2019 NOAA/AOML/HRD Hurricane Field Program - IFEX

MATURE STAGE EXPERIMENT
Science Goals & Observational Applications

TC Diurnal Cycle Experiment: Jason Dunion (Co-PI), Morgan O'Neill (Co-PI), Daniel Chavas (Purdue Univ.)

Goal: Collect observations targeted at better understanding how the tropical cyclone (TC) diurnal cycle affects hurricane intensity and structure and the environment surrounding the storm. This experiment will also investigate how the TC diurnal cycle impacts day-night oscillations of winds in the lower and middle levels (inflow and outflow) and the upper-level cirrus canopy (outflow) of these storms [*IFEX Goals 1, 3*]. See the 2019 HRD HFP web page for additional details: http://www.aoml.noaa.gov/hrd/HFP2019/index.html

Observational Applications: Although the TC diurnal cycle may be a fundamental TC process, it is unclear how it is fully represented in numerical models. Data that is collected will focus on observing day-night oscillations temperature, moisture, radial winds, and precipitation in the hurricane environment that can provide better initialization of these various components of storm structure. GPS dropsonde observations will be quality controlled and transmitted to the GTS in real-time for assimilation in to numerical models and TDR data will be transmitted to NOAA EMC in real-time. The observations that are collected during this experiment will be used to evaluate the robustness of the operational coupled model forecast system to represent the TC diurnal cycle.