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Type: **Poster**

Analysis of the infrasound signals from a bolide over the Bering Sea

In the current work we discuss IMS infrasound observations from a bolide occurring over the Bering Sea in December 2018 recorded at eight infrasound IMS arrays at distances from 2,000 up to nearly 8,000 km. We use the Bayesian Infrasound Source Location (BISL) procedure to obtain a source location and an origin time. Detection patterns and celerity observations validate the presence of a strong stratospheric waveguide north and east of source location, in agreement with the expected state of the atmosphere at the time of the event. The observed frequency range of the signals are variable, with the furthest stations exhibiting higher frequency than the closer stations. Using the standard deviation of the measured periods, and the Revelle 1997 period/yield relationship, the release of energy for this event is between 5 and 103 kt.

Primary author: JOHNSON, Greg (Air Force Technical Applications Center)

Presenter: JOHNSON, Greg (Air Force Technical Applications Center)

Track Classification: Theme 2. Events and Nuclear Test Sites