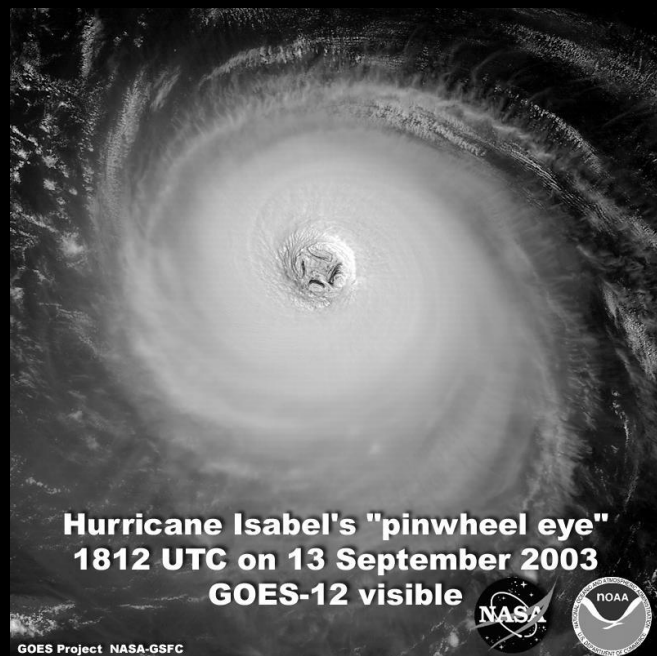


Thermodynamic and Flux Observations of the Tropical Cyclone Surface Layer

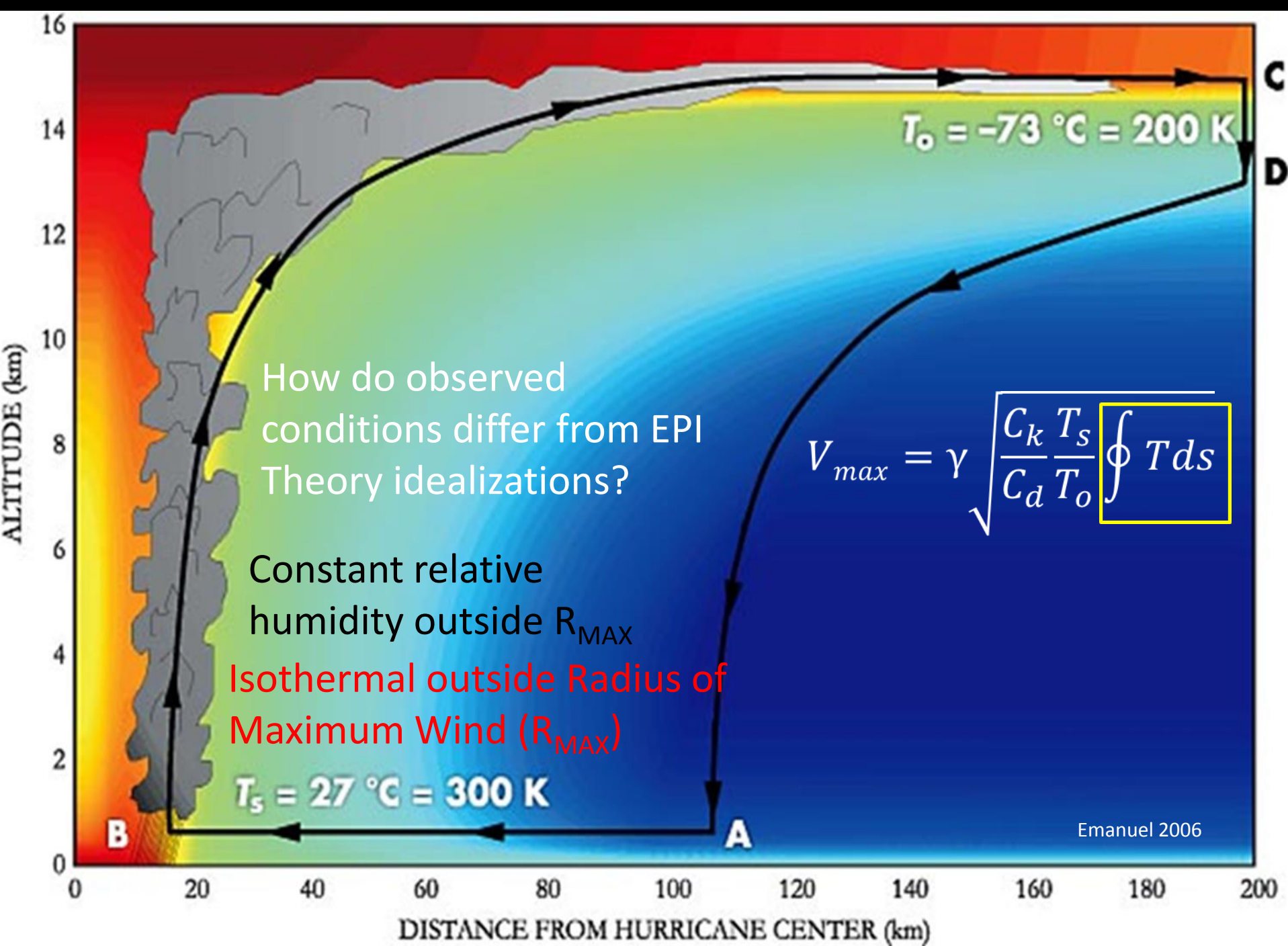
