



Probing the atmosphere and atmospheric sources with the USArray

Michael Hedlin (1), Doug Drob (2), Kris Walker (1), and Catherine de Groot-Hedlin (1)

(1) Laboratory for Atmospheric Acoustics, Scripps Institution of Oceanography, University of California, San Diego, (2) Upper Atmospheric Modeling Section, Naval Research Laboratory

The USArray is designed to image the subsurface structure of the United States with exceptional resolution at a continental scale and for studies of regional and teleseismic earthquakes. Although the sensors of this network directly measure ground motion, they indirectly measure other phenomenon that affect ground motion. It has been known for a long time that infrasound can be detected by seismometers through acoustic-to-seismic conversion at the ground/atmosphere interface. The USArray data archive contains recordings of several hundred large atmospheric events. One example is a bolide that burst above Oregon State on February 19, 2008 and was recorded by several hundred seismic stations and four infrasound arrays. The bolide source parameters were precisely determined by the seismic data, and the time-offset records show several phase branches corresponding to multiple arrivals. Such branches have never before been observed in such spectacular detail because infrasound arrays separated by thousands of kilometers are typically used for infrasound studies. In this presentation, we look at examples of the types of acoustic events detected by our USArray processing software and what we can learn from these events. We present results from our study of acoustic branches from events such as the 2008 bolide.