

Noise Reduction at Infrasound Frequencies Using Large Domes

One ongoing challenge to the use of infrasound for long-range monitoring applications (e.g., remote explosions or natural sources of infrasound such as tornados, volcanos or hurricanes) continues to be the high noise floors experienced at many permanent infrasound stations. International Monitoring System (IMS) infrasound stations typically address this problem using large pipe arrays as wind noise filters. However, these arrays generate significant distortion of higher frequency signals, making them non-ideal signals with significant frequency content above a few Hz. Further, they do not produce sufficient noise reduction during windy (typically daytime) measurements, making their utility generally limited to very quiet wind-noise periods (typically nighttime). Here we report on the development history of a 20-foot dome intended for permanent infrasound installations, and on measurements collected from arrays at the University of Mississippi Biological Field Station and at the Sandia National Laboratory Facility for Acceptance, Calibration, and Testing (FACT) site. The 20-foot dome at the FACT site is collocated with an IMS 18-m rosette filter and a University of Alaska Fairbanks experimental array, and more than a year of data has been collected, allowing for detailed comparisons of the efficacy of these different wind-noise reduction schemes.

Primary author: TALMADGE, Carrick (University of Mississippi/NCPA)

Presenter: TALMADGE, Carrick (University of Mississippi/NCPA)

Track Classification: Measurement systems and calibration