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The DPRK 2013 Underground Test and Chebarkul Meteorite: Joint Interpretation of Seismic, Infrasound, Acoustoseismic and Seismoacoustic Waves

Two events crucial for monitoring of nuclear explosions under the CTBT occurred on February 12 and 15 and attracted attention of the mass media and scientists. Seismic waves from the underground event and infrasound waves from the meteorite are of extreme interest as well as various processes of energy conversion at the free surface. Infrasound station I45(RU) collocated with seismic array USRK recorded the epicentral I-phase generated by the DPRK 2013 event and the seismoacoustic wave emitted beneath the station. The shock wave from the Chebarkul meteorite generated a regular I-phase recorded by many IMS infrasound stations and a series of seismic phases likely associated with impact and acoustoseismic conversion. Due to the altitude of the peak energy release, the air-coupled ground rolls with a group velocity of 3.5 km/s were generated. A similar pattern was observed after the 1984 r.Chulym (Siberia) bolide. We estimate the energy of both sources and discuss possible mechanisms of acoustic/seismic wave generation and conversion.

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