Shipboard Measurements of Aerosol Properties in the Coupled Ocean-Atmosphere System of the Northwest Tropical Atlantic

Tim Bates\textsuperscript{1,2} and Patricia Quinn\textsuperscript{2}

\textsuperscript{1}University of Washington, JISAO, Seattle, WA, United States of America (tim.bates@noaa.gov)
\textsuperscript{2}NOAA/PMEL, Seattle, WA, United States of America (patricia.k.quinn@noaa.gov)

The fair-weather cumulus clouds, that cover much of the low-latitude oceans, affect the radiation balance of the planet by reflecting incoming solar radiation and absorbing outgoing longwave radiation. These clouds also drive atmospheric circulation by mixing the lower atmosphere in a process called shallow convection. This mixing, in turn, affects sea surface temperature and salinity by moderating the air-sea exchange of energy and moisture. Marine boundary layer (MBL) atmospheric aerosols play a role in the processes described above by scattering and absorbing solar radiation and by serving as cloud condensation nuclei (CCN) thereby influencing cloud droplet concentrations and size; the extent, lifetime, and albedo of clouds; and the frequency and intensity of precipitation. Quantifying the role of aerosols over the Northwest Tropical Atlantic is critical to advance understanding of shallow convection and air-sea interactions.

MBL aerosol properties were measured aboard the RV Ronald H. Brown during the EUREC4A and ATOMIC field studies in January/February 2020. Aerosols encountered during the study include background sulfate/sea spray particles and African dust/biomass burning particles. Aerosol physical, chemical, optical and cloud condensation nuclei properties will be presented and their interaction with local and regional circulation.