



Tropical Moored Buoy Arrays To Advance Climate Science: A 30-Year Progress Report (Fridtjof Nansen Medal Lecture)

Michael J. McPhaden

7600 Sand Point Way, NE Seattle, Washington 98115, USA (michael.j.mcphaden@noaa.gov)

Coupled ocean-atmosphere interactions in the tropics lead to significant climate fluctuations such as El Niño and the Southern Oscillation in the Pacific, the Indian Ocean Dipole, and the Atlantic meridional gradient mode. These and other prominent climate phenomena originating in the tropics on seasonal to decadal time scales affect regional and global patterns of weather variability. Associated floods, droughts, heat waves and other extreme weather events have significant socio-economic consequences that affect millions of people worldwide.

This presentation describes a coordinated multi-national effort to develop tropical moored buoy arrays in support of climate research and forecasting. Basin specific components include the Tropical Atmosphere Ocean/Triangle Trans-Ocean Buoy Network (TAO/TRITON) in the Pacific, the Prediction and Research Moored Array in the Tropical Atlantic (PIRATA), and the Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) in the Indian Ocean. These arrays, the origins of which date back to the early 1980s, complement other satellite and in situ elements of the Global Ocean Observing System by providing high temporal resolution time series of key environmental parameters in real time. This presentation will feature a discussion of historical perspectives, recent scientific advances, and future directions in the development of the arrays.