Poulomi Ganguli

Assistant Professor (Grade **I**)
Department of Agricultural and Food Engineering,
Specialization: Land and Water Resources Engineering
Indian Institute of Technology Kharagpur, Kharagpur, India
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Research Interests

My research interest is at the intersection between hydrology and climate extremes, with particular emphasis on statistical modeling of ranges of hydroclimatic extremes while relating these statistical properties to physics and dynamics of the atmosphere. My research focuses on modeling and estimation of hydroclimatic events in multivariate context, which can help more accurate assessment of risk of extreme events, especially droughts, low flows and floods, and compound extremes in hydrology. I have applied my skills to different aspects of the field of hydroclimatic extremes, such as analysis of precipitation, both in point and regional scales.

Areas of Research

Hydroclimatology and hydrological extremes, Statistical hydrology, hydrometeorology, Hydroinformatics, data assimilation, Climate model evaluations, Climate change impact assessment on surface and subsurface hydrology, Climate dynamics, Complex networks, Climate-water-energy nexus

Education

July 2008 – October 2012	**Indian Institute of Technology**, Bombay, India, CPI: 9.25/10 **Ph.D.,** Civil Engineering (Advisor: Prof. M. Janga Reddy) **Thesis**: Multivariate Frequency Analysis and Predictive Uncertainty Assessment of Droughts using copulas (**Best Dissertation award in Civil Engineering**)
July 2005 – May 2007	**Indian Institute of Technology**, Kharagpur, India, CPI: 9.42/10 **M.Tech.,** Water Resources Development and Management (Advisor: Prof. M. K. Jha) **Thesis:** Development of computer tool for analyzing aquifer system
July 2001 – May 2005	**College of Agricultural Engineering, University of Agricultural Sciences Dharwad**, CPI: 8.97/10 (**University Gold Medal**) **B.Tech,** Agricultural Engineering (Advisor: Er. Vijay Kumar Palled) **Thesis:** Performance and Emission Characteristics of Biodiesel Fuel from Jatropha in a Direct Injection Compression Ignition Engine

Awards and Fellowships

Fellowships

- 2017: **Alexander von Humboldt** Research Fellowship (**Host Institute** Section: Engineering Hydrology, GFZ German Research Centre for Geosciences, Germany)
- 2016: Postdoctoral fellowship at McMaster Water Resources and Hydrologic Modeling Group (NSERC FloodNet, Canada), McMaster University
- 2013: Postdoctoral fellowship at Northeastern University (NSF Expedition in Computing)
- 2005-07: MHRD, Govt. of India scholarship to pursue M. Tech degree at IIT Kharagpur
- 2005-06: Indira Gandhi postgraduate scholarship, University Grant Commission, New Delhi
- 2001-05: Merit Scholarship from Govt. of Karnataka for pursuing B.Tech degree program
- 2004-2007: TATA Motors Golden Jubilee Scholarship
- 2002-2004: TATA Motors Silver Jubilee Scholarship
- 2004: All India 27th rank (95.54 percentile) in Graduate Aptitude Test in Engineering (GATE) - 2004

- 1999: TATA Hitachi Scholarship (at Grade 10th)

Honors and Awards

- 2013: **Best PhD dissertation award** in Civil Engineering, IIT Bombay
- 2007: Employee performance award (July – December 2007) at Evalueserve India for team work
- 2005: **University of Agricultural Sciences, Dharwad Gold Medal** for Securing First Rank in B.Tech
- 2005: Faruk Anwar Co. Raichur Gold Medal in B. Tech
- 2005: Sri. Veerabhadrappa Channappa Mataldinni Gold Medal in B. Tech
- 2005: Gangu Bai R Patil Cash award in B. Tech
- 2005: Sri. S. Eshwarappa, Raichur cash award in B. Tech

