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T2.2-P17. Relocation of the DPRK M5.1 February 12th, 2013 Earthquake using Modified Joint Hypocenter Determination (MJHD) and Double Difference Algorithm

The aim of this research is to determine the high precision location of the DPRK M5.1 February 12th, 2013 nuclear test earthquake using relocation algorithm of Modified Joint Hypocenter Determination (MJHD) and Double Difference (DD) using IDC-CTBTO, BMKG and global seismic stations respectively. We simultaneously relocated this event using 3 datasets including 2006 and 2009 nuclear test and the seismicity around these three events. We did the precise repicking of the P-wave arrival time in 7 stations in regional scale ($\Delta \leq 15$ degree) for the first dataset. The others dataset are the arrival time data from ISC and BMKG for three nuclear tests and the surrounding seismicity in 2012 to 2013. We successfully relocated the event with 7 scenarios of teleseismic and regional relocation. For example, MJHD teleseismic relocation using BMKG arrival dataset and 18 selected IDC-CTBTO stations showed the location of 129.0652±0.0505, 41.1814±0.0249 at zero depth. The relocated positions using MJHD and DD are considered better because the smaller value of residual O-C or RMS residual and sum of squared residuals (SSR) after relocation. The results were compared with the location results of previous researchers and analyzed using topographic data satellite imagery. Keywords: nuclear test, relocation, MJHD, double difference

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