Ms. Alka TIWARI
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Ecological Science and Engineering (Dept. of Ag. And Biol. Engineering)
Purdue University, West Lafayette, IN 47907

Doctoral Candidate, Former NASA FINESST Fellow (2019-22)
Also, Senator and then Chair Community Team for the Purdue Graduate Student Government (2019-present)
DE&I Chair (2023-onwards) for the AMS Hydrology STAC Committee;
Elected Member/ Program Committee Member for AMS Social Media
Elected Member AMS Hydrology Award Committee (2022-present)

**Educational Background, Research Experience & Proficiency:**

*Doctor of Philosophy*, in the Department of Agricultural and Biological Engineering, Purdue University, IN, USA 2018 – present. [GPA: 3.68]

*Research Topic*: Improving post-Hurricane Flood Estimation utilizing recent Satellite Products.

*Academic Projects*: (i) Contribution of Tropical Cyclones on Rainfall 'Climatology' over the south and the southeast US in the recent IMERG-era (2013- 2018) (ii) Seasonal ARIMA time series modeling of the Weekly Mauna Loa CO2 Concentration Data (iii) Calibration and Sensitivity Analysis of precipitation event in HEC-HMS; (iv) Flood Module development; (v) Python/Jupyter notebook project on flood inundation studies (vi) HEC-RAS flood stage simulation for various satellite precipitation for Hurricane Florence period (vii) Vehicular vs Crop Burning Policy for Air Quality Controls over Delhi under Changing Climate. (viii) Science hypothesis for a Root Zone Soil Moisture measurement for mission design and planning (ix) Geospatial analysis of post landfall hurricane rainfall.

*Master of Technology*, in Hydraulics & Water Resource Engineering (Civil Engineering), Indian Institute of Technology (IIT) Kanpur, 2013- 2015.

*Thesis*: Mathematical Modeling of Bed-load Transport: Revisiting van-Rijn's Approach.

*Academic Projects*: (i) Rainfall Modeling using artificial neural networks; (ii) Experimental Investigation of Turbulent Flow in concentric annulus using PIV; (iii) Review of Numerical Modeling of Sediment Transport

*Bachelor in Civil Engineering*, Kamla Nehru Institute of Technology (KNIT), Sultanpur, 2008-2012.
Project title: Design of Flyover on Sultanpur-Allahabad Road

Proficient in
Python, R, MATLAB, ArcGIS, FRAGSTATS, HEC-HMS, HEC-RAS, VIC, SWAT, Tableau and Reanalysis based projects on hurricane HURDAT2 database, also various computational and data processing tools. Writing and communicating research, developing synthesis papers, technical research papers, proposals. Strong writing and oral presentation skills.

**Work experience**:
*Teaching Assistant*, Purdue University, Indiana, August 2018 - August 2019
Teaching, grading and guiding undergraduate students for Hydraulics lab.

*Visiting Research Scholar*, Purdue University, Indiana, March 2018 – July 2018
Characterization of heavy rainfall processes across urbanization and land use gradients.
Helped develop synthesis for land cover change impacts for Himalayan region in preparation for a meta-analysis initiative.

*Project Associate*, Indian Institute of Science, Bangalore, May 2017 – November 2017
Participated in urban flooding monsoon school (2-week duration) assisted and worked with SWMM software for Bengaluru flooding case studies.
Project using SWAT and VIC for catchment hydrology and climatic and landcover changes.
Data preparation and analysis in ArcGIS and developed MATLAB codes for synthesis and data visualization. These projects are part of a multi-institutional research consortium as well as Indo-UK collaboration. Also worked on using ensemble GFS output from NCMRWF into experimental streamflow model outlooks in real-time for Tungabhadra river basin.

*Assistant Professor*, School of Civil Engineering, KIIT Bhubaneswar, India, July 2015 – May 2017; Courses taught: Hydrology, Fluid Mechanics, Open Channel Flow, Construction Planning & Management, Water Resource Design, Engineering Graphics. Project guide for senior projects on various hydrology, hydro-climatic, water resources topics.