Professional Experience

July 2018 – **present**	**Assistant Professor**, Department of Agricultural and Food Engineering, IIT Kharagpur, India
May 2019 – December 2019	**Visiting Research Scientist**, GFZ German Research Centre for Geosciences, Potsdam, Germany
June 2017 – June 2018	**Scientist (Research Fellow)**, Section Hydrology, Helmholtz Center Potsdam, GFZ German Research Center for Geosciences, Potsdam, Germany
May 2016 – May 2017	**Postdoctoral Fellow**, Department of Civil Engineering, McMaster University, Hamilton, Canada
May 2013 – December 2015	**Postdoctoral Fellow**, Department of Civil and Environmental Engineering, Northeastern University, Boston, USA
December 2012 – April 2013	**Assistant Professor,** School of Civil Engineering, Kalinga Institute of Industrial Technology (KIIT) University, Bhubaneswar, India
August 2007 – April 2008	**Patent Analyst**, Intellectual Property Group, Evalueserve, Gurgaon, India

Referred Journal Publications

Citation Statistics: *Google scholar* Citations **599**, h-index **12**; *Scopus* Citations **441**, h-index **11**

ORCID: orcid.org/0000-0002-2372-1121; **Indicates Impact Factor reported in the journal website*

2020

1. Majhi, A., **Ganguli, P**., Kumar, R. (20xx). Towards large-scale multivariate characterization and propagation of hydrological drought across distinct climate regimes. *Submitted* to Geophysical Research Letters. Manuscript No. 2020GL089113.
2. **Ganguli, P**., Paprotny, D., Hasan, M., Guentner, A., Merz, B. (20xx). Projected changes in compound flood hazard from riverine and coastal floods in northwestern Europe. *Submitted*.
3. **Ganguli, P**., Rama, N.Y., Chatterjee, C. (20xx). Analysis of changes in flood magnitude and timing in a major river basin in India. *In review at Hydrology and Earth System Sciences.* Manuscript No. hess-2020-55.
4. Khatun, A., **Ganguli, P**., Chatterjee, C., Sahoo, B. (20xx). Risk associated with predecessor rain events over a large river basin in a changing climate. *Submitted to Journal of Hydrology.* Manuscript No. HYDROL36188.
5. **Ganguli, P**., Rama, N.Y., Chatterjee, C. (2020). Analysis of persistence in the flood timing and the role of catchment wetness on flood generation in a large river basin in India. *Theoretical and Applied Climatology.*139, 373-388. IF 2.720.

2019

6. **Ganguli, P.,** Merz, B. Extreme coastal water levels exacerbate fluvial flood hazards in Northwestern Europe. *Scientific Reports.* 9, 13165, IF* 4.525 (*Featured as a **Top in Scientific Reports Earth Sciences Papers**, with 1518 downloads since 2019 as reported by the publisher on 27th April 2020*).

7. **Ganguli, P.,** Merz, B. Trends in compound flooding in Northwestern Europe during 1901-2014. *Geophysical Research Letters.* DOI: 10.1029/2019GL084220. IF 4.34
8. **Ganguli, P.,** Coulibaly, P. Assessment of future changes in Intensity-Duration-Frequency curves for Southern Ontario using North American (NA)-CORDEX models with nonstationary methods. *Journal of Hydrology: Regional Studies*. 22, 100587. Cite Score: 3.91

2017

9. **Ganguli, P.,** Coulibaly, P. (2017). Does nonstationarity in rainfall require nonstationary Intensity-Duration-Frequency Curves? Hydrology and Earth System Sciences, 21(12):6461-6483. IF 4.936
10. **Ganguli, P.,** Kumar, D., Ganguly, A.R. (2017). US power production at risk from water stress in a changing climate. *Nature Scientific Report.* 7 (11983), DOI: 10.1038/s41598-017-12133-9. IF 4.525 (*Featured as a* ***Top 100 in Scientific Reports Earth Sciences Papers*** *in 2017*)

2016

11. **Ganguli, P.,** Ganguly, A.R. (2016). Space-time trends in US meteorological droughts. *Journal of Hydrology: Regional Studies*. 8, 235-259, IF 3.17
12. **Ganguli, P.,** Ganguly, A.R. (2016). Robustness of meteorological droughts in dynamically downscaled climate simulations. *Journal of the American Water Resources Association (JAWRA)*. 52(1): 138-167, IF 2.16

2015

13. Ganguly, A.R., Kumar, D., **Ganguli, P.**, Short, G., Klausner, J. (2015). Climate adaptation informatics: Water stress on US power production. *Computing in Science and Engineering Magazine*, 17(6): 53 – 60, IF 2.074

