DEEKSHA RASTOGI

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EDUCATION

Aug' 2016 – Dec' 2019	PhD, Energy Science and Engineering Focus: Environmental and Climate Sciences **The University of Tennessee, Knoxville, TN**
Aug' 2010 – Dec' 2012	M.S., Atmospheric Sciences **University of Illinois Urbana-Champaign, Urbana, IL**
Aug' 2006 – Jun' 2010	B. Tech., Environmental Engineering **Indian School of Mines, Dhanbad, India**

WORK EXPERIENCE

Dec' 2019 – Present	Research Scientist, Computational Urban Climate, **Computational Urban Sciences Group** **Computational Sciences and Engineering Division** **Oak Ridge National Laboratory, Oak Ridge TN**
Aug' 2016 – Dec' 2019	Graduate Research Assistant, **The University of Tennessee, Knoxville, TN - Oak Ridge National Laboratory, Oak Ridge, TN**
Thesis Title:	*Assessment of Hydroclimate Responses to Anthropogenic Forcing and Implications for Human Systems*
Jun' 2019 – Aug' 2019	Graduate Visitor, Advanced Study Program **Climate & Global Dynamics/Research Applications, Laboratory, National Center for Atmospheric Research Boulder, CO**
Jan' 2013 – Jun' 2016 May 2012 – Aug' 2012	Post Master's Research Associate, Summer Intern, **Oak Ridge Associated Universities/Oak Ridge National Laboratory, Oak Ridge, TN**
Research Focus:	*Regional climate modeling, numerical weather modeling, climate and weather extremes, South Asian monsoon dynamics*
Aug' 2010 – Dec'2012	Graduate Research Assistant, **University of Illinois Urbana-Champaign, Urbana, IL**
Thesis Title:	A numerical study of cropland-atmosphere feedbacks by incorporating a crop growth module in the WRF model.

Critical Expertise

- More than ten years of experience working in the field of environmental science with a focus on atmospheric, climate and energy sciences.
- Unique expertise in investigating hydroclimate, weather/climate extremes, and infrastructure and human health responses to environmental and atmospheric processes.
- Advanced skills in the development and application of numerical modeling frameworks and scientific data analysis.

Technical Skills

Numerical weather/climate modeling (WRF, RegCM), high performance computing, statistical data analysis, handling large datasets, Python, shell scripting, Fortran 90, SQL, NCO, NCAR command language (NCL),

LIST OF PUBLICATIONS

In Print/Press [16] (Google Scholar Profile) (cited >500 times)

- **Rastogi D.,** D. Touma, K. J. Evans, and M. Ashfaq (2020), Shift towards intense and widespread precipitation events over the United States by mid 21st century. *Geophysical Research Letters*, *47*, e2020GL089899, https://doi.org/10.1029/2020GL089899.
- **Rastogi, D.**, Lehner, F., & Ashfaq, M. Revisiting Recent United States Heatwaves in a Warmer and More Humid Climate (2020). *Geophysical Research Letters*, 47, e2019GL086736, https://doi.org/10.1029/2019GL086736
- **Rastogi, D.,** J.S. Holladay, K. J. Evans, K., B.L. Preston, and M. Ashfaq (2019), Shift in seasonal climate patterns likely to impact residential energy consumption. *Environmental Research Letters, 14(7),* doi: 10.1088/1748-9326/ab22d2.
- **Rastogi, D.**, M. Ashfaq, L. R. Leung, S. Ghosh, A. Saha, K. Hodges, and K. J. Evans (2018), Characteristics of Bay of Bengal Monsoon Depressions in the 21st Century. *Geophysical Research Letters*, *45*(13), 6637-6645, doi:10.1029/2018GL078756.
- **Rastogi, D.**, S.-C. Kao, M. Ashfaq, R. Mei, E.D. Kabela, S. Gangrade, B. S. Naz, B. L. Preston, N. Singh, and V.G. Anantharaj (2017), Effects of climate change on probable maximum precipitation: A sensitivity study over the Alabama-Coosa-Tallapoosa River Basin. *Journal of Geophysical Research: Atmospheres*, *122*(9), 4808-4828, doi: /10.1002/2016JD026001.
- Allen-Dumas M. R., H. Xu, K.R. Kurte, and **D. Rastogi** (2020), Towards urban water security: broadening the use of machine learning methods for mitigating urban water hazards. Frontiers in Water: Water and Hydrocomplexity,2,75.
- Gangrade, S., S.-C. Kao, B.S. Naz., **D. Rastogi**, M. Ashfaq, N. Singh, and B.L. Preston (2018), Sensitivity of probable maximum flood in a changing environment, *Water Resources Research, 54*(6), 3913-3936, doi:10.1029/2017WR021987.
- Naz, B. S., S.-C. Kao, M. Ashfaq., H. Gao, **D. Rastogi**, and S. Gangrade (2018), Effects of climate change on streamflow extremes and implications for reservoir inflow in the United States, *Journal of Hydrology*, *556,* 359-370, doi: 10.1016/j.jhydrol.2017.11.027.

