

## **Evaluation of rosette infrasonic noise-reducing spatial filters**

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The spatial noise filter currently preferred for use at new International Monitoring System (IMS) infrasound array sites consists of an array of low-impedance inlets connected by solid tubes to a microbarometer. We present results from recent tests of "rosette" infrasonic noise-reducing spatial filters at the Pinon Flat Infrasound test-bed in southern California. At wind speeds up to 5.5 m/s, the 96 inlet 18-meter rosette filter reduces wind noise levels above 0.2 Hz by 15 to 20 dB. Under the same conditions, the 144 inlet 70-meter rosette filter provides noise reduction of up to 15 to 20 dB between 0.02 and 0.7 Hz. Standing wave resonance inside the 70-meter filter degrades the reception of acoustic signals above 0.7 Hz. Synthetics accurately reproduce the noise reduction and resonance observed in the 70-meter filter at all wind speeds above 1.25 m/s. Experiments with impedance matching capillaries indicate that internal resonance in the rosette filters can be removed. Rosette filters are tuned to vertically incident energy. Attenuation of signals by the 70-meter rosette filter at frequencies above 3.5 Hz arriving at grazing angles of less than 15° from the horizontal are predicted to range upward from 10 dB to total cancellation at 5 Hz.