Alex M. Kowaleski and Jenni L. Evans

Pennsylvania State University



April 2, 2014

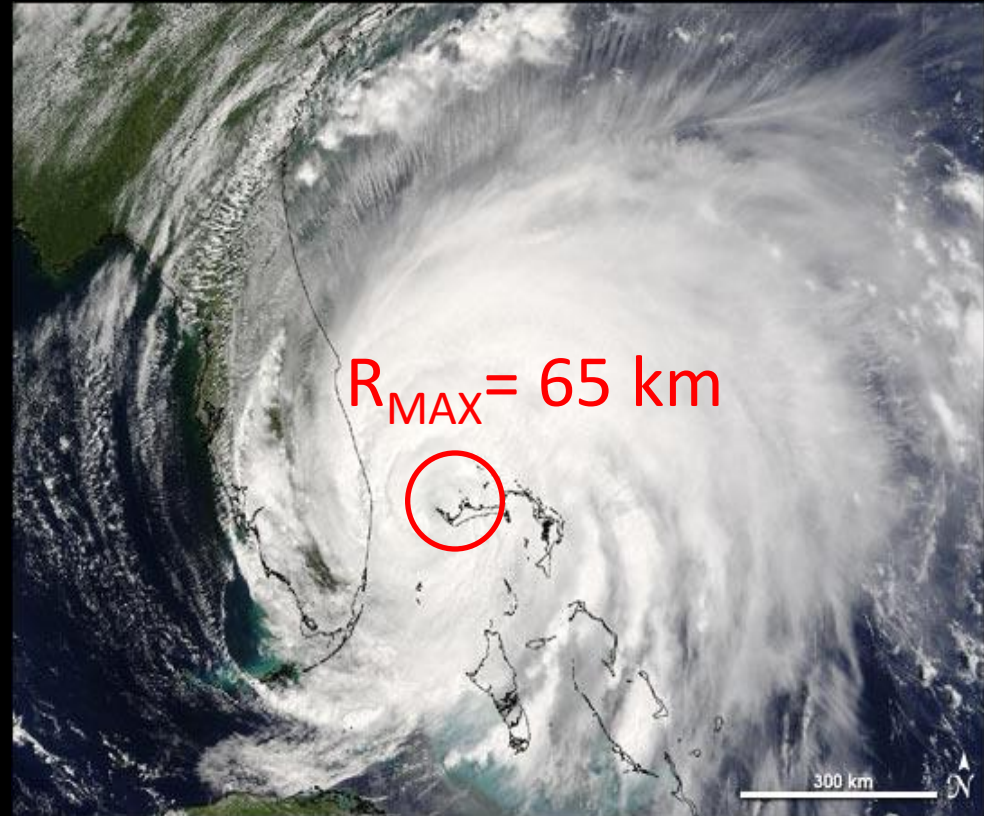
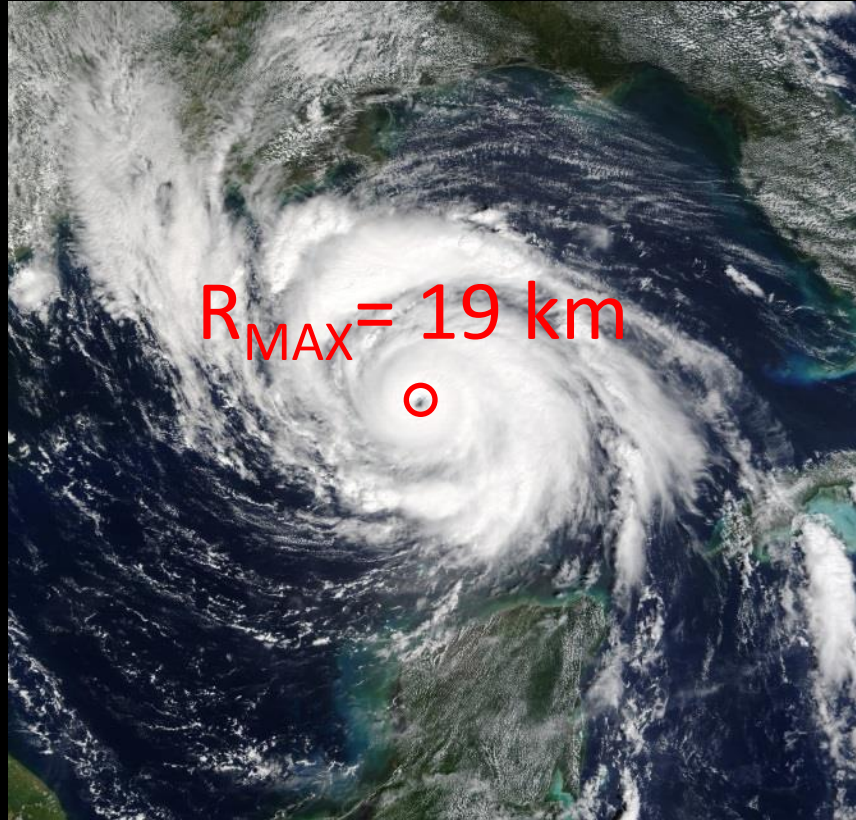




