

Manabendra Saharia

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Address and Contact Information

Associate Professor, Department of Civil Engineering
Associate Faculty, Yardi School of Artificial Intelligence
Block V-224, Department of Civil Engineering, Indian Institute of Technology Delhi, Hauz Khas, 110016, India

🌐 **IIT Delhi HydroSense Lab:** <https://hydrosense.iitd.ac.in/>

🌐 **Personal Website:** <https://www.msaharia.com/>

🔗 **Google Scholar** | **R⁶ ResearchGate** | **GitHub** | **in LinkedIn** | **Twitter**

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Research Bio

My passion lies in developing solutions for monitoring and mitigating natural hazards, as well as advancing sustainable water resources management. My current focus is on developing cutting-edge techniques for forecasting and mitigating the impacts of floods, droughts, and landslides at local to global scales. My research seeks to unravel the complex interplay between climate, precipitation, land surface, and water flow, utilizing physics-based and machine learning models.

Research Interests

Land surface modeling, AI/ML applications, Hydrometeorology, flood forecasting, radar/satellite precipitation, citizen science, landslides.

Experience

- 2024-now **Associate Professor, Indian Institute of Technology Delhi.**
 - Department of Civil Engineering & Yardi School of Artificial Intelligence (Associate Faculty)
- 2019-24 **Assistant Professor, Indian Institute of Technology Delhi.**
- 2019 **Postdoctoral Research Associate, NASA Goddard Space Flight Center, USA.**
 - A West Africa Land Data Assimilation System for Forecasting Extreme Hydrological Events
- 2017-18 **Postdoctoral Fellow, National Center for Atmospheric Research (NCAR), Colorado, USA.**
 - (1) Developing a real-time and distributed HUC-based modeling system for ensemble streamflow forecasting over large domains. (2) Uncertainty quantification and sensitivity analysis of flood frequency estimates.
- 2013-17 **Advanced Radar Research Center, National Weather Center/The University of Oklahoma.**
- 2011-13 **Hydrology and Water Resources Laboratory, University of Texas at Arlington.**

Education

- 2013-17 **Ph.D. in Water Resources Engineering, The University of Oklahoma, USA.**
 - Dissertation: Characterization and Prediction of Flash Flood Severity.
- 2011-13 **M.S. in Water Resources Engineering, The University of Texas at Arlington, USA.**
 - Thesis: Ensemble Streamflow Forecasting For The Upper Trinity River Basin In Texas
- 2007-11 **B.Tech. in Civil Engineering, National Institute of Technology, Silchar, Assam, India.**
 - Major Project: Flood Forecasting in Multiple River Sections using Artificial Neural Networks

Awards and Fellowships

- Indian National Geospatial Award 2024, Indian Society of Remote Sensing
- National Geospatial Emerging Faculty Fellow Award, National Geospatial Awards 2024, IIT Bombay
- Fulbright-Kalam Climate Fellowship for Academic Exchange, 2024-25, Host: NASA Goddard Space

Flight Center

- **ERASMUS+ Exchange Mobility Award**, MATE, 2023 (Didn't avail)
- **CDRI (Coalition for Disaster Resilient Infrastructure) Fellowship** for 2023-24
- **Son of the Soil Award 2022**, Emerging Professional category, Care Luit Foundation, March 25, 2023
- **Visiting Scientist**, Research and Applications Laboratory, National Center for Atmospheric Research, 2023
- **Guest Professor (Global)**, Keio University, Japan, 2023
- **Geospatial World 50 Rising Stars 2023**, Geospatial World Forum, Rotterdam, Netherlands.
- **NASI Platinum Jubilee Young Scientist Award**, The National Academy of Sciences, India, 2023
- **Sir CV Raman Young Scientist Award**, The International Society for Energy, Environment and Sustainability (ISEES), 2022
- **French Embassy's Faculty Mobility Initiative Award**, Sponsored Visit to University of Eiffel, 2021
- **Young Faculty Incentive Fellowship**, 2019-2022, IIT Delhi
- **Early Career Scientist Assembly Award**, National Center for Atmospheric Research (NCAR), USA, 2018
- Citation and cash award in the oral presentation category of the Student Water Conference, Oklahoma Water Resources Center, Mar 23, 2017.
- Advanced Radar Research Center Student Paper Cash Award *in recognition of research accomplishments and scholarly publication*
- First prize and cash award in the oral presentation category of the Student Research and Creativity Day, University of Oklahoma, Feb 24, 2017.
- Advanced Radar Research Center Student Paper Cash Award *in recognition of research accomplishments and scholarly publication*
- First prize and cash award in the oral presentation category of the Student Research and Creativity Day, University of Oklahoma, March 4, 2016.
- Student Recognition, President's Monthly Research and Development Highlights, Volume 10, Issue 7, University of Oklahoma, Oct 2015.
- Best Poster Award in the Graduate Student Poster Contest, Annual Meeting of the Society of Environmental Journalists (SEJ), Norman, October 7-11, 2015

