



THESIS DEFENSE

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4:00 PM EDT

Zoom: <https://tinyurl.com/purdue-alka>

In-person: ABE 1164

HYDROMETEOROLOGICAL IMPACTS OF THE ATLANTIC TROPICAL CYCLONES USING SATELLITE PRECIPITATION DATA

Tropical Cyclones (TCs) are *meteorological monsters* causing severe rainfall and flooding. Accurate quantitative precipitation estimates (QPEs) are vital for understanding TCs, but different sources like satellite, radars, and rain gauges yield varying results. This dissertation evaluates three QPEs: NASA's IMERG, NCEP's Stage IV, and NWS's GCOOP estimates, focusing on their impact on hydrological modeling using Variable Infiltration Capacity (VIC) model. Analyzing eight TCs from 2000-2018, including Hurricanes Charley, Frances, Jeanne, Fay, Beryl, Debby, Irma and Michael, the study finds satellite QPE (IMERG) underpredicts high quantiles but aligns with other sources at lower quantiles. IMERG effectively estimates runoff and evapotranspiration, proving valuable for hydrological studies and flood preparedness in data-scarce regions.



Alka Tiwari, she/her

Ph.D. Candidate

NASA Fellow, Lynn Fellow, Bilisland Fellow

Interdisciplinary Department of Ecological Sciences and Engineering (ESE)

Department of Agricultural and Biological Engineering (ABE)

Purdue University, West Lafayette, IN, USA

PhD Committee Members

Dr. Keith Cherkauer (Chair)

Department of Agricultural and Biological Engineering (ABE), Purdue University.

Dr. Wen-wen Tung

Department of Earth, Atmospheric and Planetary Science (EAPS), Purdue University.

Dr. Frank Marks

Hurricane Research Division, National Oceanic and Atmospheric Administration (NOAA HRD).

Dr. Dev Niyogi

Jackson School of Geosciences, The University of Texas at Austin.