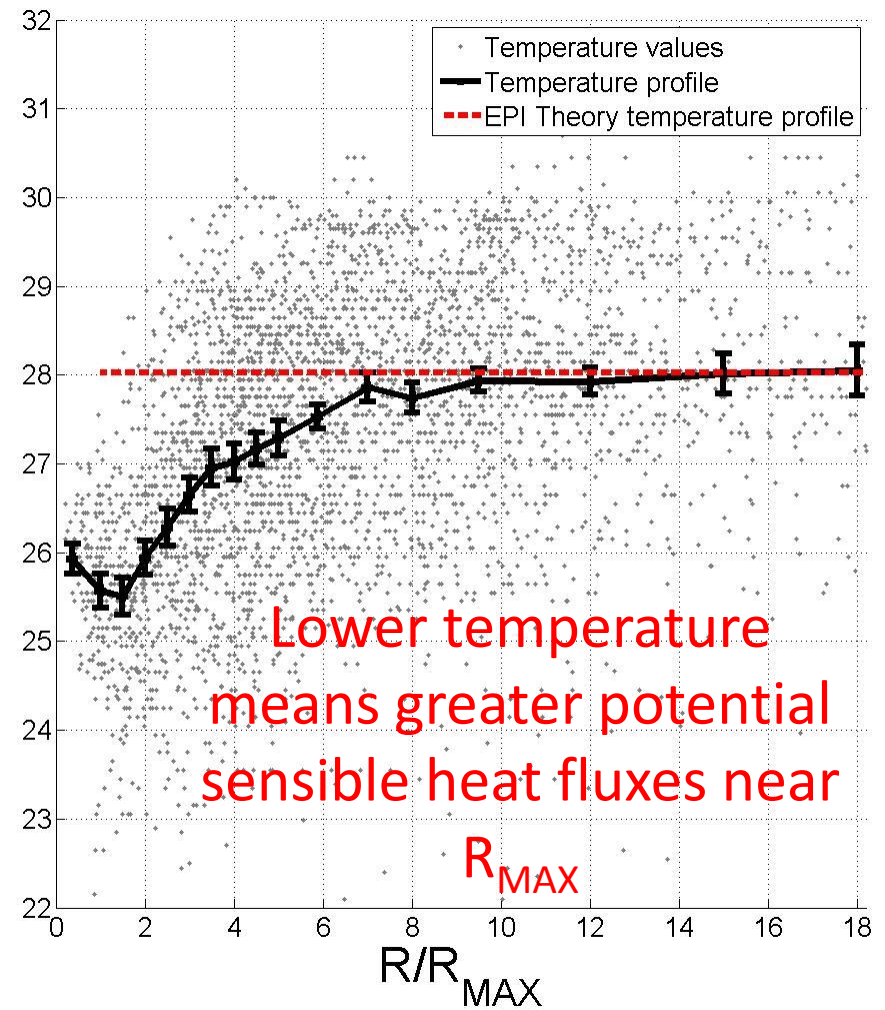
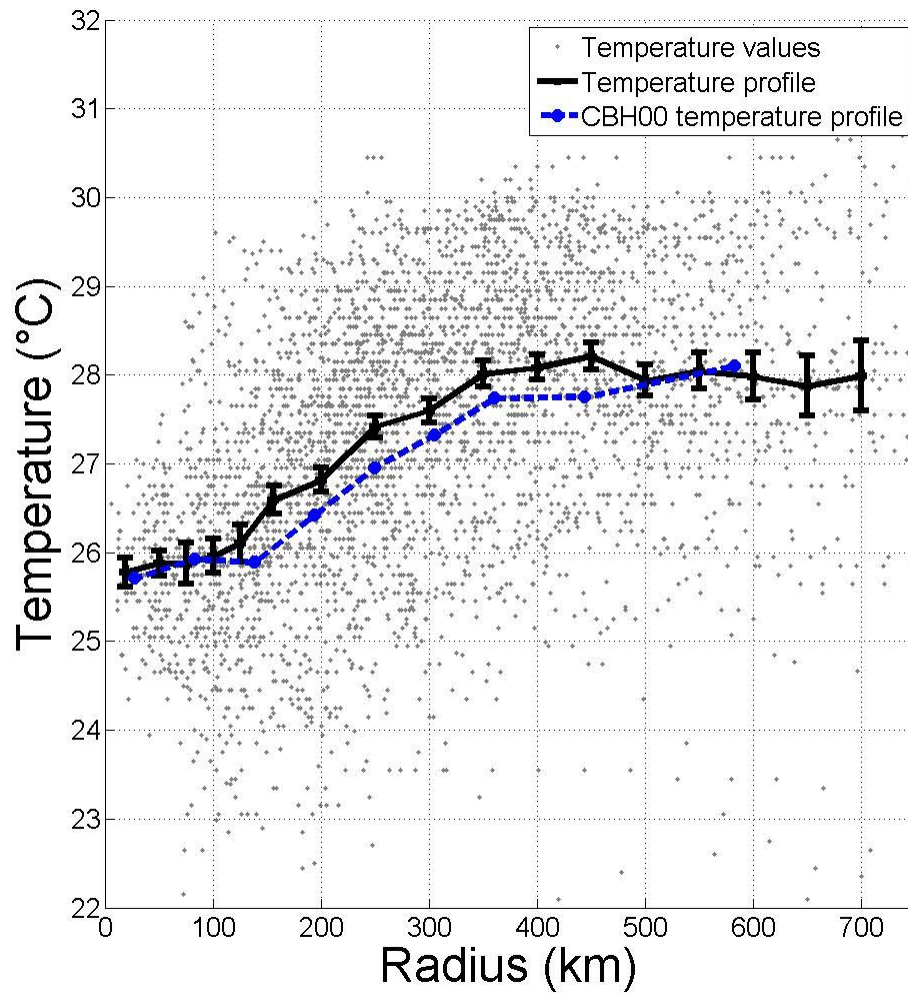
R_{MAX} Space