■ Sponsored Research Grants

Here, PI - Principal Investigator

Funding Agency	Project Title	Role	Amount (INR)	Duration
Ministry of Earth Sciences (MoES)	DeepINDRA: An experimental system for forecasting street-scale flood inundation by coupling physical and deep learning models	PI	62 Lakhs	2024-26
Monsoon Mission-III, Ministry of Earth Sciences (MoES)	BrahmaSATARK: A real-time impact-based 2D flood forecasting system for the Brahmaputra River basin using hydrologic-hydrodynamic and statistical-dynamical approaches	PI	73 Lakhs	2023-26
DST Indo-Canada IC-IMPACTS	GBM-CLIMPACT: Development of an end-to-end modeling and analysis toolset to assess climate impact and readiness of water sector in the Ganga, Brahmaputra, and Meghna basins	PI	60 Lakhs	2023-25
CDRI (Coalition for Disaster Resilient Infrastructure)	Detecting Flood Inundation Using Deep Learning and Citizen Science Fellowship	Fellow	\$15,000	2023-24
IIT Delhi Institute of Excellence (IoE) Grant	Geohazard assessment and mitigation via multiscale digital twinning	Co-PI	74.5 Lakhs	2022-24

IIT Delhi Seed Grant	Development of an Interpretable Machine Learning Framework for Detection and Attribution of Hydroclimatic Extremes	PI	20 Lakhs	2021-23 ##
Principal Scientific Adviser to the Government of India	Portable and High Precision Compact Gravimeter for Field Applications	Co-PI	10 Crores	2021-26
Indian Space Research Organization (ISRO)	Establishing a coupled Indian Land Data Assimilation System (ILDAS) for identifying hydrologic extremes	PI	35 Lakhs	2021-24
UCL-IITD Strategic Partner Fund	Making local knowledge matter for landslides and flooding preparedness	PI	5 Lakhs	2020-21
IRD, IIT Delhi	New Faculty Grant	PI	1 Lakh	2019
IIT Delhi	Young Faculty Incentive Fellowship	Fellow	25,000 pm	2019-22

Industrial Research Grants

Here, PI - Principal Investigator, # Completed

Funding Agency	Project Title	Role	Duration
Ministry of Rural Development	BhuPRAHARI: A monitoring system for MGNREGA Assets using ground and space-based Geospatial Technologies and Artificial Intelligence	PI	2024-25
SONY Research	DeepMizu: A Digital Twin for urban using Hyper-Resolution DEM, Synthetic Aperture Radar, and Deep Learning	PI	2023-24

Textbooks

- 2024 "Python for Water and Environment", Textbook published by Springer, Dr. Anil Kumar and **Dr. Manabendra Saharia**, ISBN: 978-981-99-9407-6, <https://link.springer.com/book/9789819994076>
- 2023 "Introduction to Civil Engineering", Textbook for undergraduate students of Civil Engineering, **Dr. Manabendra Saharia** and Dr. Nagendra R. Velaga, Published by the All India Council for Technical Education (AICTE), 2023. ISBN : 978-81-960386-4-9. Available in E-Kumbh: <https://ekumbh.aicte-india.org/>

Journal Publications

- 2025 V. V. Sidhan and **Saharia, Manabendra**. Controls on runoff efficiency and its spatiotemporal variability in South Asian river basins. *Journal of Hydrology*, volume 652, page 132680, May 2025. [doi:10.1016/j.jhydrol.2025.132680](https://doi.org/10.1016/j.jhydrol.2025.132680).
- 2025 Nirdesh Kumar Sharma and **Saharia, Manabendra**. DeepSARFlood: Rapid and Automated SAR-based flood inundation mapping using Vision Transformer-based Deep Ensembles with uncertainty estimates. *Science of Remote Sensing*, page 100203, February 2025. [doi:10.1016/j.srs.2025.100203](https://doi.org/10.1016/j.srs.2025.100203).
- 2025 Bhanu Magotra, **Saharia, Manabendra**, and C.T. Dhanya. Improved streamflow simulations in hydrologically diverse basins using physically informed deep learning models. *Hydrological Sciences Journal*, volume 0, January 2025. [doi:10.1080/02626667.2025.2458545](https://doi.org/10.1080/02626667.2025.2458545). Publisher: Taylor & Francis _eprint: <https://doi.org/10.1080/02626667.2025.2458545>.
- 2025 Sai Kiran Kuntla and **Saharia, Manabendra**. INDOFLOODS: A Comprehensive Database for Flood Events in India Enhanced with Catchment Attributes. *Bulletin of the American Meteorological Society*, volume -1, January 2025. [doi:10.1175/BAMS-D-24-0008.1](https://doi.org/10.1175/BAMS-D-24-0008.1). Publisher: American Meteorological Society Section: Bulletin of the American Meteorological Society.

