

## **5A.7 Model biases in precipitation and air-sea fluxes in tropical cyclones**

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Observations from TRMM rainfall and in-situ air-sea enthalpy fluxes derived using dropsondes and AXBTs are used in this study to identify and quantify model biases in precipitation and air-sea fluxes in tropical cyclones. It is found that uncoupled atmospheric model with unrealistically warm SST produces excessive surface latent and sensible heat fluxes lead to a vicious cycle: Excessive heat and moisture fluxes resulted stronger convection and precipitation, large evaporative cooling and stronger surface winds, and event larger air-sea heat and moisture fluxes. Coupled atmosphere-wave-ocean can correct a significant part (but not all) of the model biases in air-sea fluxes and rainfall, which is a good starting point to break up the vicious cycle. Detailed diagnostic analysis is underway to identify potential compounding errors in the WRF (e.g., precipitation, water vapor, boundary layer properties).