

Relocation of Tasikmalaya Earthquake of 2 September 2009 and Its Aftershocks Using Grid Search and Simulated Annealing Methods

A Large earthquake occurred on September 2, 2009 at 02:55 local time with a magnitude 7.0 (M_w). BMKG published that the epicenter is located at 8.24S 107.32E and depth 30 km. The source mechanism is thrusting faulting, where the strike direction perpendicular to the trench, raises doubts whether the earthquake is an intraplate or interplate. In this study, we relocate the hypocenter of Tasikmalaya earthquake occurred on September 2, 2009 and its aftershock. Hypocenter and origin time data obtained from the BMKG earthquake catalog is set as initial data. The data of P wave arrival time is obtained by picking P phase in the waveform that is high-pass-filtered with frequency cut off 2 Hz. Grid search and simulated annealing methods are used to relocate the hypocenter. The hypocenters of mainshock and aftershocks are clustered at a depth of about 10-30 km. Hypocenter of mainshock has a depth of about 22-25 km or above the contact plane. mainshock and aftershocks shows the southwest-northeast linearization or perpendicular to the Java trench. This result appropriate with the calculation of the source mechanism published by the USGS, Global-CMT and BMKG. This linearization is caused by crust deformation trending northwest-southeast.

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Track Classification: Theme 2: Events and Their Characterization