- 2025 Ishita Afreen Ahmed, **Saharia, Manabendra**, and Sumedha Chakma. Erosivity density as an indicator of soil erosion risk in South Asia. *CATENA*, volume 251, page 108766, April 2025. [doi](https://doi.org/10.1016/j.catena.2025.108766)10.1016/j.catena.2025.108766.
- 2024 Nirdesh Sharma, **Saharia, Manabendra**, and G. V. Ramana. High resolution landslide susceptibility mapping using ensemble machine learning and geospatial big data. *CATENA*, volume 235, page 107653, February 2024. [doi](https://doi.org/10.1016/j.catena.2023.107653)10.1016/j.catena.2023.107653.
- 2024 Nirdesh Sharma and **Saharia, Manabendra**. ML-CASCADE: A machine learning and cloud computing-based tool for rapid and automated mapping of landslides using earth observation data. *Landslides*, September 2024. [doi](https://doi.org/10.1007/s10346-024-02360-3)10.1007/s10346-024-02360-3.
- 2024 Ravi Raj, **Saharia, Manabendra**, and Sumedha Chakma. Geospatial modeling and mapping of soil erosion in India. *CATENA*, volume 240, page 107996, May 2024. [doi](https://doi.org/10.1016/j.catena.2024.107996)10.1016/j.catena.2024.107996.
- 2024 Fadji Z. Maina, Augusto Getirana, Sujay V. Kumar, **Saharia, Manabendra**, Nishan Kumar Biswas, Sasha McLarty, and Ravi Appana. Irrigation-driven groundwater depletion in the Ganges-Brahmaputra basin decreases the streamflow in the Bay of Bengal. *Communications Earth & Environment*, volume 5, page 169, April 2024. [doi](https://doi.org/10.1038/s43247-024-01348-0)10.1038/s43247-024-01348-0.
- 2024 Gautam Kunwar, **Saharia, Manabendra**, Augusto Getirana, and Ayush Pandey. Detection and socio-economic attribution of groundwater depletion in India. *Hydrogeology Journal*, October 2024. [doi](https://doi.org/10.1007/s10040-024-02842-7)10.1007/s10040-024-02842-7.
- 2024 Anil Kumar, **Saharia, Manabendra**, and Pierre Kirstetter. Mapping a novel metric for Flash Flood Recovery using Interpretable Machine Learning. *Journal of Hydrometeorology*, volume -1, August 2024. [doi](https://doi.org/10.1175/JHM-D-23-0196.1)10.1175/JHM-D-23-0196.1. Publisher: American Meteorological Society Section: Journal of Hydrometeorology.
- 2024 Yash Gupta, **Saharia, Manabendra**, Shashank Joshi, and Bhupendra Nath Goswami. The asymmetric distribution of rainfall frequency and amounts in India. *Journal of Hydrology*, volume 644, page 132041, November 2024. [doi](https://doi.org/10.1016/j.jhydrol.2024.132041)10.1016/j.jhydrol.2024.132041.
- 2024 Arijit Chakraborty, **Saharia, Manabendra**, Sumedha Chakma, Dharmendra Kumar Pandey, Kon-dapalli Niranjan Kumar, Praveen K. Thakur, Sujay Kumar, and Augusto Getirana. Improved soil moisture estimation and detection of irrigation signal by incorporating SMAP soil moisture into the Indian Land Data Assimilation System (ILDAS). *Journal of Hydrology*, volume 638, page 131581, July 2024. [doi](https://doi.org/10.1016/j.jhydrol.2024.131581)10.1016/j.jhydrol.2024.131581.
- 2023 Ravi Raj, **Saharia, Manabendra**, and Sumedha Chakma. Mapping soil erodibility over India. *CATENA*, volume 230, page 107271, September 2023. [doi](https://doi.org/10.1016/j.catena.2023.107271)10.1016/j.catena.2023.107271.
- 2023 Bhanu Magotra, Ved Prakash, **Saharia, Manabendra**, Augusto Getirana, Sujay Kumar, Rohit Pradhan, C. T. Dhanya, Balaji Rajagopalan, Raghavendra P. Singh, Ayush Pandey, and Mrutyunjay Mohapatra. Towards an Indian Land Data Assimilation System (ILDAS): A coupled hydrologic-hydraulic system for water balance assessments. *Journal of Hydrology*, page 130604, December 2023. [doi](https://doi.org/10.1016/j.jhydrol.2023.130604)10.1016/j.jhydrol.2023.130604.
- 2023 Sai Kiran Kuntla, **Saharia, Manabendra**, Samar Prakash, and Gabriele Villarini. Precipitation inequality exacerbates streamflow inequality, but dams moderate it. *Science of The Total Environment*, page 169098, December 2023. [doi](https://doi.org/10.1016/j.scitotenv.2023.169098)10.1016/j.scitotenv.2023.169098.
- 2022 Ravi Raj, **Saharia, Manabendra**, Sumedha Chakma, and Arezoo Rafieinasab. Mapping rainfall erosivity over india using multiple precipitation datasets. *CATENA*, volume 214, page 106256, 2022. [doi](https://doi.org/10.1016/j.catena.2022.106256)10.1016/j.catena.2022.106256.
- 2022 Sai Kiran Kuntla, **Saharia, Manabendra**, and Pierre Kirstetter. Global-scale characterization of streamflow extremes. *Journal of Hydrology*, volume 615, page 128668, December 2022. [doi](https://doi.org/10.1016/j.jhydrol.2022.128668)10.1016/j.jhydrol.2022.128668.