2014

14. Ganguly, A.R., Kodra, E.A., Banerjee, A., Boriah, S., Chatterjee, S., Chatterjee, S., Choudhary, A., Das, D., Faghmous, J., **Ganguli, P.**, Ghosh, S., Hayhoe, K., Hays, C., Hendrix, W., Fu, Q., Kawale, J., Kumar, D., Kumar, V., Liess, S., Mawalagedara, R., Mithal, V., Oglesby, R., Salvi, K., Snyder, P.K., Steinhaeuser, K., Wang, D., Wuebbles, D (2014). Toward enhanced understanding and projections of climate extremes using physics –guided data mining techniques. *Non-linear processes in Geophysics.* 21, 777-795. IF: 1.394
15. **Ganguli, P.**, Reddy, M.J. (2014) Ensemble prediction of regional droughts using climate inputs and SVM-copula approach. *Hydrological Processes.* 28, 4989–5009. IF: 3.014
16. **Ganguli, P**. (2014) Probabilistic analysis of extreme droughts in southern Maharashtra using bivariate copulas. *ISH Journal of Hydraulic Engineering*. 20(1): 90-101. DOI: 10.1080/09715010.2013.843279. SJR: 0.158

2013

17. **Ganguli, P.**, Reddy, M.J. (2013) Probabilistic assessment of flood risks using trivariate copulas. Theoretical and Applied Climatology. 111 (1-2): 341-360. IF: 2.640
18. **Ganguli, P.**, Reddy, M.J. (2013) Analysis of ENSO based climate variability in modulating drought risks over Western Rajasthan in India. Journal of Earth System Sciences. 1: 253 – 269. IF: 0.955
19. **Ganguli, P**., Reddy, M.J. (2013) Evaluation of trends and multivariate frequency analysis of droughts in three meteorological subdivisions of western India. International Journal of Climatology. 34(3): 911-928. IF: 3.76
20. Reddy, M.J., **Ganguli, P**. (2013) Spatio-temporal analysis and derivation of copula-based intensity-area-frequency curves for droughts in western Rajasthan (India). Stochastic Environmental Research and Risk Assessment. 27(8):1975-1989. IF: 2.629

2012

21. **Ganguli, P.,** Reddy, M.J. (2012) Risk assessment of droughts in Gujarat using bivariate copulas. Water Resources Management. 26(11): 3301-3327. IF: 2.848
22. Reddy, M.J., **Ganguli, P.** (2012). Bivariate flood frequency analysis of Upper Godavari River flows using Archimedean copulas. Water Resources Management. 26(14): 3995-4018. IF: 2.848
23. Reddy, M.J., **Ganguli, P**. (2012) Application of copulas for derivation of drought Severity-Duration-Frequency curves. Hydrological Processes. 26(11): 1672-1685. IF: 3.014
24. Reddy, M.J., **Ganguli, P**. (2012) Risk assessment of hydro-climatic variabiliy on groundwater levels in the Manjara Basin aquifer in India using Archimedean copulas. *ASCE* Journal of Hydrologic Engineering. 17(12): 1345 – 1357. IF: 1.694

Conference Proceedings

2020

1. **Ganguli, P.**, Merz, B. (2020). Importance of tail dependence in compound flood modelling. Presented at Risk KAN webinar series on compound event, 3rd June 2020, Organized by FutureEarth, https://futureearth.org/networks/knowledge-action-networks/risk/.
2. **Ganguli, P.**, Merz, B. (2020). Compounding effects of riverine and coastal floods and its implications for coastal urban flood resilience. Abstract #: EGU2020-6439, presented at EGU General Assembly, 4th May 2020, Vienna, Austria.
3. Vorogushyn, S., Wietzke, L., Guse, B., **Ganguli, P.**, Lun, D., Blöschl, G., Merz, B. (2020). Muster von Heavy-Tail Verhalten von Hochwasser in Europa. Tag der Hydrologie 2020 (Day of Hydrology 2020), March 31 – April 1, 2020, University of Potsdam, Potsdam, Germany.
4. Khatun, A., **Ganguli, P.**, Chatterjee, C., Sahoo, B. (2020). Effect of catchment wetness in flood generation of a medium-sized catchment with tropical pluvial regime. Roorkee Water Conclave (RWC) 2020, February 26-28, IIT Roorkee, India.

