

Automatic Shortwave Radiometer Cleaner

Ulises Rivero and Gregory Foltz

This project is in collaboration with engineers and technicians at NOAA/PMEL. The Prediction and Research Moored Array in the Tropical Atlantic (PIRATA) consists of 17 moorings spanning the tropical Atlantic Ocean. Several of the moorings are directly downwind from the Sahara and Sahel regions of Africa, which together represent the largest source of mineral dust on the planet. Dust aerosols accumulate on the moorings' solar radiometer domes, leading to biases as large as -150 W m^{-2} . Scientists and engineers at AOML have developed an automated radiometer dome cleaner that will rinse aerosols from the moorings' radiometer domes at regular 24-hour intervals while deployed at sea. After successful tests at AOML, the first dome rinser was deployed at 11.5°N , 23°W during the December-February 2015 PIRATA Northeast Extension cruise alongside a radiometer without a rinser. A comparison between the solar radiation time series from the rinsed and unrinsed radiometers will be performed in early 2016 to verify that the rinser worked as intended and to make any necessary adjustments for the future deployments.



Photo of the prototype radiometer rinser. Fresh water is pumped from a large container and through each nozzle, rinsing the radiometer's glass dome.