**Air-Sea Interaction Revealed from Aircraft-Based Measurements During DYNAMO**

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As part of the Dynamic of the Madden-Julian Oscillation (DYNAMO) field campaign, aircraft measurements from the NOAA WP-3D took place over the tropical Indian Ocean between Nov 11 and Dec 13, 2011, based at the remote island of Diego Garcia. A total of 12 flights were made, 10 of which were full ~9 hour research flights. Measurements from the NOAA P-3 include flight-level state and thermodynamics variables, turbulence and high-rate temperature and water vapor perturbations, cloud microphysics, atmospheric radiation, surface imaging and waves, and convective activities from the vertical-scanning Doppler radar and the fuselage horizontally scanning radar. Measurements of the NOAA P-3 also include air expendables such as GPS dropsondes, Airborne eXpendable Bathy Thermographs (AXBT) and Airborne eXpendable Conductivity Temperature and Depth probes (AXCTD) for co-located and simultaneous atmospheric and oceanic profiling.

This presentation will focus on two related subjects. 1) we will look into the characteristics of the atmospheric boundary layer and the upper ocean from dropsondes, in situ and remote sensing measurements from aircraft instrumentations, and AXBT/AXCTD profiling. We will specifically investigate the different vertical structure of the lower atmosphere and ocean mixed layer under active convection and in the non-convective regions. The spatial and temporal variations on various spatial and temporal scales will also be discussed using concurrent measurements in the atmosphere and in the ocean. 2) We will examine the evolution of the near surface characteristics in the both the atmosphere and the ocean in different stages of the November MJO event through collocated measurements. Such analyses reveal the roles of the upper ocean, the cold pool of the convective system, and the environmental moisture on the air- sea exchange of heat and moisture and their implication to MJO initiation.