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Global and Coherent Infrasound Field: Revisiting the Reprocessing of the Full International Monitoring System Infrasound Data, Part 2: Examples

In this study we are going to present results of global coherent infrasound measured at IMS infrasound stations and its correlation with atmospheric dynamics. A new implementation of the Progressive Multi-Channel Correlation (PMCC) algorithm enables the characterization, with a single processing run, of coherent noise in log-spaced frequency with one-third octave bands from 0.01 to 5 Hz. Such a new array processing algorithm enables a better characterization of all received signals in their wave parameter space (e.g. frequency–azimuth space, frequency–trace-velocity space). This, in turn, enables more accurate signal discrimination, and source and propagation studies. We are currently performing a re-processing of the entire previous IMS infrasound database covering the time period from April 2005 to November 2018; meanwhile, the number of stations has increased from 30 to 50. The obtained results clearly indicate a continuous spectrum of coherent signals at IMS stations within the 0.01 to 5.0 Hz frequency range. In this part of our study examples of globally detected microbarom sources and hotspots for generating mountain-associated waves are shown, as well as benchmarking events like volcanic eruptions and bolides.

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