Lili

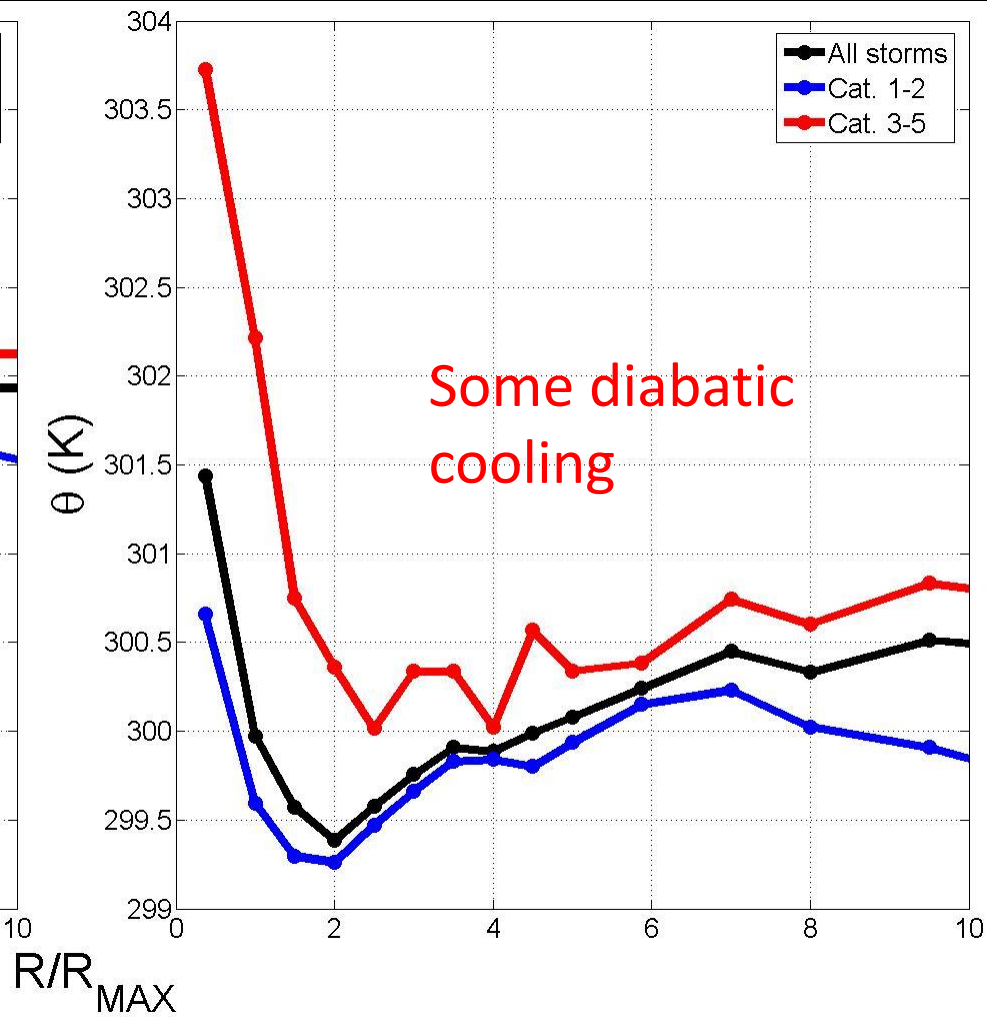
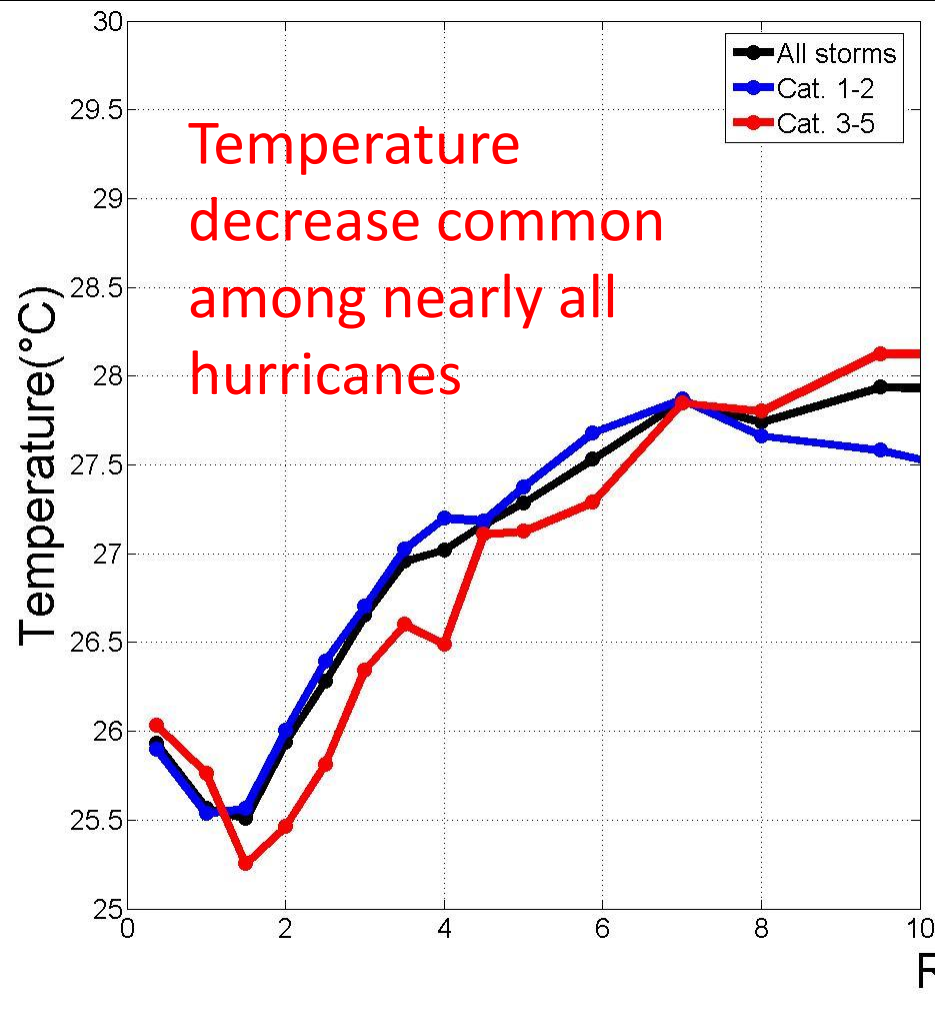
Frances