2019

5. Rama, N.Y., **Ganguli, P.**, Chatterjee, C. (2019). Trends and shifts in timing of flood peaks across Mahanadi River Basin, India. Abstract for presentation at International Conference on Climate Change Impacts, Vulnerabilities, and Adaptation: Emphasis on India and Neighborhood (CCIVA 2019), IIT Kharagpur, India.

2018

6. **Ganguli, P.,** Merz, B. (2018). Trends in compound flooding in Northwestern Europe. AGU Fall meeting, Washington, DC. NH31C-0986.
7. **Ganguli, P.,** Merz, B. (2018). Risk of compound flooding from coastal and fluvial floods over Northwestern Europe. EGU Abstract, Vol. 20, EGU2018-1929.

2017

8. **Ganguli, P.,** Coulibaly, P. (2017). Assessing nonstationarity in rainfall extremes and changes in future design rainfall in NA-CORDEX regional climate models across Southern Ontario. Poster: The FloodNet Annual General Meeting, Montreal, June, 27-28, 2017.
9. **Ganguli, P.,** Coulibaly, P. (2017). Assessing nonstationarity in extreme rainfall records in Southern Ontario. Paper ID: 243896, Oral: ASCE-EWRI Congress, Sacramento, California, May, 21-25, 2017.

2016

10. **Ganguli, P.,** Coulibaly, P. (2016). Extreme rainfall nonstationary investigation and evaluation of nonstationary-based Intensity-Duration-Frequency (IDF) curves for Southern Ontario region in a changing climate. Poster: The FloodNet Annual General Meeting, Vaughn, Toronto, September 19, 2016.

2014

11. **Ganguli, P.,** Kumar, D., Yun, J., Short, G., Klausner, J., Ganguly, A.R. (2014). Water stress on US power production at decadal time horizons. Poster: AGU Fall meeting, San Francisco, California, December 15, 2014, paper no. GC13B-0633.

2013

12. **Ganguli, P.**, Ganguly, A.R. (2013). Severity-duration-frequency curves of meteorological droughts over US. **Oral**: AGU Fall meeting, San Francisco, California, December 12, 2013, paper no. H44C – 04.
13. Mawalagedara, R., **Ganguli, P**., Ganguly, A. R., Oglesby R.J. (2013). Hydrology and water resources of Tropical Island and implications of global warming: Case studies over Puerto Rico. Poster: AGU Fall meeting, San Francisco, California, December 13, 2013, poster no. GC51A.
14. **Ganguli, P.** (2013). Characterization and short-term prediction of droughts over India using copula-based approaches. Invited talk at Expedition biweekly meeting, Northeastern University, Boston, MA, July 26, 2013.

2012

15. **Ganguli, P**., Reddy, M.J. (2012). Copula-based drought severity-area-frequency analysis in Western Rajasthan, India. 21st Century Watershed Technology: Improving Water Quality and Environment, **Oral**: ASABE, Bari, Italy, May 27-June 1st, 2012. (Received travel grants from **Department of Science & Technology** and **Council of Scientific and Industrial Research,** India). DOI: 10.13031/2013.41421.

2011

16. **Ganguli, P.**, Reddy, M.J. (2011) Bivariate Archimedean copula in drought frequency analysis in Maharashtra. Oral: International Congress of Environmental Research, SVNIT Surat, India, December 15-17, 2011.
17. **Ganguli, P.,** Reddy, M.J. (2011). Hydro-climatic variability study of Manjara Basin aquifer using bivariate Archimedean copula. Oral: International Conference on Sustainable Water Resources Management and Climate Change Adaptation, NIT Durgapur, India, February 17-19, 2011.

2010

18. **Ganguli, P**., Reddy, M.J. (2010). Probabilistic characterization of hydrologic extremes using bivariate copulas. Oral: 9th International Conference on Hydro-science and Engineering (ICHE-2010). IIT Madras, India, August 2-5, 2010.
19. Reddy, M.J., **Ganguli, P**. (2010). Multivariate statistical analysis of flood flows using copulas. Oral: National conference on Sustainable Water Resources Management and Impact of Climate Change (SWRM-2010). BITS-Pilani campus, Hyderabad, India, March 5-6, 2010.

