ID: Type: **Poster**

T2.2-P07. Detection of the 2006 DPRK explosion by small-aperture array ”Mikhnevo” using waveform cross correlation

Three underground tests conducted by DPRK in 2006, 2009, and 2013 were measured by small aperture seismic array “Mikhnevo”, which has been operated by the Institute of Geospheres Dynamics since 2004. This array is designed for the purposes of regional seismic monitoring. It has aperture of approximately 1 km and includes ten vertical and two 3-C stations. Sampling rate is 200 counts per second. Automatic processing includes beamforming (azimuth and slowness values for the preset detection beams cover the range of regional and teleseismic body waves), filtering and detection by standard STA/LTA procedure. Distinct signals generated by the 2009 and 2013 events were detected. The 2006 event was not detected by standard procedure (detection threshold was STA/LTA=3.5) and we applied waveform cross correlation (matched filter) in order to improve signal-to-noise ratio (SNR). Multichannel waveforms from the 2009 and 2013 signals filtered in various frequency bands were used as templates. The 2006 signal was detected with the cross correlation technique with SNR>4. Therefore, the matched filter technique improves detection capability of a small-aperture array even for teleseismic waves.

Primary author: KITOV, Ivan (CTBTO)

Presenter: KITOV, Ivan (CTBTO)

Track Classification: 2. Events and their characterization