2019 NOAA/AOML/HRD Hurricane Field Program - IFEX

MATURE STAGE EXPERIMENT
Science Goals & Observational Applications

Gravity Wave Module: Jun Zhang (Co-PI) and David Nolan (Co-PI, University of Miami)

Goal: This module aims to collect observations for improve our understanding of the characteristics of gravity waves in hurricanes, that radiate outward from the hurricane core. The goal is to quantify how the characteristics of these waves are related to hurricane intensity and intensity change. The observational data collected in this module will also be used to evaluate the hurricane structure in hurricane model simulations [*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: Hurricane convection produces gravity waves that propagate both upward and outward. Physics in hurricane forecast models to represent these waves remain to be evaluated and improved for improving track and intensity prediction. The flight-level data collected from this module would provide valuable information for model evaluation and physics improvement. These observational data will be analyzed to quantify the characteristics of the gravity waves in hurricanes. The relationship between the gravity wave properties and hurricane intensity will be derived using these observational data, which would assist the operational intensity forecast in the future. Furthermore, these data would be useful for model initialization purpose in hurricane forecast and research models.