CPAESS Discovery Seminars

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Dr. Benjamin Johnston

CPAESS Project Scientist I, *NOAA's Quantitative Observing System Assessment Program (QOSAP)*

► **The Impact of Assimilating GNSS-RO Observations on HAFS Tropical Cyclone Forecasts from the 2022 Atlantic Hurricane Season**

DATE: Wednesday, July 23, 2025

TIME: 11:00 AM - 12:00 PM MT (VIRTUAL)

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Ben Johnston's current work focuses on conducting observing system experiments (OSEs) and observing system simulation experiments (OSSEs) within NOAA's next-generation hurricane model, the Hurricane and Analysis Forecast System (HAFS), to evaluate the impact of various data sources on operational hurricane forecasts. His primary research interests include GNSS-RO data evaluation, remote sensing, tropical cyclones, convective processes and dynamics, and climate studies including ENSO and tropopause variability. He completed a postdoctoral research fellowship within the COSMIC program at UCAR in 2022.

SUMMARY: In this study, we show the impact of assimilating GNSS-RO bending angle (BA) observations on ten tropical cyclone (TC) forecasts from the 2022 Atlantic hurricane season using the Hurricane Analysis and Forecast System (HAFS) model. A case study of Hurricane Ian, a category five hurricane which made landfall along the western Florida coast, showed greatly improved landfall prediction three-to-five days before landfall after assimilating RO BAs due to improved forecasts of the synoptic-scale steering flow over the Gulf of Mexico.