

# Shushobhit Chaudhary

Assistant Professor

Department of Civil Engineering,

Indian Institute of Technology (ISM) Dhanbad, India

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Nationality: Indian



Scopus<sup>®</sup>



## Research Interests

Precipitation, Satellite-based precipitation measurement, Water Resources Engineering, Modelling and System Analysis, Error modeling and propagation, Remote sensing, Hydro-climatological modeling, Error propagation, Surface water quality modeling, Environmental flow, Climate change, Regionalization.

## Experience

Mar 2023 – Present **Assistant Professor in Department of Civil Engineering**, Indian Institute of Technology (ISM) Dhanbad, India.

Nov 2022 – Mar 2023 **Visiting Assistant Professor in Department of Civil Engineering**, Indian Institute of Technology (ISM) Dhanbad, India.

## Education

**Ph.D. in Water Resources (Civil) Engineering**, Indian Institute of Technology (IIT) Delhi, India, 2022.

*Dissertation* Improving the Potential of Satellite-Based Precipitation Estimates for Hydrological Applications

**Master of Technology in Water Resources Engineering**, IIT Delhi, India, 2015.

*Dissertation:* Environmental Flow of River under Climate Change Considering Water Quality

**Bachelor of Technology in Civil Engineering**, National Institute of Technology (NIT) Allahabad, India, 2013.

## Publications

### Peer Reviewed Journals

- ✚ Dalal, G., Chaudhary, S., Dutta, R., Karmakar, S., Koppa, A., & Hari, V. (2024). East–West asymmetry in intensity, duration, frequency of heatwaves over Northern India. *Environmental Research Letters*, 19(12), 124089. <https://stats.iop.org/article/10.1088/1748-9326/ad948f>
- ✚ Yadav S., Nelapudi L., Singh G., Chaudhary S., Dhanya C.T., Arya V. (2023) Impact of lockdowns and possible quantification of pollution sources on the water quality of the Yamuna River, *Hydrological Sciences Journal*, 68:11, 1539–1552. <https://doi.org/10.1080/02626667.2023.2224004>
- ✚ Chaudhary S., Dhanya C.T., (2021) An Improved Error Decomposition Scheme of Satellite-based Precipitation Estimates. *Journal of Hydrology*, 598, 126434. <https://doi.org/10.1016/j.jhydrol.2021.126434>
- ✚ Chaudhary S., Dhanya C.T., (2020) Expanding contingency table for intensity and frequency based “true” detection of rainy events in precipitation datasets. *Atmospheric Research*, 244, 105119. <https://doi.org/10.1016/j.atmosres.2020.105119>

- ✚ Chaudhary S., Dhanya C.T., (2020) Decision tree-based reduction of bias in monthly IMERG satellite precipitation dataset over India. *H2Open Journal*. 3(1), 236-255. <https://doi.org/10.2166/h2oj.2020.124>
- ✚ Chaudhary S., Dhanya C.T., Kumar A. and Rehana S., (2020) Closure to "Water Quality-Based Environmental Flow under Plausible Temperature and Pollution Scenarios" by Shushobhit Chaudhary; C.T. Dhanya; Arun Kumar; and Rehana Shaik. *ASCE Journal of Hydrologic Engineering*, 25(6), 0702000. [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001914](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001914)
- ✚ Chaudhary S., Dhanya C.T., Kumar A. and Rehana S., (2019) Water quality based environmental flows under plausible temperature and pollution scenarios. *ASCE Journal of Hydrologic Engineering*, 24(5), 05019007. [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001780](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001780)
- ✚ Chaudhary S., Dhanya C.T., and Kumar A. (2018). Sequential calibration of a water quality model using reach-specific parameter estimates. *Hydrology Research*, 49(4), 1042-1055. <https://doi.org/10.2166/nh.2017.246>
- ✚ Mannan A., Chaudhary S., Dhanya C.T., and Swamy A.K. (2018). Regionalization of rainfall characteristics in India incorporating climatic variables and using self-organizing maps. *ISH Journal of Hydraulic Engineering*, 24(2), 147-156. <https://doi.org/10.1080/09715010.2017.1400409>
- ✚ Chaudhary S., Dhanya C.T., and Vinnarasi R. (2017). Dry and Wet Spell Variability during Monsoon in Gauge-Based Gridded Daily Precipitation Datasets over India. *Journal of Hydrology*, 546, 204-218. <https://doi.org/10.1016/j.jhydrol.2017.01.023>
- ✚ Walling B., Chaudhary S., Dhanya C. T., and Kumar A. (2017). Estimation of environmental flow incorporating water quality and hypothetical climate change scenarios. *Environmental Monitoring and Assessment*, 189(5), 225. <https://doi.org/10.1007/s10661-017-5942-2>

### Peer Reviewed Conference

- ✚ Chaudhary S., Dhanya C.T., (2019) Investigating the performance of bias correction algorithms on satellite-based precipitation estimates. *Remote Sensing for Agriculture, Ecosystems, and Hydrology XXI*. Vol. 11149. International Society for Optics and Photonics. <https://doi.org/10.1117/12.2533214>

