



Seismo-acoustic analysis of local impulsive infrasound events at BURAR site

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A four-element seismo-acoustic array of 1.2 km aperture is currently deployed in northern Romania, at BURAR site, under a joint effort of Air Force Technical Application Center AFTAC (USA) and National Institute for Earth Physics NIEP (Romania).

Strong impulsive signals of short-duration and frequency range from 3 s to 20 Hz are frequently detected during daytime in the acoustic array data. By adding borehole seismometers' recordings, these infrasound detections are investigated in order to distinguish between seismic and sonic events which could be associated to local quarry blasts and sonic booms. Identification and analysis of local impulsive acoustic sources at BURAR site are achieved by applying PMCC detector (embedded in the DTK-GPMCC application) combined with frequency-wavenumber analysis.

Sonic boom signals in the form of an N-shockwave pressure signature, generated by planes flying through the sound barrier, could be detected as direct arrivals over BURAR site, under or near the flight path of an aircraft. The detonations originated in an open pit mine located at 2.6 km from the BURAR site are observed as well. The peak frequency of the events is around 4.4 Hz and the waveforms have a typical blast wave signature, indicating a nearby explosion.