- Paull, S. H., D. E. Horton, M. Ashfaq, **D. Rastogi,** L. D. Kramer, N. S. Diffenbaugh, and A. M. Kilpatrick (2017), Drought and immunity determine the intensity of West Nile virus epidemics and climate change impacts. *Proceedings of the Royal Society B: Biological Sciences*, *284*(1848), 20162078, doi:10.1098/rspb.2016.2078.
- Ashfaq, M., **D. Rastogi**, R. Mei, D. Touma, and L. R. Leung (2017), Sources of errors in the simulation of south Asian summer monsoon in the CMIP5 GCMs. *Climate dynamics*, *49*(1-2), 193-223, doi: 10.1007/s00382-016-3337-7.
- Ashfaq, M., **D. Rastogi**, R. Mei, S.-C. Kao, S. Gangrade, B.S. Naz, and D. Touma (2016), High-resolution ensemble projections of near-term regional climate over the continental United States, *Journal of Geophysical Research: Atmospheres*, *121*(17), 9943-9963, doi:10.1002/2016JD025285.
- Pagán, B. R., M. Ashfaq, **D. Rastogi,** D. R. Kendall, S.-C. Kao, B. S. Naz, R. Mei, and J.S. Pal. (2016), Extreme hydrological changes in the southwestern US drive reductions in water supply to Southern California by mid century. *Environmental Research Letters*, *11*(9), 094026, doi:10.1088/1748-9326/11/9/094026.
- Naz, B. S., S.-C. Kao, M. Ashfaq, **D. Rastogi,** R. Mei, and L.C. Bowling, (2016), Regional hydrologic response to climate change in the conterminous United States using high-resolution hydroclimate simulations. *Global and Planetary Change*, *143*, 100-117, doi:10.1016/j.gloplacha.2016.06.003.
- Mani, A., F. T.-C. Tsai, S.-C. Kao, B.S. Naz, M. Ashfaq, and **D. Rastogi** (2016), Conjunctive management of surface and groundwater resources under projected future climate change scenarios. *Journal of Hydrology*, *540*, 397-411, doi:10.1016/j.jhydrol.2016.06.021.
- Mei, R., M. Ashfaq, **D. Rastogi,** L. R. Leung, and F. Dominguez (2015), Dominating controls for wetter South Asian summer monsoon in the twenty-first century. *Journal of Climate*, *28*(8), 3400-3419, doi:10.1175/JCLI-D-14-00355.1.
- Singh, D., D. E. Horton, M. Tsiang, M. Haugen, M. Ashfaq, R. Mei, R., **D. Rastogi,** N.C. Johnson, A. Charland, B. Rajaratnam, and N.S. Diffenbaugh (2014), Severe precipitation in Northern India in June 2013: Causes, historical context, and changes in probability. *Bulletin of the American Meteorological Society*, *95*(9), S58.

Technical Reports [2]

- Kao, S.-C., M. Ashfaq, B. S. Naz, R. Martinez, **D. Rastogi**, R. Mei, J. Yetta, N. M. Samu, M. J. Sale (2016), The Second Assessment of the Effects of Climate Change on Federal Hydropower, ORNL Technical Report, Oak Ridge National Laboratory, Oak Ridge, TN, United States: N. p., 2016. Web. doi:10.2172/1340431
- Pagan, B. R., J.S. Pal, C. Gao, J. Reichenberger, D.R. Kendall, M. Ashfaq, **D. Rastogi**, S.-C. Kao, B. S. Naz, J. Schubel (2015), *Long Beach Climate Resiliency Study: Impacts on Water Supply and Demand*. United States: N. p., 2015. Web. doi:10.2172/1502614.

Encyclopedia Chapter [1]

- Roy, S. B. and **D. Rastogi** (2014), Land--Atmosphere Interactions. In Encyclopedia of Natural Resources: Water and Air. Taylor and Francis: New York, Published online: 21 Oct 2014; 1040-1043, doi: 10.1201/9780203757611

SELECTED PRESENTATIONS

- **Rastogi D.,** D. Touma, K. J. Evans, and M. Ashfaq, European Geophysical Union Meeting, April 2021, Investigating Future Changes in the Spatial Characteristics of Precipitation Extremes over the United States (April 29, 2021) (**Invited**)
- **Rastogi D**., S.-C. Kao, M. Ashfaq, Downscaling and Intercomparison of CMIP6 Models over the Conterminous United States. Secure Water Act Section 9505 Assessment Workshop, February 23-25, 2021
- **Rastogi D.**, D. Touma, M. Ashfaq (2019), Shift towards intense and widespread precipitation events over the United States by mid 21st century. American Geophysical Fall Meeting 2019, 9-13 December 2018, San Francisco, CA.

