

## **explosion observed by the US-ARRAY : an unprecedented collection of infrasound phases recorded from the same event**

The 28th October 2014 in Wallops Flight Facility, orbital's Antares launch vehicle failed and heavily exploded onto the launch pad area. At that time, the US transportable array of more than 200 operating stations (all equipped with microbarometers), was located on the east coast of the US and surrounded the accident. A large amount and variety of infrasound phases were observed at some stations, highlighting interesting propagation effects. The variety of recorded signals on such a dense network is unprecedented and offers the opportunity to better understand some propagation features, such as (1) the frequency content changes of stratospheric phases; (2) the dispersion of tropospheric phases propagating over thousands of kilometers within a stable and thin waveguide at fast phase speeds (350m/s) with low attenuation; (3) the non-linear effects associated with slow thermospheric phases (180m/s), especially in terms of shape, amplitude and duration. These 3 points will be addressed, and pieces of interpretations will be given thanks to the different propagation techniques: full waveform modelling (Normal Modes, finite element method), parabolic equation and ray tracing technique. Location issues of such an acoustic event based on tens of infrasound arrival times only will also be shown and discussed.

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