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Detection and localization capability of the European infrasound network

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The infrasound network of the International Monitoring Network (IMS) for the compliance with the Comprehensive Nuclear-Test-Ban Treaty (CTBT) is currently not fully established. However, it has demonstrated its capability for detecting and locating infrasonic sources like meteorites, as well as volcanic eruptions on a global scale. Such ground-truth events are rare; therefore regions providing a dense network of infrasound stations have to be considered to test and to calibrate detection and location procedures. In central Europe, several years of continuous infrasound waveform data are available for nine stations in Sweden, the Netherlands, France, and Germany, whereas only one of them is part of the IMS. This exquisite setting with an average inter-station distance below 500 km allows the analysis of natural and artificial infrasonic activity in Europe.
The results of the association of multiple arrays demonstrate the need of continuous infrasound monitoring on a regional scale to advance the development of automatic location procedures. Beside the seasonal variation of the network's detection capability, which is dominated by the prevailing stratospheric winds, dominant source regions showing repeating events will be discussed in detail considering the next recording stations.