2009

20. **Ganguli, P.,** Reddy, M.J., Rastogi, A.K. (2009). Estimation of groundwater recharge using Support Vector Regression. Oral: FSES-2009, IIT Kharagpur, India, December 17-19, 2009

2007

21. **Ganguli, P.,** Jha, M. K. (2007). Computer-aided analysis of well interference in confined and unconfined aquifer systems. Oral: National Conference on Technologies for Sustainable Utilization of Natural Resources (TechSUNR-2007). JITM Paralakhemundi, Orissa, India, February 24-25, 2007.

New Dataset Developed

Ganguli, P., Paprotny, D., Hasan, M., Güntner, A., Merz, B. (2019). Compound flood drivers for northwestern Europe in high-resolution EURO-CORDEX Simulations. GFZ Data Services. http://doi.org/10.5880/GFZ.4.4.2019.003

Invited Talk/Lecture

2019

1. Session Speaker: Towards understanding single and compound flood extremes in the anthropocene. Session name: Climate data science: Monsoon and beyond, IISA-2019, Indian Institute of Technology Bombay, December 26-30, 2019.

2018

2. Invited Speaker: Translating climate uncertainty in risk-informed water resources decisions. Department of Civil Engineering, Indian Institute of Science, Bangalore, March 14, 2018.
3. Invited Speaker: School of Civil Engineering, Newcastle University, Newcastle upon Tyne, UK; November 5, 2018.
4. Invited Speaker: School of Civil Engineering, University of Warwick, UK; November 7, 2018.

2017

5. Guest lecture: Frequency Analysis in Hydrology: focused on flood frequency (probability) distributions. Department of Civil Engineering University of Manitoba, Winnipeg, Canada, November 9, 2017.

Book Chapter

Blumenfeld, L., Hall, T., Henderson, H., Bressler, L., Moskos, C., **Ganguli, P**., Kumar, D., Ganguly, A. R. (2016). Climate and human stresses on the water-energy-food nexus. Ed., S. Shekhar, H. Xiong, X. Zhou. Encyclopedia of GIS, Springer, 179 - 188.

Copyright/Patent

Jha, M.K., **Ganguli, P**. (2007). Aquifer Manager: A Comprehensive Suit of Computer Tools for Forward and Inverse Modeling of Groundwater Systems. Registration No. SW-3559/2007, copyrighted on July 16, 2007 by SRIC IIT Kharagpur.

Reports

- Ganguly, A. R., Ganguli, P., and Kumar, D. (2014). Water Stress on U.S. Power Production at Decadal Time Horizons. United States. DOI:10.2172/1339441.
- Expedition Annual Report (2015) for the period 09/01/2014-8/31/2015, Collaborative Research: Understanding Climate Change: A Data Driven Approach, **Contributed to Climate Extremes and Uncertainty** section**.** NSF Award ID 1029771.

Non-peer Reviewed Publications

- **Ganguli, P**. (2016) Copula theory: Introduction and application to meteorological droughts. LAP Lambert Academic Publishing. ISBN 978-3-659-96041-3, pp. 277.
- **Ganguli, P**. (2007) Development of computer tools for analyzing aquifer systems. M. Tech. Thesis, Indian Institute of Technology Kharagpur, India.

Teaching, Mentoring & Administrative Experience

Teaching

- **AG61654 Statistics of Hydroclimatic Extremes:** Course credit 4 (L-T-P: 3-1-0), as an **Instructor** for the graduate course (9 students); Spring 2019, Spring 2020
- **AG69202 Seminar II:** Course credit 4 (L-T-P: 0-0-3), as an **Instructor** for the graduate course (18 students); Spring 2019, 2020
- **AG60201 Surface Water Hydrology**; Course credit 4 (L-T-P: 3-1-0), as an **Instructor** for the graduate course (21 students); Fall 2018
- **AG69037 Hydrological Systems Laboratory**; Course credit 3 (L-T-P: 0-0-3), as an **Instructor** for the graduate lab course (21 students); Fall 2018
- NPTEL Online Video lecture series on **Soil and Water Conservation Engineering**, Chapter **Drop and Chute spillways**, design considerations, design problems (**5 Lectures**).
- **Time Series & Spatial Statistics**, assisted PI at Northeastern University**,** graduate course (~ 30 students); Fall 2013
- **Fluid Mechanics II**, KIIT University, as an **Instructor** for the undergraduate Civil Engineering (~ 85 students); Spring 2013
- **Fluid Mechanics & Hydraulic Machinery**, KIIT University, as an **Instructor** for the undergraduate Electrical Engineering (~ 85 students); Spring 2013
- **Fluid Mechanics Lab**, KIIT University, as an **Instructor** for the undergraduate Civil Engineering (~ 85 students); Spring 2013