- 2022 Sushma Kumari, Avinash Chand Yadav, **Saharia, Manabendra**, and Soumyabrata Dev. Spatio-temporal analysis of air quality and its relationship with COVID-19 lockdown over dublin. *Remote Sensing Applications: Society and Environment*, volume 28, page 100835, 2022. doi:10.1016/j.rsase.2022.100835.
- 2021 **Saharia, Manabendra**, Pierre-Emmanuel Kirstetter, Humberto Vergara, Jonathan J. Gourley, Isabelle Emmanuel, and Hervé Andrieu. On the Impact of Rainfall Spatial Variability, Geomorphology, and Climatology on Flash Floods. *Water Resources Research*, volume n/a, page e2020WR029124, 2021. doi:10.1029/2020WR029124.
- 2021 **Saharia, Manabendra**, Avish Jain, Ronit Raj Baishya, Saagar Haobam, O. P. Sreejith, D. S. Pai, and Arezoo Rafieeiniasab. India flood inventory: creation of a multi-source national geospatial database to facilitate comprehensive flood research. *Natural Hazards*, March 2021. doi:10.1007/s11069-021-04698-6.
- 2021 Akhil Sanjay Potdar, Pierre-Emmanuel Kirstetter, Devon Woods, and **Saharia, Manabendra**. Towards Predicting Flood Event Peak Discharge in Ungauged Basins by Learning Universal Hydrological Behaviors with Machine Learning. *Journal of Hydrometeorology*, volume -1, August 2021. doi:10.1175/JHM-D-20-0302.1. Publisher: American Meteorological Society Section: Journal of Hydrometeorology.
- 2021 A. J. Newman, A. G. Stone, **Saharia, M.**, K. D. Holman, N. Addor, and M. P. Clark. Identifying sensitivities in flood frequency analyses using a stochastic hydrologic modeling system. *Hydrology and Earth System Sciences*, volume 25, pages 5603–5621, 2021. doi:10.5194/hess-25-5603-2021.
- 2018 Sunghee Kim, Hossein Sadeghi, Reza Ahmad Limon, **Saharia, Manabendra**, Dong-Jun Seo, Andrew Philpott, Frank Bell, James Brown, and Minxue He. Assessing the skill of medium-range ensemble precipitation and streamflow forecasts from the Hydrologic Ensemble Forecast Service (HEFS) for the Upper Trinity River Basin in North Texas. *Journal of Hydrometeorology*, August 2018. doi:10.1175/JHM-D-18-0027.1.
- 2017 **Saharia, Manabendra**, Pierre-Emmanuel Kirstetter, Humberto Vergara, Jonathan J. Gourley, Yang Hong, and Marine Giroud. Mapping Flash Flood Severity in the United States. *Journal of Hydrometeorology*, volume 18, pages 397–411, February 2017. doi:10.1175/JHM-D-16-0082.1. Publisher: American Meteorological Society Section: Journal of Hydrometeorology.
- 2017 **Saharia, Manabendra**, Pierre-Emmanuel Kirstetter, Humberto Vergara, Jonathan J. Gourley, and Yang Hong. Characterization of floods in the United States. *Journal of Hydrology*, volume 548, pages 524–535, May 2017. doi:10.1016/j.jhydrol.2017.03.010.
- 2016 Weiyue Li, Chun Liu, Yang Hong, **Saharia, Manabendra**, Weiwei Sun, Dongjing Yao, and Wen Chen. Rainstorm-induced shallow landslides process and evaluation – a case study from three hot spots, China. *Geomatics, Natural Hazards and Risk*, volume 7, pages 1908–1918, November 2016. doi:10.1080/19475705.2016.1179685.
- 2016 Wei-yue Li, Chun Liu, Yang Hong, Xin-hua Zhang, Zhan-ming Wan, **Saharia, Manabendra**, Weiwei Sun, Dong-jing Yao, Wen Chen, Sheng Chen, Xiu-qin Yang, and Yue Yue. A public Cloud-based China's Landslide Inventory Database (CsLID): development, zone, and spatiotemporal analysis for significant historical events, 1949–2011. *Journal of Mountain Science*, volume 13, pages 1275–1285, July 2016. doi:10.1007/s11629-015-3659-7.
- 2014 Yu Zhang, Yang Hong, Xuguang Wang, Jonathan J. Gourley, Xianwu Xue, **Saharia, Manabendra**, Guangheng Ni, Gaili Wang, Yong Huang, Sheng Chen, and Guoqiang Tang. Hydrometeorological Analysis and Remote Sensing of Extremes: Was the July 2012 Beijing Flood Event Detectable and Predictable by Global Satellite Observing and Global Weather Modeling Systems? *Journal of Hydrometeorology*, volume 16, pages 381–395, October 2014. doi:10.1175/JHM-D-14-0048.1.

