

## 2019 NOAA/AOML/HRD Hurricane Field Program - IFEX

### EARLY STAGE EXPERIMENT *Science Goals & Observational Applications*

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

Goal: This module aims to collect observations for improving our understanding of the characteristics of gravity waves in early-stage hurricanes. 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 early-stage hurricanes and their relationship with storm intensity and intensity change. Such relationship would assist the operational intensity forecast in the future. Furthermore, the observational data collected from this module would benefit model initialization in hurricane forecast and research models.