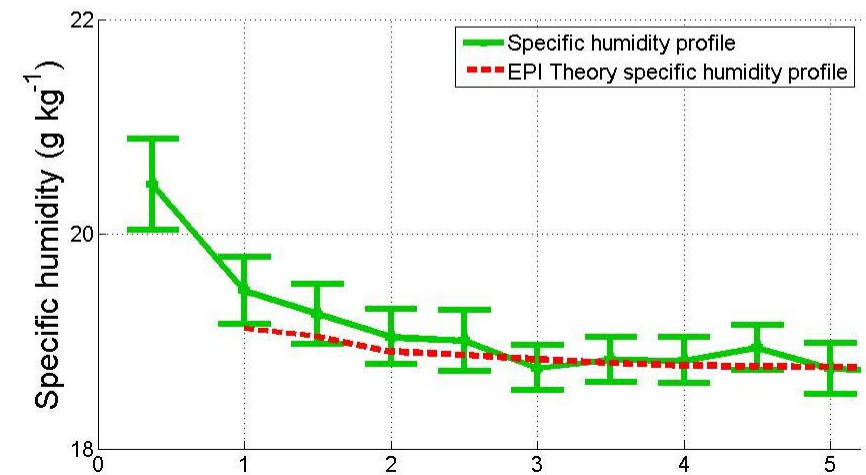
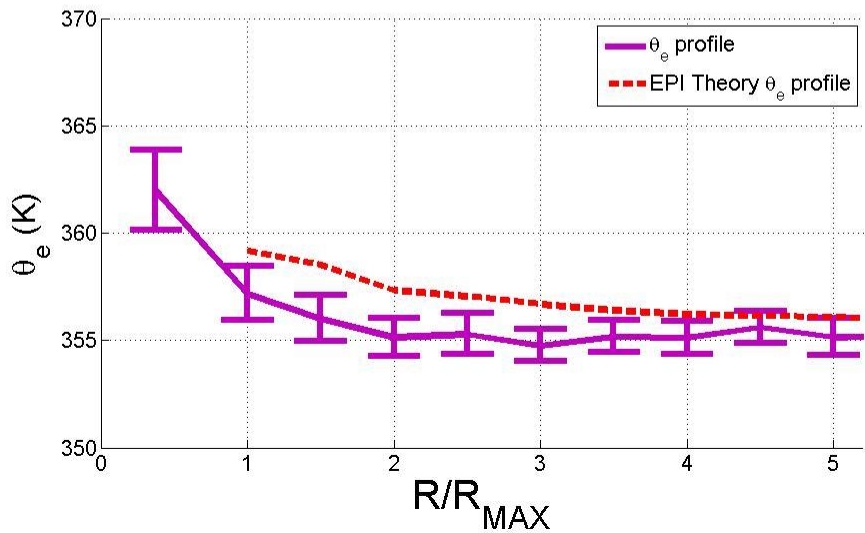
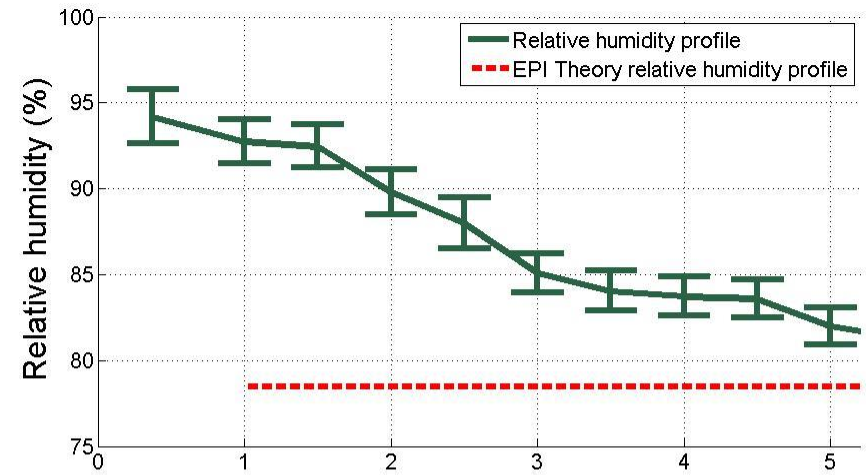
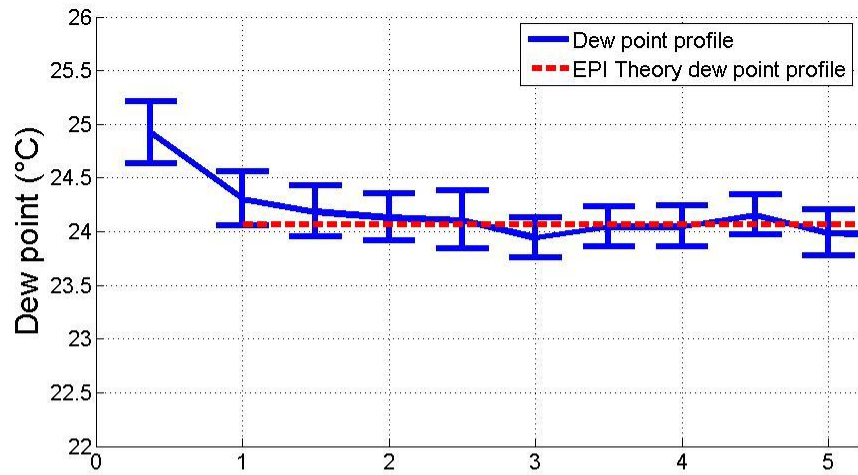
Air temperature with radius and R_{MAX}