- 2014 Yan Shen, Anyuan Xiong, Yang Hong, Jingjing Yu, Yang Pan, Zhuoqi Chen, and **Saharia, Manabendra**. Uncertainty analysis of five satellite-based precipitation products and evaluation of three optimally merged multi-algorithm products over the Tibetan Plateau. *International Journal of Remote Sensing*, volume 35, pages 6843–6858, 2014.
- 2014 Parthajit Roy, **Saharia, Manabendra**, and P. Choudhury. River Reaches Flood Flow Prediction using PRNN Models. *International Journal of Civil, Structural, Environmental and Infrastructure Engineering Research and Development (IJCEIERD)*, volume 1, pages 119–126, 2014.
- 2013 S. K. Jain, Vijay Kumar, and **Saharia, M.** Analysis of rainfall and temperature trends in northeast India. *International Journal of Climatology*, volume 33, pages 968–978, 2013. [doi:https://doi.org/10.1002/joc.3483](https://doi.org/10.1002/joc.3483). [_eprint:https://rmets.onlinelibrary.wiley.com/doi/pdf/10.1002/joc.3483](https://rmets.onlinelibrary.wiley.com/doi/pdf/10.1002/joc.3483).
- 2012 **Saharia, Manabendra** and Rajib Kumar Bhattacharjya. Geomorphology-based Time-Lagged Recurrent Neural Networks for runoff forecasting. *KSCE Journal of Civil Engineering*, volume 16, pages 862–869, July 2012. [doi:10.1007/s12205-012-1463-2](https://doi.org/10.1007/s12205-012-1463-2).

Peer-Reviewed Conferences

- 2023 Rajdeep Pandey, Nirdesh Kumar Sharma, and Manabendra Saharia. LoRa-Based Communication System for Monitoring Water Quality of Lakes and Reservoirs. In *2023 International Conference on Machine Intelligence for GeoAnalytics and Remote Sensing (MIGARS)*, volume 1, pages 1–4, January 2023.
- 2011 **Saharia, Manabendra**, Rajib Bhattacharjya, and Mysore G. Satish. Catchment runoff forecasting using time-lagged recurrent neural networks. In *4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011)*, NUS Singapore. ASCE-EWRI, 2011.
- 2011 **Saharia, Manabendra** and Rajib Bhattacharjya. Comparison of ann-based runoff-prediction models trained by eight different learning algorithms. In *4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011)*, NUS Singapore. ASCE-EWRI, 2011.
- 2011 Parthajit Roy, P.S. Choudhury, and **Saharia, Manabendra**. River reaches flood flow prediction using tlrn models. In *4th ASCE-EWRI International Perspective on Water Resources & the Environment (IPWE 2011)*, NUS Singapore. ASCE-EWRI, 2011.

