

Aftershock Distribution and the Mainshock's Fault Plane by the MJHD Method: Application to the Philippines Islands Region Earthquake on August 31, 2012

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HURUKAWA Nobuo

Building Research Institute (BRI), Japan

Earthquake Information (USGS)

Origin Time: August 31, 2012 at 12:47:34 UTC

Hypocenter: 10.838°N, 126.704°E 34.9 km (depth)

Magnitude: $M_w = 7.6$

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

Events Relocated: Mainshock and aftershocks until September 3, 3h11m

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

Results: Size of concentrated aftershock area: 70 km x 40 km

Fault plane: Nodal plane striking NNW-SSE dipping ENE

Comments: This is an intraplate thrust earthquake in the Philippine Sea Plate. The rupture started at a deepest point of the fault plane. Aftershocks with normal faulting occurred.

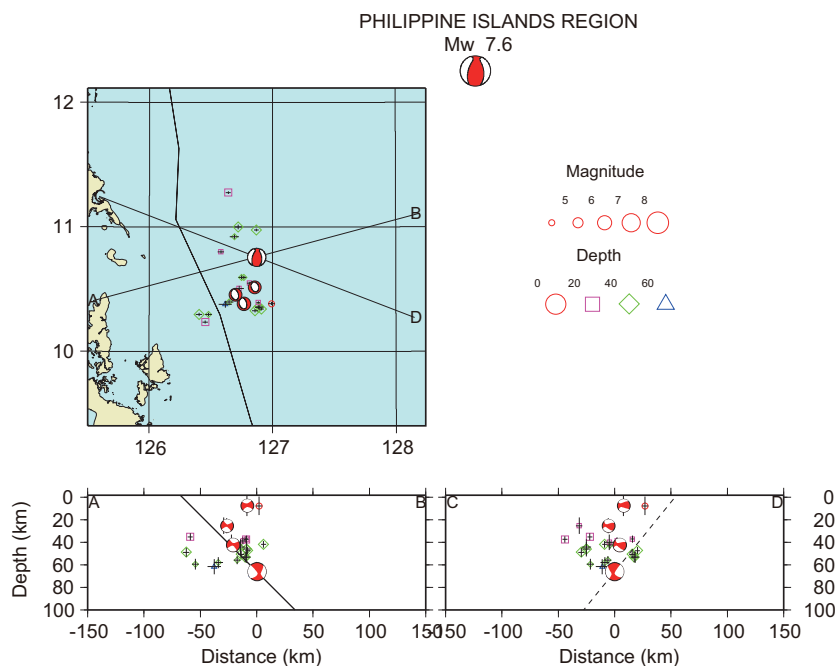


Figure 1. Hypocenters relocated by the MJHD method. Global CMT solutions are also shown. Epicentral distribution and two vertical cross sections along A-B and C-D lines, which are perpendicular to strikes of the two nodal planes, are shown. Two nodal planes are shown by lines in cross sections. The nodal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

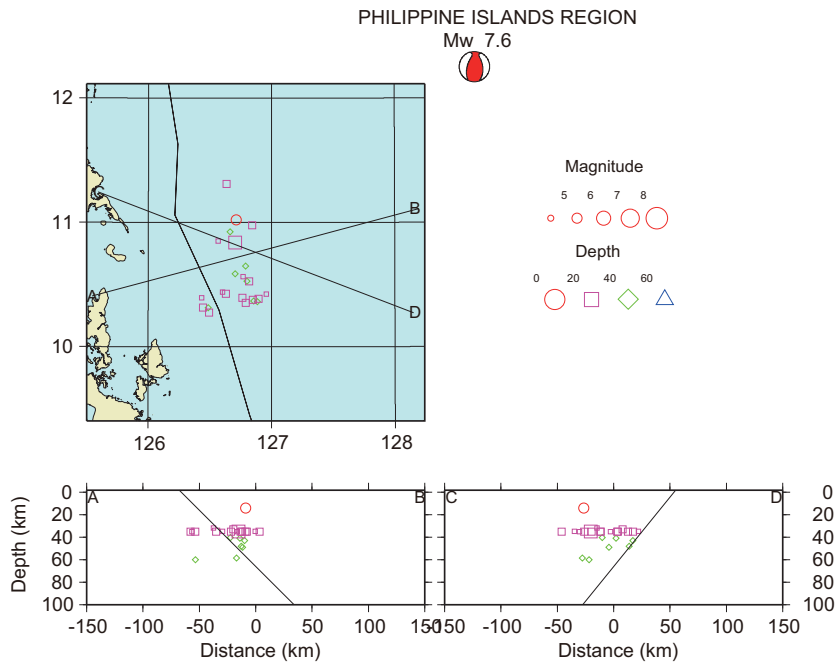


Figure 2. Hypocenters located by the USGS. Two nodal planes are also shown by solid lines in cross sections.

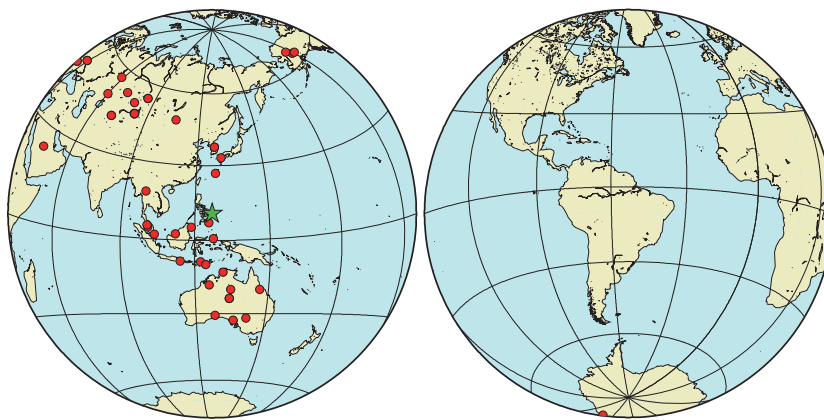


Figure 3. Stations used in relocation.

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 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.