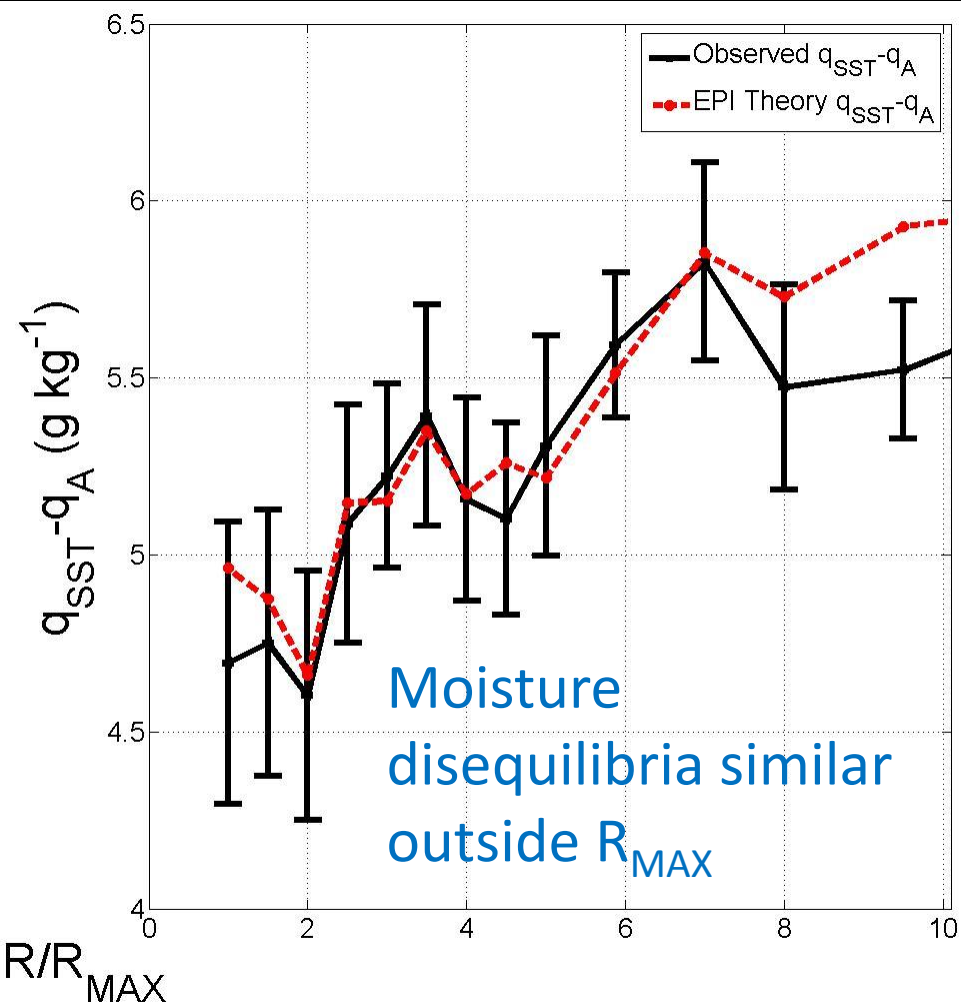
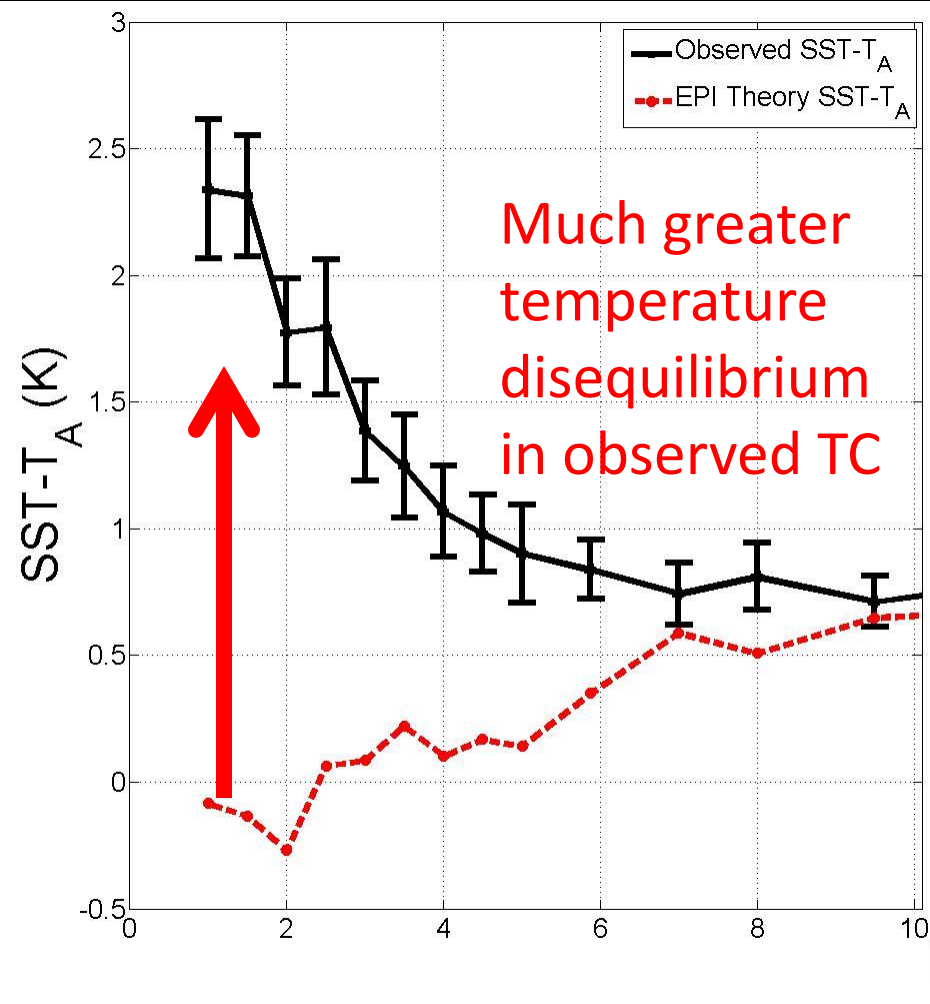
Air temperature and θ with R_{MAX}