Book Chapters

- 2016 Saharia, M., Li, L., Hong, Y., Wang, J., Adler, R.F., Policelli, F.S., Habib, S., Irwin, D., Korme, T., Okello, L., 2016. Real-Time Hydrologic Prediction System in East Africa through SERVIR, in: Hong, Y., Zhang, Y., Khan, S.I. (Eds.), *Hydrologic Remote Sensing*. pp. 247–258. <https://doi.org/10.1201/9781315370392-15>
- 2014 Shen, Y., Xiong, A., Hong, Y., Yu, J., Pan, Y., Chen, Z., Saharia, M., 2014. Uncertainty analysis of five satellite-based precipitation products and evaluation of three optimally merged multi-algorithm products over the Tibetan Plateau. *International Journal of Remote Sensing* 35, 6843–6858. <https://doi.org/10.1080/01431161.2014.960612>

Teaching Experience

- Instructor, CVL730 Hydrologic Processes and Modeling, 2023-2024, 2024-2025
- Instructor, CVP484 Computational Aspects in Water Resources, 2024-2025
- Instructor, CVL736 Soft Computing Techniques in Water Resources, 2023-24
- Instructor, CVP735 Finite Element Methods, 2021-2022, 2022-2023
- Instructor, CVL834 Urban Water Infrastructure, 2021-2022
- Instructor, CVL282 Engineering Hydrology, 2020-2021
- Instructor, CVL381 Design of Hydraulic Structures, 2019-2020, 2020-2021, 2021-2022, 2022-2023

- Instructor, CVP731 Simulation Lab II, 2020-2021, 2022-2023, 2023-2024
- Instructor, CVP731 Simulation Lab I, 2021-2022, 2023-2024
- Instructor, CVP731 NEN 100 Professional Ethics and Social Responsibility, 2019
- Teaching Assistant and co-taught, CEES 5843 Hydrology, University of Oklahoma, Spring 2017
- Teaching Assistant, CEES 5903 Remote Sensing Hydrology, University of Oklahoma, Spring 2016

Industry Course [Organized and Taught]

- Feb 2024 *Artificial Intelligence and Machine Learning for Industry*, 6 month certificate course through CEP e-Vidya, IIT Delhi [Batch 03, Sep-Feb 2024] [**Program Coordinator**]
- Sep 2024 *Artificial Intelligence and Machine Learning: Foundations*, No. of participants: 20, Sep 2-6, 2024, Sponsored by Comptroller and Auditor General of India (CAG) for IAAS Officers [**Program Coordinator**]
- Apr 2024 *Leadership Conclave on Data Science, Automation, and Smart Manufacturing*, No. of Participants: 24, 16th April, 2024. Sponsored by YPO. [**Program Coordinator**]
- Apr 2024 *Gen AI Techniques for CRIS Engineers*, No. of Participants: 50, 5 day training program, 05-07 & 12-13 April, 2024. Sponsored by Centre For Railway Information Systems. [**Program Coordinator**]
- Mar 2024 *Artificial Intelligence and Machine Learning for Industry (Bootcamp)*, No. of Participants: 21, 15-17th March, 2024. [**Program Coordinator**]
- Feb 2024 *Artificial Intelligence and Machine Learning for Industry*, 6 month certificate course through CEP e-Vidya, IIT Delhi [Batch 02, Feb-Aug 2024] [**Program Coordinator**]
- Apr 2023 *AI/ML for Industry*, No. of Participants: 59, 6 month certificate course through CEP e-Vidya, IIT Delhi [Batch 01, Apr-Sep 2023] [**Program Coordinator**]
- Jan 2023 Tutorial: "Promoting sustainable water usage and management with water data, AI and policy", CODS-COMAD, January 4th 2023
- 2021 "Water and Solid Waste Management", Continuing Education Program, Sponsored by Central Reserve Police Force (CRPF), Duration - 5 months [**Program Coordinator**]

Thesis Supervision

Graduated from IIT Delhi

- PhD - 2
- MS(R) - 2
- M.Tech - 5

Ph.D. Scholar	Title	Year
Sidhan VV	–	2024-
*Rocktim Saikia	Waterway Policy	2024
Kshitij Kumar	Urban floods	2023 -
Neharika Bhattarai	Climate Change Impacts	2023-
Tapati Parashar	Large Sample Hydrology	2023-
Priyam Deka	An impact-based flood forecasting system for the Brahmaputra river	2022-
Ved Prakash	Indian Land Data Assimilation System	2022-
Prateek Sharma	Forecast Guided Reservoir Operation Framework	2022-
*Avnish Varshney	Urban flood forecasts	2022-
Anagha P.	Deep Learning Applications in Hydrology	2020-
Nirdesh Sharma	India Landslide Model	2020-
Bhanu Magotra	Flood Forecasting using process-based Machine Learning	2020-
Sai Kiran Kuntla	Embracing Large-sample Hydrology and Machine Learning for Prediction of Floods	2020-24
Ravi Raj	A New Soil Erosion Severity Map for India using Geospatial Modeling and Machine Learning	2020-23

