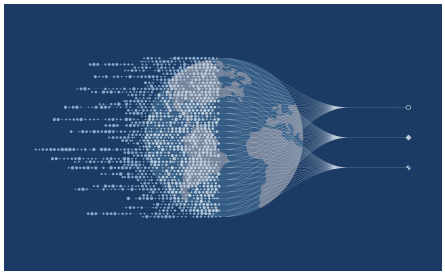

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# of fine scale infrasound IMS network performances in near real time

Global scale infrasound observations confirm that the detection capability of the International Monitoring System (IMS) infrasound network deployed to monitor compliance with the Comprehensive Nuclear-Test-Ban Treaty (CTBT) is the most variable among the three waveform technologies. The time- and space-dependent dynamics of the different atmospheric layers explain the typical diurnal and seasonal trends of the network performance variability in space and time. Past global studies used station- and time-independent statistical noise models, climatological atmospheric specifications and scaling laws to estimate the minimum detectable explosive yield. In this study, a modern updated Bayesian approach has been chosen to predict as realistic as possible network detection capability with a high resolution in space and time useful to real time applications. Based on a frequency- and yield-dependent explosive source term, ECMWF operational atmospheric specifications, up to date frequency-dependent attenuation laws, measured background noise at stations, data availability of array elements, travel times of infrasound waves and performance of the operational detector, the probability to detect any explosive yield is calculated globally on an hourly basis. Results will be shown and discussed from intensive calculations carried out during the 2021-2025 time period, during which IMS infrasound network was stable, with 53 infrasound stations operational.

E-mail

julien.vergoz@cea.fr

In-person or online preference

Primary author: Mr VERGOZ, Julien (Commissariat à l'énergie atomique et aux énergies alternatives (CEA))

Co-authors: Mr LE PICHON, Alexis (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); Mr LISTOWSKI, Constantino (Commissariat à l'énergie atomique et aux énergies alternatives (CEA)); Dr HUPE, Patrick (Federal Institute for Geosciences and Natural Resources (BGR))

Presenter: Mr VERGOZ, Julien (Commissariat à l'énergie atomique et aux énergies alternatives (CEA))

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