

of Tropical Cyclones using Seismic and Infrasonic stations surrounding the South-Western Indian Ocean.

In the South-West Indian Ocean, tropical cyclones occur every year from December to April. As they move, cyclones generate swells that may represent infrasound sources (microbaroms at 0.2 Hz) and sources of microseismic noise (secondary peak, 0.1-0.35 Hz). A dominant source of noise in the oceans is issued from interaction of two swells of similar periods propagating in opposite directions. These stationary waves generate microbaroms travelling the atmosphere and then recorded by infrasound stations (Benioff & Butenberg, 1939). In the meantime, such standing waves generate pressure variations through the water column down to the ocean floor, and create seismic waves (Rayleigh waves) and that may be recorded by seismic stations. We combined these two independent observables of stationary waves for tracking cyclone. We used IMS infrasound data from CTBTO, seismic stations from the OVPF on La Réunion Island and from MACOMO project. The microbarom sources are analyzed with WinPMCC4.3 software (CEA/DASE2010) based on PMCC method (Cansi, 1995). The azimuths of the microseismic source regions are determined by polarization analyses (Schimmel et al., 2012). As result, during the passage of Haruna cyclone (Feb 2013), we observed a clear signature in both seismic and infrasound sources that show good agreement with the cyclone track.

Primary author: ANDRIANAIVOARISOA, Jean Bernardo (Institute and Observatory of Geophysics of Antananarivo (IOGA))

Presenter: ANDRIANAIVOARISOA, Jean Bernardo (Institute and Observatory of Geophysics of Antananarivo (IOGA))

Track Classification: Analysis of Sources and Scientific Applications