Aftershock Distribution and the Mainshock Fault Plane by MJHD method: Application to September 30, 2009 Southern Sumatra Earthquake

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Nobuo HURUKAWA
International Institute of Seismology and Earthquake Engineering, BRI

SOUTHERN SUMATRA, INDONESIA
Origin Time (USGS): September 30, 2009 at 10:16:09 UTC
Hypocenter (USGS): 0.725°S, 99.856°E, 81 km
Magnitude (Global CMT): Mw = 7.5

Data: 'Latest Earthquakes in the World - Past 7 days' by the US Geological Survey
Events Relocated: Mainshock and aftershocks until October 5

Method: Modified Joint Hypocenter Determination (MJHD) by Hurukawa

Results: Length of aftershock area: 20 km
Fault plane: Nodal plane dipping toward SSE
An intraplate earthquake in the Australia plate

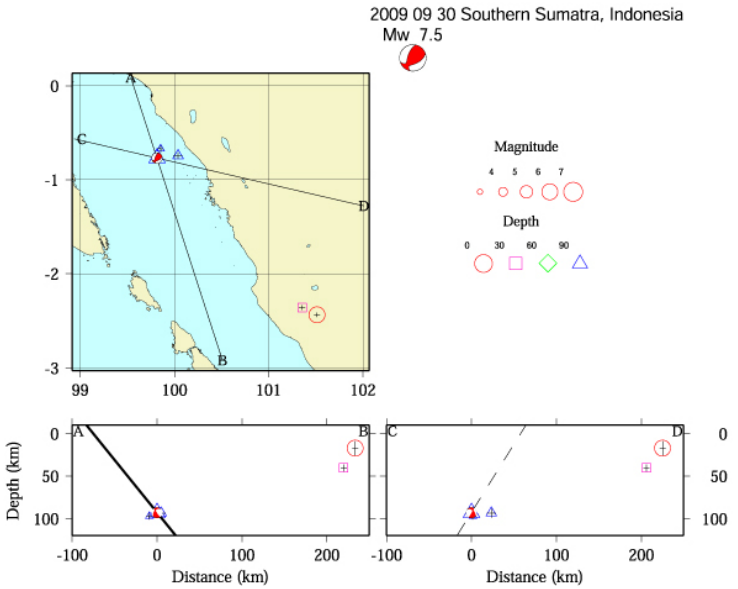

Fig. 1. Hypocenters relocated by the MJHD method. Global CMT solution is also shown. Epicentral distribution and two vertical cross sections along A-B and C-D lines, which are perpendicular to strikes of the two nodal planes, are shown. Two nodal planes are shown by lines in cross sections. The nodal plane corresponding to the fault plane is shown by a thick solid line in the A-B cross section. Note: In order to increase a number of earthquakes, I included the Mw 6.6 southern Sumatra earthquake and its aftershock for relocation.

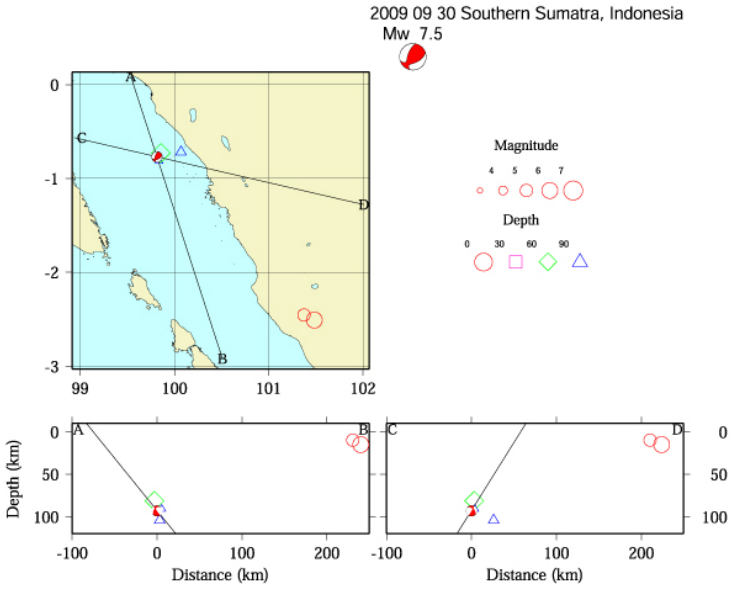

Fig.2 Hypocenters located by USGS. Two nodal planes are also shown by solid lines in cross sections.

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.