* Part-time

MS(R) Scholar	Title	Year
Anandita Kaushal	Cloudbursts	2024-
Arijit Chakravarty	Multivariate assimilation of satellite soil moisture and vegetation conditions into the Indian Land Data Assimilation System (ILDAS) for improved estimation of water and carbon fluxes	2022-24
Anuj	Integrated Framework for Satellite Soil Moisture Products Assessment	2022-24

M.Tech. Scholar	Title	Year
Divya Singh	Characterization of Floods	2024-25
Ranga Raju	Flood Inundation Mapping	2024-25
Deepak Meena	DeepSAR Urban: Deep Learning Based Tool to Map Urban Floods	2023-24
Shashank	Streamflow Timings in India	2022-23
Suneet Bansal	Analysis of Long-term terrestrial water storage variations in the Brahmaputra river basin	2022-23
Gautam Kunwar	Detection and Attribution of Groundwater Changes in India	2021-22
Khusboo Alvi	Multi-Dimensional Characterization of Flooding Events over India	2020-21

B.Tech. Scholar	Title	Year
Harshul Malik	–	2024
Sanskar	–	2024
Nishita	–	2024
Shivani Vangla	–	2024
Avi Kaushik	–	2024
Aditi	–	2024
Ria Joshi	Development of a landslide road vulnerability index using Geospatial datasets for India	2023
Akshat Shukla	Machine Learning based modeling of Flash Floods and Lorenz-Zonoid based interpretation	2023
Hetal Priyadarshi	A deep learning-based methodology for SAR-based flood mapping	2022
Samar Prakash	Water Inequality mapping using Gini Coefficient	2022
Aparimit Kasliwal	Analysis and prediction of Reservoir data using long Short-term memory (LSTM) based Recurrent neural networks	2022
Ayush Pandey	Improving Streamflow Simulations using LSTM Networks	2021
Rohit Garga	A Deep Learning-based Methodology for SAR-based Flood Mapping	2021
Kaushal Sharma	SAR-based flood mapping using Deep Learning models	2021
Jatin Ahuja	An in-depth study of the timing of streamflow in India including seasonality and variability	2020
Gautam Kunwar	Detection and Socio-economic Attribution of Groundwater Depletion in India	2020
Yash Gupta	Characteristics of Daily Precipitation in India	2020

Industrial Consultancy

Year	Role	Title
2024	Co-CI	Engineering Work of Design of Emergency Storage Ash Mound, Hindalco Industries Limited, Odisha, India.
2022	Co-CI	Study of Scouring and Vetting of Proposed Restoration Work in Okhla Barrage at Yamuna.
2020	Co-CI	Assessment of Bank Protection Measures for NH-37A

Invited Talks [Technical]

- Sep 2024 "Development of a next-generation Hybrid Physics-AI Transboundary Water Modeling System over India", EPSA Seminar, ISRO Space Applications Center, Ahmedabad. Sep 13, 2024
- Jul 2024 "Indian Precipitation Ensemble Dataset: A 0.1 degree daily ensemble dataset and potential Hydrological Applications", Indian Meteorological Department, Pune, July 30, 2024
- May 2024 "A Transboundary Water Modeling System over South Asia and a District level Flood Severity Index for India", 28th South Asian Climate Outlook Forum (SASCOF-28), May 01, 2024
- Feb 2024 "Artificial Intelligence and Remote Sensing for large scale landslide studies", Border Roads Organization, 14 Feb 2024
- Mar 2023 "Development of an India Water Model (IWM) for water management and forecasting applications", 4th "Weather and Climate Science for Service Partnership-India" (WCSSP-India) Annual Science Workshop
- Dec 2022 "Leveraging Remote Sensing and Machine learning for landslide studies", Digital Documentation of Geotechnical Landslides, Dec 22, 2022

- Nov 2022 Plenary Session-II of the National Conference on 'Landslide Risk Assessment and Mitigation in India' organized by the Department of Geography, Faculty of Natural Sciences, Jamia Millia Islamia, Nov 1-2, 2022
- Dec 2021 "Applications of High-Performance Computing, IoT, and AI/ML in Water Resources Management", International Water Innovation Summit, Confederation of Indian Industry (CII)
- July 2020 "Role of Machine Learning in Civil Engineering", Faculty Development Program, Jorhat Engineering College, Assam.
- Nov 2019 "Flood Defense - Plausible solutions rather than possible", *Transforming NE region through Science and Technology Interventions*, Assam Administrative Staff College, Guwahati.
- Nov 2019 "A Water Alliance for Tomorrow", *River-research to Evolve Sustainable-projects for People with Eco-friendly Climate-resilient Technology (RESPECT)*, IIT Guwahati.

