



Developments at ECMWF in Atlantic tropical wave and cyclogenesis forecasting

Sharanya (Sharan) Majumdar
University of Miami

Predicting the evolution of tropical waves and whether they will develop into tropical cyclones remains a significant challenge. First, evaluations of the skill and consistency of probabilistic genesis forecasts of Atlantic tropical cyclones in ECMWF's Integrated Forecasting System (IFS) will be summarized. The cases that possessed the lowest probabilities <4 days before genesis were largely associated with weaker waves (e.g., Ian 2022; Beryl 2024) and/or complex interactions (e.g., Laura 2020; Ida 2021), and warrant further investigation. Probabilistic genesis forecasts using the parallel version 49r1 (which became operational in November 2024) and ECMWF's experimental new AI Forecasting System (AIFS) ensemble have also been investigated for the 2024 Atlantic hurricane season. Differences between the IFS and AIFS probabilistic forecasts will be highlighted. Finally, for developing tropical waves in 2023-24, the IFS control ("deterministic") forecast wave tracks have been compared against the corresponding AIFS forecasts that used the same initial conditions. Some minor advantages of the AIFS forecasts 2-7 days prior to genesis have been identified. These results will be discussed in the context of ongoing developments at ECMWF.

Thursday, 12 June 2025, 2:00PM

Refreshments 1:45PM

Please also join colleagues for refreshments and informal discussion after the seminar until 3:30pm

NCAR-Foothills Laboratory, 3450 Mitchell Lane
FL2-1022, Large Seminar

Seminar will also be live webcast

<https://sundog.ucar.edu/public/page/MMM>

Participants may ask questions during the seminar via Slido.