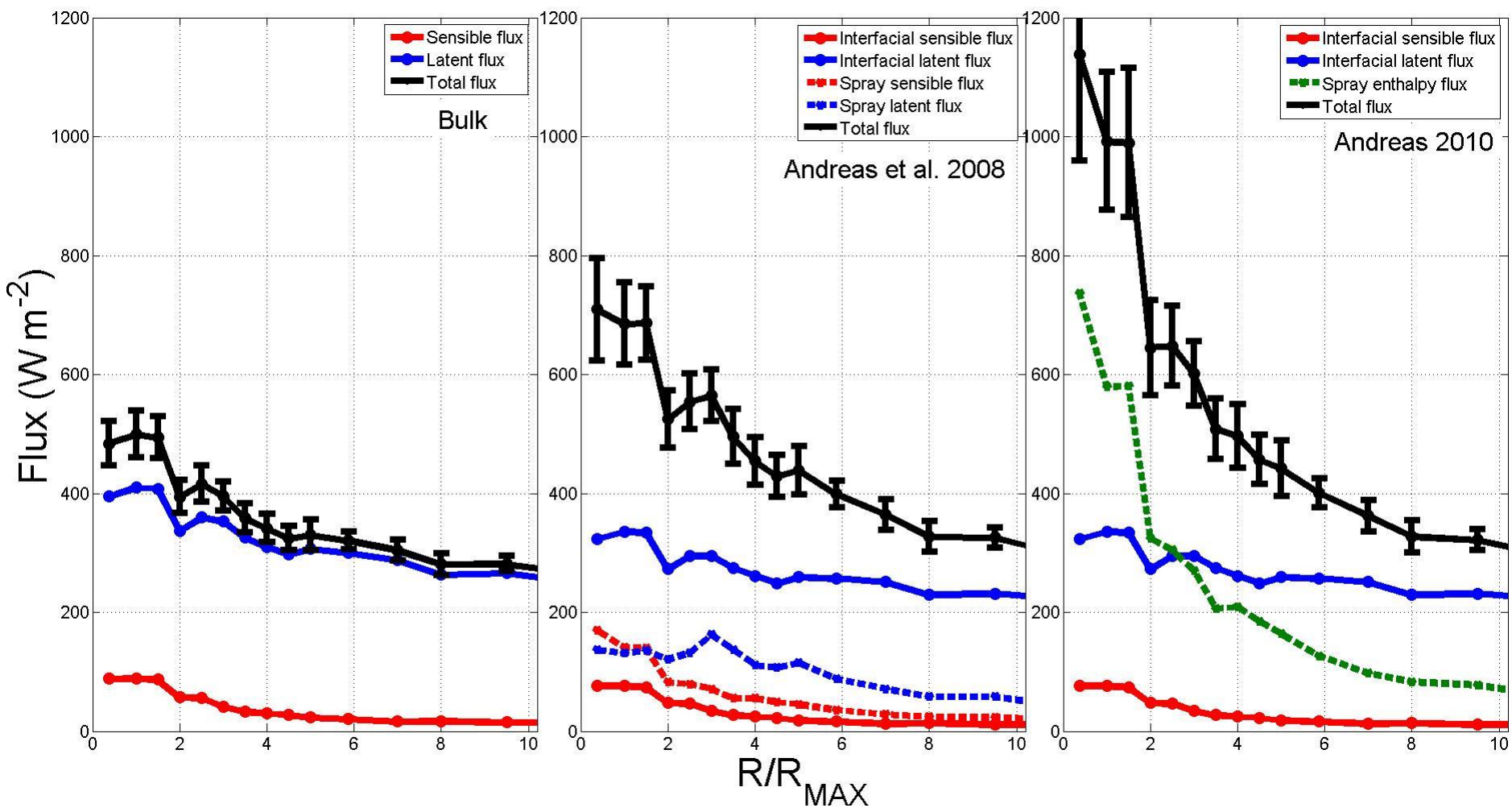
Moisture variables with R/R_{MAX}



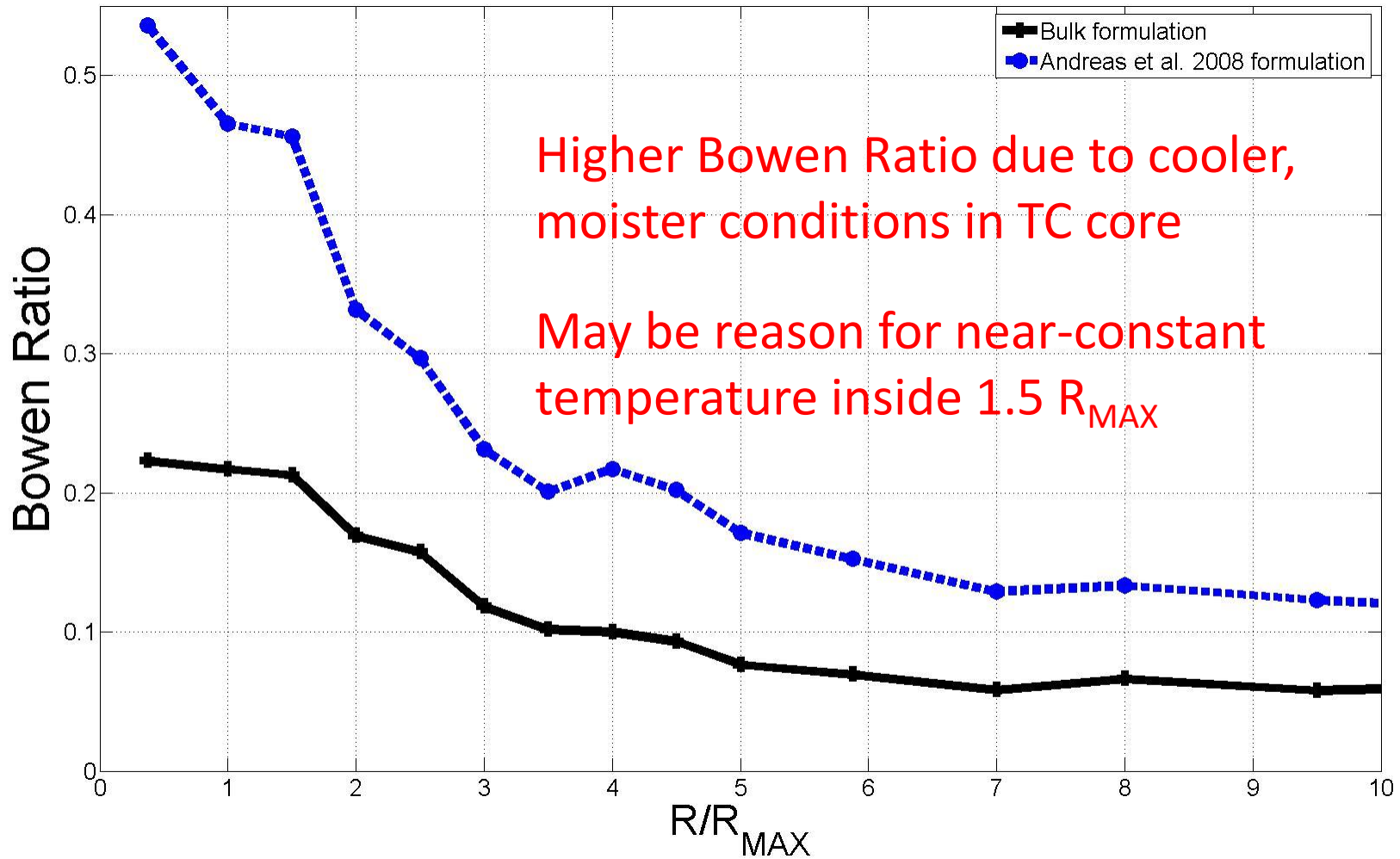
Ocean-air temperature and moisture disequilibria