Teaching Assistant

- **Applied Hydraulic Engineering**, IIT Bombay, undergraduate course (~ 40 students); Spring 2012
- **Probability & Statistics for Civil Engineers**, IIT Bombay, dual degree Honors course (~ 30 students); Spring 2009
- **Advanced Experimental Fluid Mechanics**, IIT Bombay, graduate course (~ 12 students); Spring 2009
- **Fluid Mechanics Lab**, IIT Bombay, undergraduate course; Spring 2010
- **Fluid Mechanics Lab**, IIT Bombay, undergraduate course; Spring 2011

Mentoring and Outreach

- **Master's student**: 3 (ongoing), one of them is a recipient of **DAAD KOSPIE fellowship at TU Dresden**; 2 (graduated): 1 Dual M.Tech, 1 M.Tech, Undergraduate interns: 3
- Avijit Majhi: 'Towards understanding of hydrological drought propagation across large river basins' (Ongoing; Recipient of DAAD KOSPIE fellowship at TU Dresden, Enrolled into Joint Masters and PhD program at IIT Kharagpur)

- Yamini Rama Nandamuri, 'Investigation of flood regime changes in Mahanadi River basin', M.Tech student in land and Water Resources Engineering, IIT Kharagpur (graduated; Autumn 2018 – Spring 2019).
- Sarvesh Kumar, 'Development and testing of Common Sense Climate Index for metropolitan cities in India', Dual degree M.tech student in land and Water Resources Engineering, IIT Kharagpur (Autumn 2018 – Spring 2019).
- Co-supervised Agnihotri J, 'Estimation of snow water equivalent and snow melt in British Columbia, Canada', graduate student in School of Geography and Earth Sciences, McMaster University; Fall 2017.
- Co-supervised Janet Yun, 'Role of model uncertainty and internal variability in estimating water stress on US power production', undergraduate research intern in Civil Engineering, Northeastern University; Spring 2014.
- Co-supervised Domenico Rusciano, graduate student in Energy System Sciences and research intern at Sustainability & Data Sciences Lab, Northeastern University, Summer 2014.
- S Sarangi, S Mohanty, Y Yadav, A Kumar, S Satpathy, & G Kumar, undergraduate students at School of Civil Engineering, KIIT University, Spring 2013.
- **"Disrupt Climate Data" Challenge**. **The fifth Climate Change Annual Symposium, York University, Toronto, organized by Ontario Climate Consortium**, May, 11-12, 2017. Invited as a **mentor of student team** to help them understand the challenges of translating climate uncertainty into actionable insights for impact assessment.
- Nominated to serve as a judge for the Outstanding Student Poster and PICCO (OSPP) Award contest at the EGU General Assembly, 2018.

Ph. D. Thesis Committee Member

- Mr. Subhankar Ghosh (Roll. No. 18AG90J05)

New Course Development

- Statistics of Hydroclimatic Extremes (as an elective for Masters, senior undergraduates and graduate students)

Administrative Experience

- Faculty Adviser, 2nd year undergrad students in Civil Engineering, KIIT University; Spring 2013
- Department Placement coordinator for Ph.D. students in Civil Engineering, IIT Bombay; December 2011~ August 2012
- Member of **JEE Woman's Helpdesk 2019** at IIT Kharagpur
- **Alumni-Faculty coordinator** for Agricultural and Food Engineering Department at IIT Kharagpur from January 2020
- Volunteer in Agri-Expo 2020 to be held February 14 -16, 2020 at IIT Kharagpur
- Co-convener for comprehensive viva voice and BTP student evaluation of UG studies during academic year 2019-2021.

