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Test In-Depth View

Remote yield estimation of the underground nuclear explosions is possible by the inspection of different seismic phases. The most important seismic parameters are the amplitude, body wave and surface wave magnitudes. Therefore, to estimate the yield of the DPRK explosion (Feb 12, 2013), we need to find the necessary relationships. In Iran, near to 85 stations from the Iranian Seismological Center has received this seismic event. However the CTBTO evaluated the yielded estimation of the explosion about 4.9, we have study this event with available stations. Stations consist of short period, mid band and broad band sensors. The methodology we used here is first to derive several relationships for previous explosion tests like Semipalatinsk, and then to employ these relationships for estimating the yield of DPRK explosion. In this paper, different methods have been used to derive relationships between the recorded seismic parameters by the seismograms and the known explosions. These methods include: the amplitude of P-wave with a period of one second, the body wave magnitude, mb, and the surface wave magnitude in the time domain and in the frequency domain. Also, we have compared standard methods of distinguishing an earthquake from explosion like P/S spectra from earthquakes.

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