Conference Service

1. Core Committee Member, International Symposium on Tunneling: Challenges, Solutions, and Recent Developments, Indian Institute of Technology Delhi, Dec 2023
2. Panel Member (Elevation), Thematic Working Groups on "Standards" for various National Fundamental & Sectoral Geospatial data themes envisaged under National Geospatial Policy (NGP), Survey of India, Aug 2023
3. May 2023 Co-Organizer, 14th International Precipitation Conference, May 12, 2023
4. Panel member, Roadmap to High-End Geospatial Research & Development, Conference on Geospatial Policy for National Development, 21-22 February 2023
5. Session Chair, Unlocking Opportunities in Transport Infrastructure with Reality Capture Technologies, Geosmart Infrastructure Conference 2022, Delhi, 2022
6. Session Co-Chair, Understanding, Modeling, Forecasting, and Mitigation of Urban and Riverine Flood Risks in South Asia, AGU 2021 Annual Meeting, New Orleans, USA, 2021
7. Technical Committee, International Conference on Sustainable Water Resources Management (SWARM), Guwahati, 2020

Journal Reviewer

- Journal of Hydrology
- Water Resources Research
- Journal of Hydrometeorology
- Journal of Flood Risk Management
- Hydrological Sciences
- Natural Hazards
- Scientific Data
- Water Security

Administrative Experience

Institute Service, IIT Delhi

- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2025
- Institute Representative, Joint Entrance Examination (JEE) Advanced, IIT Delhi, 2024
- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2024
- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2023
- Institute Representative, Joint Entrance Examination (JEE) Advanced, IIT Delhi, 2023
- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2022
- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2021
- Institute Representative, Graduate Aptitude Test in Engineering (GATE), IIT Delhi, 2020
- Institute Representative, Joint Entrance Examination (JEE) Advanced, IIT Delhi, 2020

Department Service, Department of Civil Engineering, IIT Delhi

- Department Vision and Strategic Planning Committee (Convenor), 2024-25
- Review/ Ranking/ Publications/ Information Coordination Committee (Coordinator), 2024-25
- Department website and prospectus committee, 2022-23, 24-25
- Water Resources Engineering Laboratory (In-charge), 2021-now
- CVN 101 Intro to Civil Engineering (Coordinator), 2020-21
- CVQ 301 Civil Engineering Seminar (Co-Coordinator). 2020-21
- NEN 101 Professional Ethics and Social Responsibility (Department Volunteer), 2019-20
- B.Tech. Report Evaluation Committee, 2020-21, 21-22

Editorials

1. **Saharia, M.** "Tips for Undergraduate Researchers", Xomidhan's Career Hand Book, 1st Edition, 2021, ISBN 978-93-92288-73-9
2. **Saharia, M.** "Can a Sanctuary in Brahmaputra Save River Dolphins?", Nov 29, 2016. The Assam Tribune (Lead editorial)
3. **Saharia, M.** "An ASEAN university in North-East", Mar 8, 2016. The Assam Tribune (Editorial)

Professional Memberships

- American Geophysical Union (AGU)
- Indian Meteorological Society (IMS), Life Member (LM-3981)
- Indian Society for Remote Sensing (ISRS), Life Member (L-5958)
- International Society for Energy Environment and Sustainability (24003)
- Indian Society of Engineering Geology (ISEG), Life Member (LM1770)
- Indian Association of Soil and Water Conservationists (IASWC), Life Member (LM 2342)
- Indian Water Resources Society (IWRS), Life Member (2024-8040)
- Society for Science of Climate Change and Sustainable Environment (SSCE), Life Member
- Society of Young Agriculture and Hydrology Scholars of India (SYAHI), Life Member (S21/0284)

Workshops Participated

- Oct 2019 River-research to Evolve Sustainable-Projects for People with Eco-friendly Climate-resilient Technology (RESPECT), IIT Guwahati
- Sep 2017 The 2016 Multi-Radar/Multi-Sensor (MRMS) HMT-Hydro Testbed Experiment (Served as Coordinator)
- May 2015 National Flood Interoperability Experiment, Summer Institute, National Water Center, Tuscaloosa, Alabama (8 Weeks)
- Jan 2011 HEPEX Workshop, National Weather Center, Silver Spring, Maryland (3 days)

Personal Interests

Educational outreach, mentoring, volunteering, writing columns, Fitness