Quantifying changes in extreme precipitation associated with future tropical cyclones

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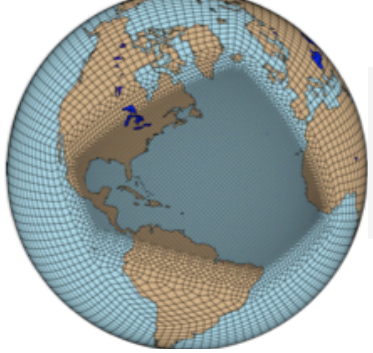
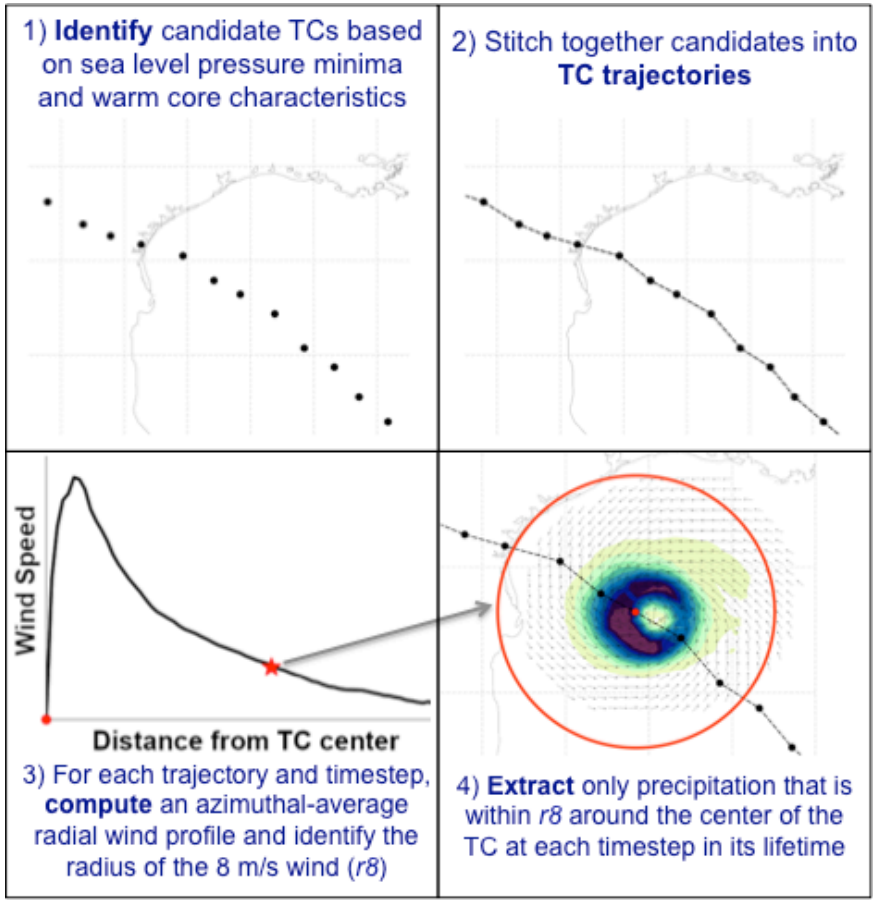
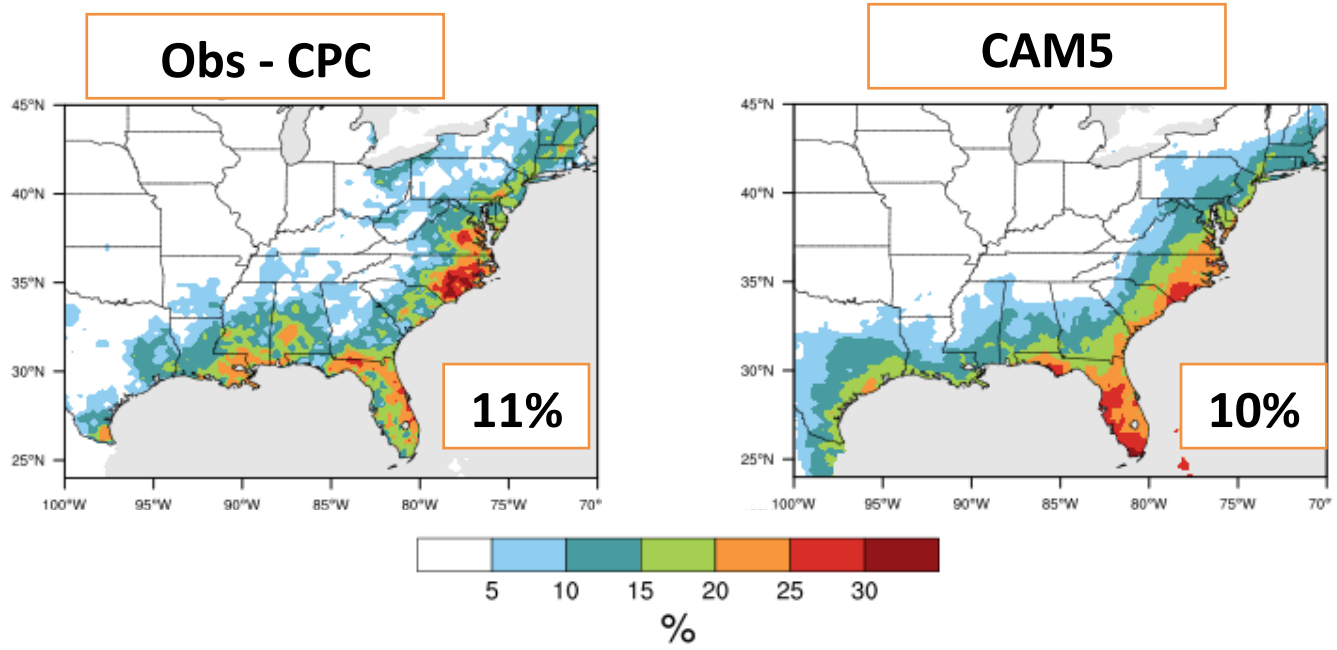
Motivation – Coastal Storm Metrics



