global view on the coherent infrasound field

Systematic characterization of coherent infrasound detection is important for quantifying the recording environment of each station which influence the detection probability of specific signals of interest. We present results of global coherent infrasound measured at IMS infrasound stations and its correlation with atmospheric dynamics. The processed database covers the time period from 2005 to 2015; whereas the number of stations has increased from 30 to 48. Following Matoza et al. (2013), the new implementation of the Progressive Multi-Channel Correlation (PMCC) algorithm enables the characterization, with a single processing run, of coherent noise in the log-spaced frequency bands from 0.01 to 5 Hz. Such experiment enables a better characterization of all received signals (e.g. frequency, azimuth, trace velocity). This, in-turn, allows more accurate signal discrimination, source and propagation studies. The multi-year processing so far indicates a continuous spectrum of coherent signals. It emphasizes continuous signals such as mountain associated waves, oceanic microbaroms, as well as persistent transient signals such as repetitive volcanic, surf, thunder, or anthropogenic activity. From these results, coherent ambient infrasound detection models station, frequency and time dependent could be derived and used to make more accurate and realistic network detection capability models.

Primary author: LE PICHON, Alexis (CEA/CENTRE Ile-de-France)

Presenter: LE PICHON, Alexis (CEA/CENTRE Ile-de-France)

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