

A new technique to locate hypocenter before arrivals of large amplitude seismic waves

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A large earthquake produces strong ground motions at its epicenter area and all seismic stations, which work correctly, record large amplitude seismic waves. With considering that all stations which are located in an area within P wave wavefront can detect P wave arrivals, we developed a new technique to locate hypocenters of large earthquakes very quickly. The technique uses not only P wave arrival times but also time data that P waves are not yet arriving. With defining residuals for both arrival time data and time data of not yet arriving, we locate hypocenter so that the square of the residuals becomes minimum. It was shown that more than 95 % of events can be located precisely within a few seconds after P wave arrival at a closest station.