- **Development of TC Rainfall Metrics in TempestExtremes:**

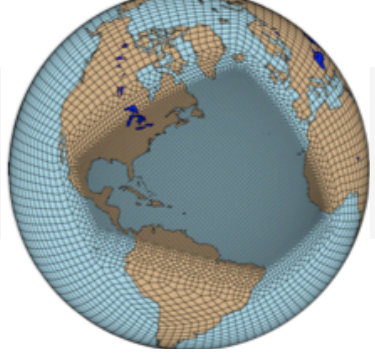


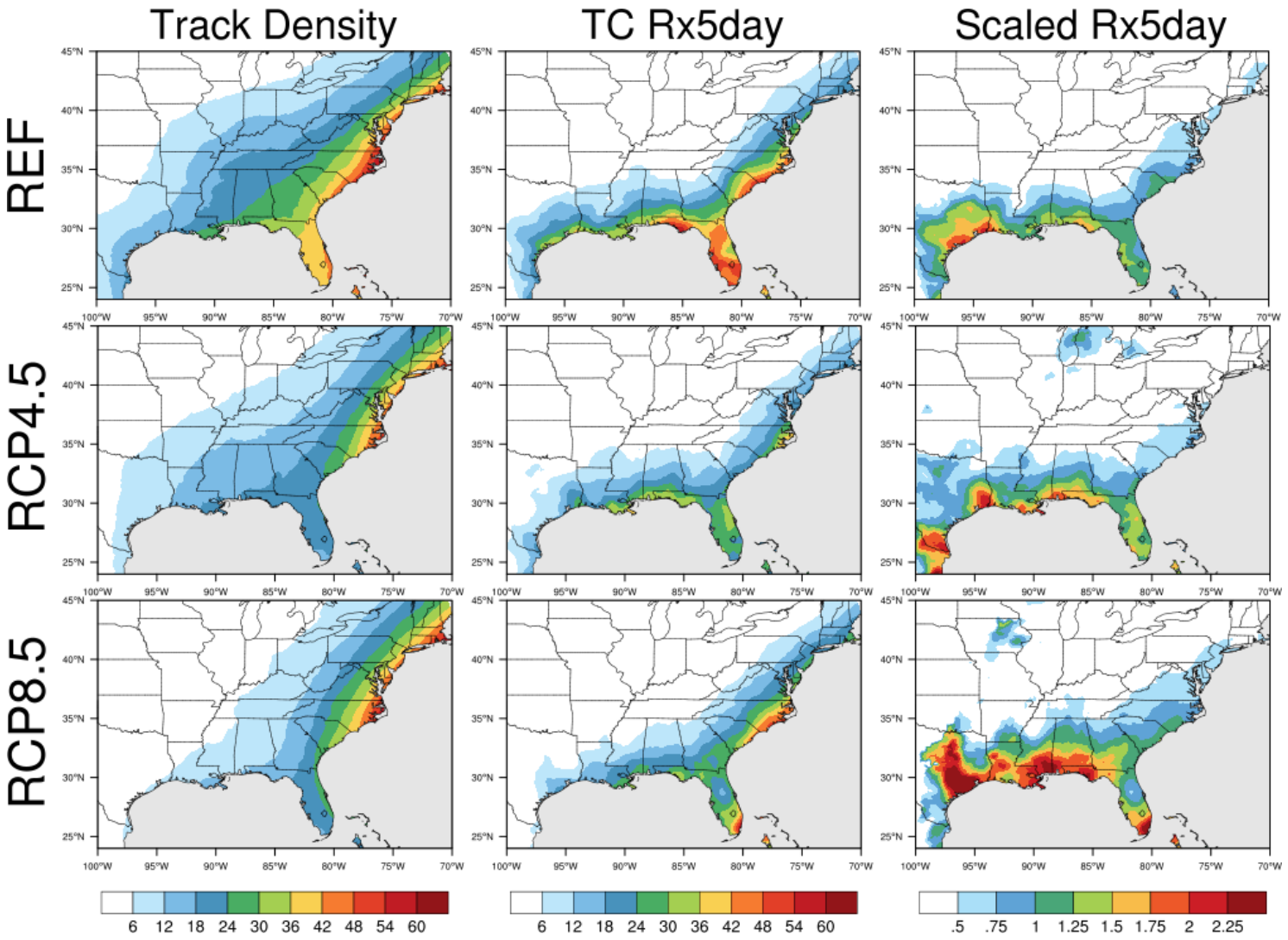
% of Extreme Rainfall Events from TCs



Stansfield, A. M., K. A. Reed, C. M. Zarzycki, P. A. Ullrich and D. R. Chavas (2020), Assessing Tropical Cyclones' Contribution to Precipitation over the Eastern United States and Sensitivity to the Variable-Resolution Domain Extent, J. Hydrometeor., 21, 1425–1445, doi: 10.1175/JHM-D-19-0240.1.

Results – Changes in TC Extreme Rainfall





The amount of rainfall per hour of storm impact is expected to increase in the future.

Stansfield, A. M., K. A. Reed and C. M. Zarzycki (2020), Changes in Precipitation from North Atlantic Tropical Cyclones under RCP Scenarios in the Variable-Resolution Community Atmosphere Model, Geophys. Res. Lett, 47, e2019GL086930, doi: 10.1029/2019GL086930.

Discussion

- Continued development of various metrics and diagnostics to quantify the ability of models to simulate coastal storms and their characteristics is needed.

- The use of secondary metrics might be helpful for exploring projected impacts (e.g., rainfall per hour of impact), especially in the context of coupled processes.

- Higher horizontal and spatial resolution of our models is still needed!