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SIGNAL CHARACTERISTICS FROM OCEAN WAVE SPECTRA STUDY DURING CYCLONE PERIOD

In the South-West Indian Ocean, tropical cyclones occur every year from December to April which can generate infrasonic signals in the 0.1-0.5 Hz frequency band and propagate into thousands of kilometers. Generation mechanism of microbarom signals is attributed to the nonlinear interaction of surface ocean waves and radiated acoustically only if the swells are almost opposite in direction and of a near identical frequency. The Infrasound station I33MG, Madagascar from the International Monitoring System (IMS) is used for this study with selected cyclones in the Indian Ocean. National Oceanic and Atmospheric Administration's (NOAA's) Wavewatch 3 (WW3) model is run to estimate the spatial and temporal distribution of the acoustic source spectra induced by nonlinear ocean wave interactions, then coupled with empirical amplitude scaling relationships to predict microbarom signal levels and peak frequencies (M. Garcés, 2014). Results are presented following the sea-state evolution and microbarom frequency band.

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Track Classification: Analysis of Sources and Scientific Applications