*Summer research trainee*, Civil Engineering Department, East Central Railway, Dhanbad, June-July 2011 Worked as a team member, analyzed various construction work flow plans and studied engineering drawings, developed project presentations and internship report.

*Summer research trainee*, Civil Engineering Department, NTPC Ltd, June-July 2010
Interned in a project team on various project management aspects related to construction and scheduling, developed an assessment report.

**Scholastic Achievements**:

- AGU Precipitation TC Student Award for presentation at American Geophysical Union (AGU) Fall Meeting 2021
- NASA FINESST Fellowship (2019 – 2022)
- ESE-Lynn Fellowship (awarded 2018)
- Diversity, Equity & Inclusion (DE&I) Chair, American Meteorology Society (AMS) Hydrology STAC Committee
- Chair, Community Team for Purdue Graduate Student Government (PGSG) at Purdue University – organizing volunteer, professional development and mental health awareness week related activities for grad students to bridge the gap between the Lafayette community and grad community on campus. Also, work on writing legislations for student senate to vote on various issues.
- Elected student committee member for AMS Committee on Hydrology. (Fall 2021 – present)
- Elected Senator for Purdue Graduate student Government (PGSG) at Purdue University (2018 – 2020)
- Secured top 3 percentile in the National Graduate Aptitude Test in Engineering (GATE) twice amongst 36156 candidates in 2012 and 67472 candidates in 2013.
- Dr. S. Radhakrishnan Award for IIISCE (Indian Institute for International Studies

& Cultural Exchange).

**Manuscript and Presentation:**

1. Tiwari, A., Cherkauer, K. A., Marks, F., Tung, W. W., & Niyogi, D. (2022, December). Characterizing Hydrology for Tropical Cyclone Precipitation using Satellite, Radar-blended and Gauge-based Precipitation Products. In *Fall Meeting 2022*. AGU.
2. Tiwari, A., Cherkauer, K., Tung, W. W., Marks, F., & Niyogi, D. (2021, December). Characterizing the tropical cyclone rainfall using satellite, radar-blended and gauge-based precipitation products for hydrological studies. In *AGU Fall Meeting Abstracts* (Vol. 2021, pp. H14F-03).
3. Tiwari, A., Kumar, A., Nair, U. S., Merwade, V., Marks, F., & Niyogi, D. (2020, December). An IMERG based Assessment of the Contribution of Landfalling Tropical Cyclones to Rainfall Climatology in the US Atlantic Basin. In *AGU Fall Meeting Abstracts* (Vol. 2020, pp. H200-0019).
4. Tiwari, A., Busireddy, N. K. R., Patel, P., Merwade, V., Jamshidi, S., Marks, F., ... & Niyogi, D. (2019, December). Assessing Variability in Multi-sensor Tropical Cyclone Rainfall Estimates and the Impact on Urban Flood Simulation for Hurricane Florence (2018). In *AGU Fall Meeting Abstracts* (Vol. 2019, pp. H31D-03).
5. Li,Z., Tiwari, A., Sui, X., Garrison, J., Marks, F., Niyogi, D. (2023, April). Studying Brown Ocean Re-intensification of Hurricane Florence Using CYGNSS and SMAP Soil Moisture Data and a Numerical Weather Model. – Under review for Geophysical Research Letters
6. Oral presentation at the American Meteorological Society (AMS) Annual Meeting in Denver, CO, January 2023.
7. Oral presentation at the American Geophysical Union (AGU) Fall Meeting in San Francisco, CA, December 2019.
8. Alka Tiwari and Dev Niyogi, 2018, Urbanization Impacts on Rainfall and Temperature Changes over Asia Region, Paper 9E.4, ICUC10 - 10th International Conference on Urban Climate/ 14th AMS Symposium on the Urban Environment, New York City, August 2018. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/343375