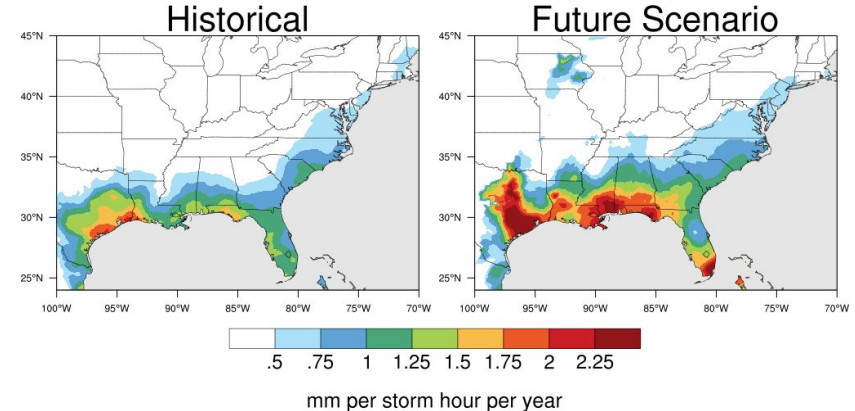


# CHANGES IN PRECIPITATION FROM NORTH ATLANTIC TROPICAL CYCLONES UNDER RCP SCENARIOS IN THE VARIABLE-RESOLUTION COMMUNITY ATMOSPHERE MODEL

## Scientific Achievement

Possible future changes in precipitation from tropical cyclones (TCs) over the eastern United States are calculated using a historical climate configuration and two Representative Concentration Pathway projections (RCP4.5 and RCP8.5) in a variable-resolution configuration of the Community Atmosphere Model version 5.



Annual average amount of rainfall in mm produced per hour of TC impact for the (left) historical and (right) RCP8.5 simulations.

## Significance and Impact

- Results suggest that while the number of landfalling TCs in the eastern US will decrease in the future, the precipitation produced per hour of storm impact will increase. This has important implications for TC hazard preparations.
- The results motivate future work to explore the rate that TC precipitation will increase with climate warming.

Stansfield, A. M., Reed, K. A., & Zarzycki, C. M. (2020). Changes in precipitation from North Atlantic tropical cyclones under RCP scenarios in the variable-resolution community atmosphere model. *Geophysical Research Letters*, 47, e2019GL086930. <https://doi.org/10.1029/2019GL086930>

## Research Details

- Compared to the historical simulation, annual mean TC landfalls in the eastern US decrease by 27% in the RCP4.5 simulation and 32% in the RCP8.5 simulation.
- Results show a greater probability of more extreme precipitation rates within TCs in the RCP simulations compared to the historical. This helps to explain the increase in precipitation per hour of TC impact.



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