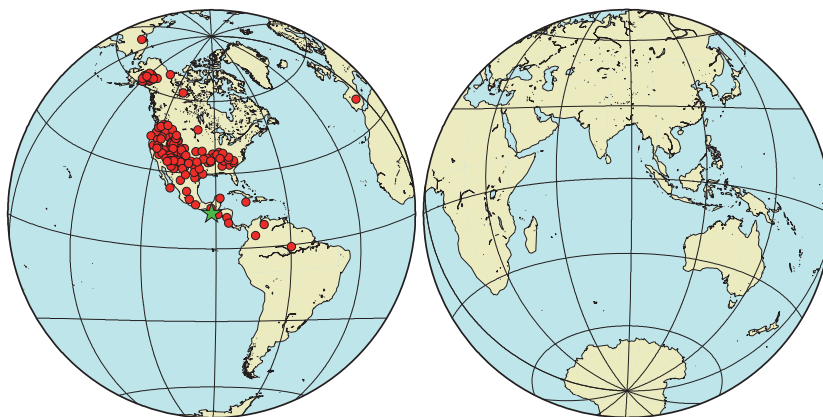


Figure 3. Stations used in relocation.

References

- Hurukawa, N., Quick aftershock relocation of the 1994 Shikotan earthquake and its fault planes, *Geophys. Res. Lett.*, 22, 3159-3162, 1995.
- Hurukawa, N. and Imoto, M., 1990, Fine structure of an underground boundary between the Philippine Sea and Pacific plates beneath the Kanto district, Japan, *Zisin (J. Seismol. Soc. Jpn)*, 43, 413-429 (in Japanese with English abstract).
- Hurukawa, N. and M. Imoto, Subducting oceanic crusts of the Philippine Sea and Pacific plates and weak-zone-normal compression in the Kanto district, Japan, *Geophys. J. Int.*, 109, 639-652, 1992.