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In situ observations of the near-shore atmospheric boundary layer during ATOMIC/EUREC4A from small Uncrewed Aircraft Systems

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During the 2020 Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign (ATOMIC) and Elucidating the Role of Cloud- Circulation Coupling in ClimAte (EUREC4A) field campaigns, a team from the University of Colorado Boulder deployed the RAAVEN Remotely-Piloted Aircraft System (RPAS). The RAAVEN RPAS was equipped with the miniFlux measurement system to observe the marine boundary layer upwind of Morgan Lewis, Barbados. Over the course of 23 days, the team completed 39 flights covering nearly 80 flight hours. Flights were conducted in and just above the boundary layer at altitudes between 10 and 1000 m, with a focus on capturing regular thermodynamic and kinematic profiles of the lower atmosphere, along with statistics on vertical transport and spatial variability. In this presentation, we will give initial details on the observed state of the lower atmosphere. This includes information on the structure and internal variability of thermodynamic and kinematic properties, turbulence intensity, turbulent surface fluxes and their variability, and details on the structure of vertical velocities in the lower atmosphere.