

Detection and Interpretation of Seismoacoustic Events at German Infrasound Stations

Three infrasound arrays with collocated or nearby installed seismometers are operated by the Federal Institute for Geosciences and Natural Resources (BGR) as the German NDC for the verification of the CTBT. Infrasound generated by seismoacoustic events is routinely detected at these infrasound arrays, but air-to-ground coupled acoustic waves occasionally show up in seismometer recordings as well. Different natural and artificial sources like meteoroids as well as industrial and mining activity generate infrasonic signatures that are simultaneously detected at microbarometers and seismometers. Furthermore, many near-surface sources like earthquakes and explosions generate both seismic and infrasonic waves that can be detected successively with both technologies. The combined interpretation of seismic and acoustic signatures provides additional information about the origin time and location of remote infrasound events or about the characterization of seismic events distinguishing man-made and natural origins. Furthermore, seismoacoustic studies help to improve the modelling of infrasound propagation and ducting in the atmosphere and allow quantifying the portion of energy coupled into ground and into air by seismoacoustic sources. An overview of different seismoacoustic sources and their detection by German infrasound stations as well as some conclusions on the benefit of a combined seismoacoustic analysis are presented within this study.

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