Hurricanes: Environmental Interactions and Intensification Processes

The goals of our research are 1) to better understand how properties of the large-scale environment around hurricanes – wind shear, dry air, and sometimes Saharan dust – modulate hurricane structure and intensity; and 2) to characterize and understand the inner-core convective structures that do and do not lead to intensification. We use satellite and aircraft observations of mid-level winds and humidity to build composite environments around intensifying or weakening storms. These are used in conjunction with very high resolution, high-quality numerical simulations to reproduce and understand the storm-environment interactions. Graduate assistants will be involved in acquiring in-situ data, performing simulations with the WRF model, and analyzing the inner-core evolution. Students with undergraduate majors in sciences outside of meteorology are welcome to apply.

Prof. David S. Nolan, dnolan@rsmas.miami.edu