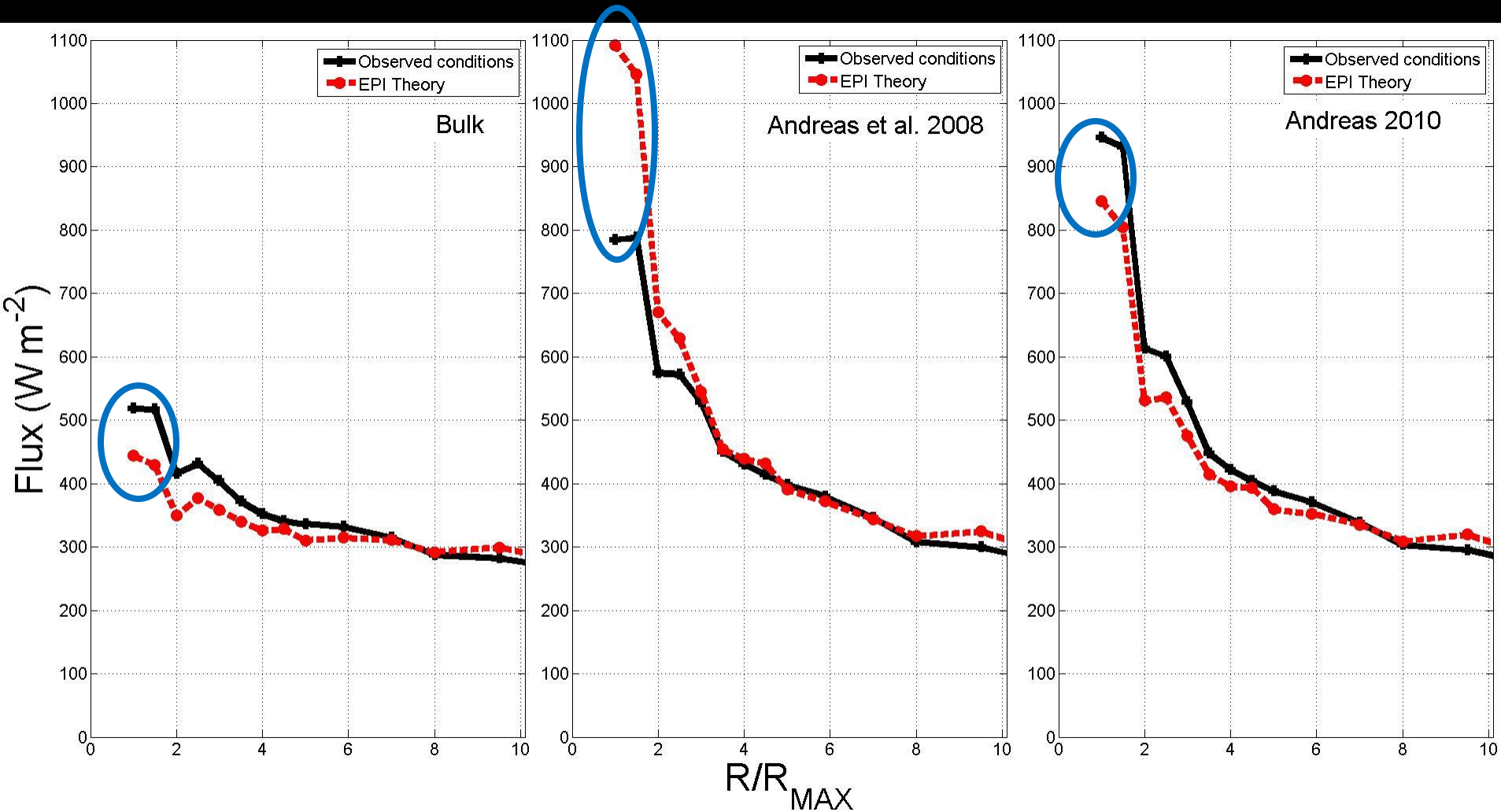
Ocean-air heat fluxes with R/R_{MAX}



Bowen Ratio with R/R_{MAX}



Total fluxes: Observations vs. EPI Theory



Flux formulation determines whether calculated flux near R_{MAX} is greater or less than calculated flux using EPI Theory idealizations

Conclusions

Temperature decreases substantially between the environment and R_{MAX}

Moisture profiles agree reasonably with EPI Theory

Accounting for sea spray leads to more ocean-air energy input than the bulk formulation gives

Total calculated flux near R_{MAX} compared to calculated flux using EPI Theory depends on flux formulation chosen