Contributor to Sponsored Projects

- May, 2013-December 2014: Expeditions in Computing: Understanding Climate Change A Data-driven Approach, NSF Award # 1029711, 5 year $10 M funded by the **National Science Foundation** (NSF). Project team led by University of Minnesota with associate partner (Co-PI) Prof. A. R. Ganguly from Northeastern University
- February 2014 – September 2014: Water Availability in United States under Climate and Population Change, DOE purchase order # DE – AR0000482, 1 year $ 85 k funded by **Advanced Research Project Agency – Energy (ARPA-E)**, a wing of US Dept. of Energy (Role: self as a **Co-Principal Investigator**)
- January 2015 – December 2015: High-dimensional Statistical Machine Learning for Spatiotemporal Climate Data, NSF Award # 1447587, 3 year $ 3.5 M funded by **NSF**, PI Prof. A. R. Ganguly from Northeastern University
- May 2016 – Current: NSERC FloodNet Canada, 5 year C$ 11M, funded by the **Natural Science and Engineering Research Council of Canada (NSERC)**, PI Prof. Paulin Coulibaly from

McMaster University; project comprises 21 sub-projects involving 12 universities and different partners from Government, industry and non-profit organizations across Canada

Ongoing Sponsored Projects

2019
- Impact of climate change on flood risk (IFR). Budget: 5.8 M INR, *Responsibility:* Co-PI; *Funding Agency*: Department of Science and Technology (DST), Government of India, *Funding duration:* 5 years
- Hydrological drought coincidence risk analysis over large river basins in India. Budget: 1.7 M INR; DST SREB., *Funding duration:* 2 years.

2018
- Risk of single and compound extremes from droughts and heatwaves over South Asia. Budget: 2.5 M INR, *Responsibility:* PI*; Funding Agency*: Sponsored Research and Industrial Consultancy (SRIC), IIT Kharagpur, *Funding duration:* 3 years

Contributor to Proposals

2018
- Rainfall thresholds for triggering landslides and slope stability analyses for climate resilient infrastructure: A hybrid physics-based statistical approach. Budget: 5.0 M INR, National Mission to Himalayan Studies (NMHS), Ministry of Environment, Forest and Climate Change. Partner Institutes: IIT Roorkee and Uttarakhand State Disaster Management Authority, India.

2015
- Collaborative Research: Data Science for Water Sustainability - Adapting to Climate Change; Budget: $5 M in 5 years with 5 universities

2014
- Water Availability in the United States under Climate & Population Change; Budget $85k for 1 year

2013
- PREPARED: Precipitation and Runoff Extremes Projections for Adaptive Resilience & Effective Decisions; Budget: $2.9 M in 5 years
- Collaborative Research: Water in the 21st Century: A Data-Guided Approach; Budget: $10 M in 5 years with 5 universities
- PREPARED: Precipitation and Runoff Extremes Projections for Adaptive Resilience & Effective Decisions; Budget: $2.9 M in 5 years
- Collaborative Research: Water in the 21st Century: A Data-Guided Approach; Budget: $10 M in 5 years with 5 universities

Professional Engagement

Reviewer
- **Total number of manuscripts reviewed since 2012: 79,** Journal of Hydrology (27), Advances in Water Resources (4), Nature Scientific Reports (6), Journal of Earth System Sciences (4), ISH Journal of Hydrologic Engineering (5), Hydrology (1), Atmospheric Research (2), Hydrological Sciences Journal (3), Water Resources Research (2), Journal of Computing in Civil Engineering (1), International Journal of Climatology (2), Computers and Electronics in Agriculture (1), Water (4), Journal of Integrated Disaster Risk Management (1), Environmental Processes (1), Natural Hazard Earth System Sciences Discuss. (2), Global and Planetary Change (1), Journal of Hydrologic Engineering (6), Hydrology and Earth System Sciences (1), Geophysical Research Letters (1), npj Climate and Atmospheric Sciences (1), Environmental Research Letters (1), Natural Hazard (1)
- **Outstanding reviewer recognition** from **Journal of Hydrology,** October 2016, June 2017.
- **Outstanding reviewer recognition** from **Advances in Water Resources**, May 2018.
- **Associate Editor:** Frontiers in Water

Member
- Indian Society of Hydraulics (Life Member, Membership #: LM 910), European Geophysical Union (Regular), American Geophysical Union (Regular)

Media Coverage: https://www.climatechangepost.com/news/2020/3/10/compound-flooding-northwestern-europe-floods-coast/