

Chelyabinsk meteorite fall: analysis of shockwave signals recorded by broadband seismometers and infrasound sensors

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A huge bolide was appeared in the skies over the Ural district, Russia around 03:20 UTC, and a few minutes after, strong shockwave struck at Chelyabinsk city. The shockwave destroyed lots of window glasses of buildings and injured more than 1,000 residents. The shockwave signals were clearly recorded by global broadband seismic network and CTBT-IMS infrasound monitoring array stations. At the small meteorite fall (e.g., Jan. 20th, 2013 fireball event, Iwakuni et al., this JpGU meeting), the shockwave related signal detection range is limited as wide as 150 km from terminal burst point or atmospheric trajectory. However, the case of Chelyabinsk bolide, we could identify shockwave related wave phenomena at least beyond 1,000s km in range. It is no doubt that this is the largest bolide event since 1908, when the Tunguska event occurred.

In this presentation, we will present the results of analysis of shockwave related phenomena based on seismic, infrasound, and GPS TEC records.

Keywords: meteorite fall, shockwave, infrasound