

Analysis on Earthquake Relocation Using Modified Joint Hypocenter Determination (MJHD) and Double Difference (DD) (Case Study of Kebumen Earthquake 25 January 2014 in Mw: 6.2)

In order to obtain earthquake locations of high fidelity it is important to perform hypocenter relocation accurately with an appropriate methodology. This is because errors due to the velocity structure model cannot be minimized when determining the hypocenter. In this study, the Kebumen earthquake of January 25, 2014 and its aftershocks were relocated using both MJHD and Double Difference methods. The data used were the arrival time readings taken from the earthquake catalog of the Meteorology, Climatology and Geophysics Agency (BMKG) from 25 January 2014 to 10 February 2014 in a region bounded by 6.23 – 10.23 south latitude and 107.2 – 111.2 east longitude. The BMKG catalogue location was then relocated using MJHD and Double Difference methods. The end result of this relocation showed a major earthquake hypocenter position using the MJHD method at -8.416 south latitude – 109.219 east longitude at a depth of 58.03 km, whereas the Double Difference method yielded location at -8.23 south latitude – 109.19 east longitude at a depth of 86.6 km. The results also indicated that the Kebumen earthquake of January 25, 2014 was an intraslab event that occurred in the Wadati Benioff zone.

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