RESEARCH PROJECTS

- Veterans Affairs (VA) Veterans Care Improvement via Computation and Outcomes-driven Research (VICTOR) Environmental Determinants of Health (EDH). Apr' 2021-Present
- Georgetown University Center for Clinical and Translational Science-Environmental Determinants of Health, funded by National Institute of Health. Jan'2021-Mar' 2021
- Identifying Ecosystems Vulnerable to Climate Change: Laboratory Directed Research and Development Program, Oak Ridge National Laboratory. Role: Co-Investigator, Oct'2020-Present
- Effects of Climate Change on Federal Hydropower – The Third 9505 Assessment. Sponsor: Water Power Technologies Office, U.S. Department of Energy, August'2020-Present
- Integrated Multi-Sector Multi-Scale Modeling (IM3) funded by Biological and Environmental Research program within U.S. Department of Energy, Office of Science, Dec'2019-Present.
- Multiscale Methods for Accurate, Efficient, and Scale-Aware Models of the Earth funded by Advanced Scientific Computing Research (ASCR) program within the U.S. Department of Energy, Office of Science, Dec'2019-Nov'2020.
- Energy Exascale Earth System Model (E3SM), U.S. Department of Energy, Office of Science, Office of Biological and Environmental Research, Aug' 2016 – Dec' 2019.
- Towards the Development of an Integrated Energy-Water Risk Assessment Tool for Probable Maximum Precipitation and Flood. Sponsor: Laboratory Directed Research and Development Program, Oak Ridge National Laboratory. Mar' 2014 – June' 2016.
- Effects of Climate Change on Federal Hydropower – The Second 9505 Assessment. Sponsor: Water Power Technologies Office, U.S. Department of Energy. Oct' 2013 – Jun' 2016.
- A Hierarchical Regional Modeling Framework for Decadal-Scale Hydro-climatic Predictions and Impact Assessments, funded by Laboratory Directed Research and Development (LDRD) Program, Jan' 2013 – Sep' 2013.
- Development of Frameworks for Robust Regional Climate Modeling, funded by U.S. Department of Energy Biological and Environmental Research (DOE-BER), US 1.2 Million, Jan' 2013 – Sep' 2013.

AWARDS AND RECOGNITIONS

- **Invited** to talk in U.S. Green Building Council (USGBC), *Better Buildings, Better Lives: Big South, Response & Resilience panel*. (December 9, 2020)
- **Invited** to talk in Urban Land Institute – *Panel on Extreme Heat in Urban Environments*.(July 15, 2020)
- Appointed as an ***Editor*** of *Journal of Water and Climate Change*. (starting June 2020)
- Invited to serve as ***Guest Editor*** for a *special issue of Sustainability* **Journal** on "The Impact of Climate Change on Urban Water Infrastructure". (July 2020)
- Graduate Student Researcher Award in the Science and Technology Category, UT-Battellle Awards. (2019)
- Graduate Student Fellowship, Advanced Study Program, National Center for Atmospheric Research, Boulder, CO. (2019)
- Bredesen Center Fellowship, The University of Tennessee, Knoxville, TN. (August 2016 – Present)
- Graduate Research Fellowship, Department of Atmospheric Sciences, University of Illinois at Urbana-Champaign, Urbana IL. (2010-2012)

PROFESSIONAL SERVICES & TRAININGS

- **Served as Session chair/convener**:
  - American Geophysical Fall Meeting 2020, 1-17 December 2020 (Virtual).
    - GC092 - Extreme Events, Climate Change, and Urban Systems I
    - GC084 - Extreme Events, Climate Change, and Urban Systems II Posters
  - American Geophysical Fall Meeting 2019, 9-13 December 2019 San Francisco, CA.
    - GC21C - Connecting Cause and Effect in Data-Driven Analyses and Vulnerability Assessments of Coupled Human and Geophysical Systems with a Special Focus on Extreme-Driven Impacts II Posters
    - GC23A - Connecting Cause and Effect in Data-Driven Analyses and Vulnerability Assessments of Coupled Human and Geophysical Systems with a Special Focus on Extreme-Driven Impacts I
  - American Geophysical Fall Meeting 2018, 10-14 December 2018 Washington D.C.
    - GC21A Coupled Human–Natural Systems and Global Environmental Change: Innovative Interdisciplinary Approaches I
    - GC22A Coupled Human–Natural Systems and Global Environmental Change: Innovative Interdisciplinary Approaches II
    - GC31D Coupled Human–Natural Systems and Global Environmental Change: Innovative Interdisciplinary Approaches Posters

- Peer Reviews (***Conducted >50 peer reviews for 19 Journals***):
  - *Nature Climate Change*
  - *Nature Communications*
  - *Joule*
  - *Journal of Geophysical Research-Atmospheres*
  - *Journal of Climate*
  - *Climate Dynamics*
  - *Water Resources Research*
  - *Journal of the American Water Resources Association*
  - *International Journal of Climatology*

- *Journal of Cleaner Production*
- *Journal of Hydrometeorology*
- *Journal of Hydrology: Regional Studies*
- *Journal of Hydrology*
- *Journal of Water and Climate Change*
- *Climate Risk Management*
- *Climate Change*
- *Water*
- *Catena*
- *MethodsX*