Aftershock Distribution and the Mainshock's Fault Plane by the MJHD Method: Application to April 13, 2010 Southern Qinghai, China Earthquake

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Origin Time (USGS): April 13, 2010 at 23:49:37 UTC
Hypocenter (USGS): 33.271°N, 96.629°E, 10 km (depth)
Magnitude (Global CMT): *Mw* = 6.9

Data: 'Latest Earthquakes in the World - Past 7 days' by the US Geological Survey
Events Relocated: Foreshock, mainshock and aftershocks until April 14, 12h30m
Method: Modified Joint Hypocenter Determination (MJHD) by Hurukawa and Imoto
Results: Length of aftershock area: 30 km
Fault plane: Nodal plane striking NE-SW
Comments: This is an intraplate earthquake in the Eurasian Plate. Since a number of available phase data is limited, it is hard to decide the fault plane of the mainshock. The rupture seemed to propagate toward SW at least. Absolute values of focal depths are unreliable.

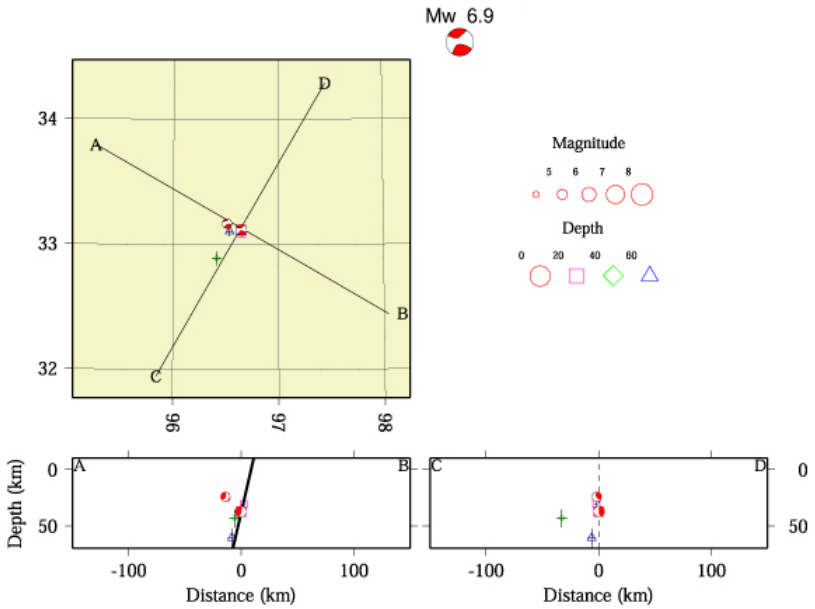

Figure 1. Hypocenters relocated by the MJHD method. Global CMT solutions are also shown. Epicentral distribution and two vertical cross sections along A-B and C-D lines, which are perpendicular to strikes of the two nodal planes, are shown. Two nodal planes are shown by lines in cross sections. The nodal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

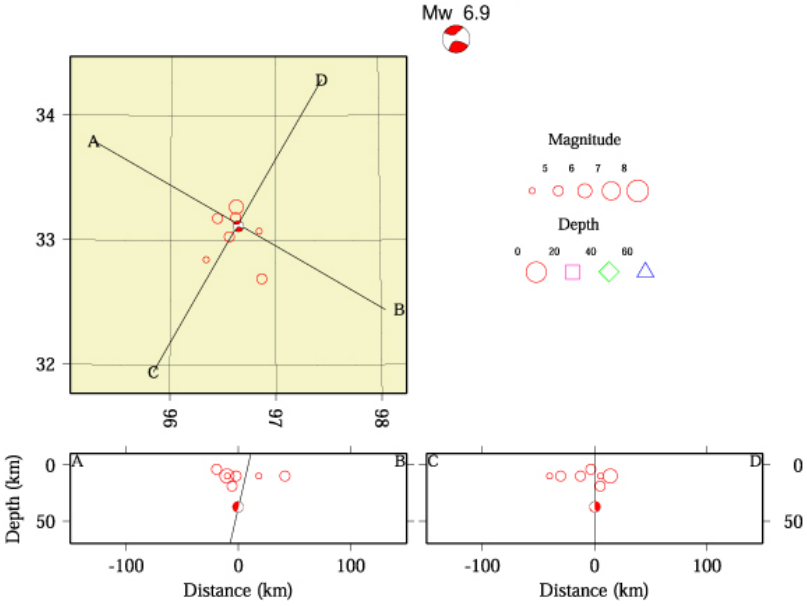

Figure 2. Hypocenters located by the USGS. Two nodal planes are also shown by solid lines in cross sections.

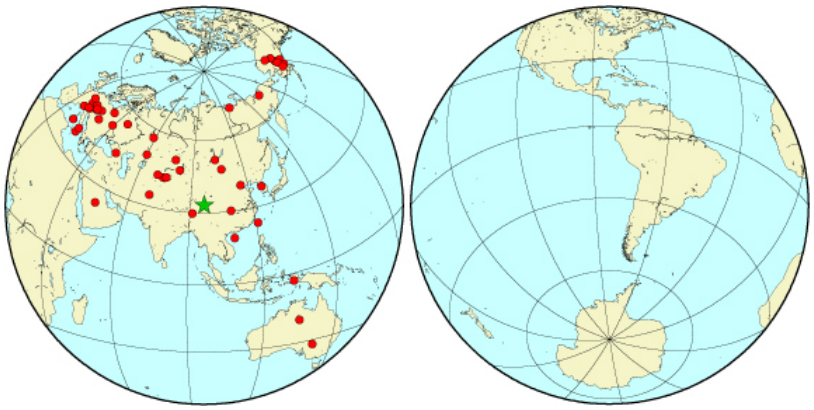

Figure 3. Stations used in relocation.

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.