### Conferences

- ✚ Sudarshan L. N. Chaudhary S., (2025) Assessment of Ecological Drought over India, *International Conference on Smart Resilient and Sustainable Infrastructure (SRISTI)*, Dhanbad, 24-25 January.
- ✚ Sudarshan L. N. Chaudhary S., (2024) Analyzing the Effects of Meteorological Drought on Vegetation Cover across India, *National Conference on Emerging Trend in Earth Sciences (ETES)*, Dhanbad, 27-29 September.
- ✚ Dalal G., Chaudhary S., Vittal H. (2024) Development of Heatwave Intensity Duration Frequency (HIDF) curves for four metropolitan cities in India, National Environmental Conference (NEC- 2024), IIT Bombay, 15-17 Feb, 2024
- ✚ Chaudhary S., Dhanya C.T., (2022) Tacking Bias in Real-Time Satellite Precipitation Estimates using Neural Network-Based Machine Learning Approach. *AGU Fall Meeting*, Chicago, IL and Online. 13-12-16 Dec.
- ✚ Chaudhary S., Dhanya C.T., (2021) Bias-Correction of Satellite Precipitation in Frequency Domain. *AGU Fall Meeting*, San Francisco and Online. 13-17 Dec
- ✚ Chaudhary S., Dhanya C.T., (2020) Do the Satellite-based Rainfall Estimates "truly-hit" the Gauge-based Observations? *AGU Fall Meeting*, San Francisco and Online. 1-17 Dec.
- ✚ Chaudhary S., Dhanya C.T., (2019) How well do bias-correction algorithms impact on error components of satellite-based precipitation estimates? *AGU Fall Meeting*, San Francisco, 9-13 Dec.
- ✚ Chaudhary S., Dhanya C.T., (2019) How Does the Error in Satellite-Based Precipitation Estimates Vary with Precipitation, Topography, LULC & Climate? *EGU General Assembly*. Vol. 21, EGU2019-1490.

- ✚ Rajendran, V., Dhanya, C. T., & Chaudhary, S. (2019). Covariate-based Time-Varying Intensity-Duration-Frequency Curve for Changing Climate. *EGU General Assembly*. Vol. 21, EGU2019.
- ✚ Chaudhary S., Dhanya C.T., (2018) Dependence of Error Components in Satellite Precipitation Products on Topography, LULC & Climatic Features., *AGU Fall Meeting*, Washington DC, 10-14 Dec.
- ✚ Chaudhary S., Dhanya C.T., Ghodichore N., (2018), Error characterization of satellite-based precipitation products over India. *EGU General Assembly*, Vol. 20, EGU2018-15413.
- ✚ Chaudhary S., Dhanya C.T., Kumar A., (2016), Environmental Flow Considering Water Quality and Changing Climate: *19th International River Symposium*, New Delhi, India, 12-14 Sep.
- ✚ Chaudhary S., Dhanya C.T., Kumar A., (2015), Instream Flow Allocation based on Water Quality of Rivers. *20th International Conference on Hydraulics, Water Resources and River Engineering (HYDRO-2015)*, Roorkee, India, 17-20 Dec.
- ✚ Mannan A., Chaudhary S., Dhanya C.T., (2015), Regionalization of Rainfall in India using Self-Organizing Map. *Proceedings of the India International Science Festival - Young Scientists' Meet*, Department of Science and Technology, Gov. of India, New Delhi, India, 04-08 Dec.
- ✚ Chaudhary S., Dhanya C.T., Kumar A., (2014), Revisiting Approach of Environmental Flow Determination under Climate Change. *5th National Research Conference on Climate Change*, New Delhi, India, 19-20 Dec.
- ✚ Chaudhary S., Dhanya C.T., Kumar A., (2014), Standalone Calibration of QUAL2K model: Impact of Climate Change on Water Quality. *National Conference on Climate Change Adaptation and Resilience*, New Delhi, India, 19-20 Nov.

## Academic Visit

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Visited Bureau of Meteorology, Australia to attend [Capacity Building Workshop on Water Forecasting in Australia](#) funded by Dept. of Foreign Affairs & Trade, Australia (4 weeks: 30 May to 26 June 2016)

## Copyright / Patents

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Copyright: SW-16998/2023: *Authors*: Dhanya C.T. & Shushobhit Chaudhary; *Title*: A Split-Hit Error Decomposition Scheme (SHEDS) Based Contingency Table; Copyright Office, Gov. of India.

## Research Projects

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- ✚ *Project Title*: [Real-time Bias Correction of Satellite Precipitation Estimates Using Novel Recursive Extreme Learning Machine Algorithm](#). *Project Duration*: 2 years (2024-2026). *Project Cost*: 16 lakhs. *Funding Organization*: IIT(ISM) Dhanbad (as PI)
- ✚ *Project Title*: [Making subgrade layer in flexible pavements water resistant using organo-silane based chemical](#). *Project Duration*: 1 year (2024-2025). *Project Cost*: 17.63 lakhs. *Funding Organization*: Zydex Industries Private Limited (as co-PI)

## Scholastic Achievements

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- ✚ [AGU Fall Meeting Virtual Student Travel Grant](#) to participate in the 2021 American Geophysical Union (AGU) Fall Meeting, 13-17 December 2021, online.
- ✚ [Best Science-Story \(Top 100\) Award](#) by [Dept. of Science and Technology, Govt. of India](#) in [Augmenting Writing Skills for Articulating Research \(AWSAR\) 2020 competition](#) [*Science Story titled: Making Satellite-based Rainfall Estimates More Reliable*].

- + AGU Virtual Berkner Travel Fellowship to participate in the 2020 American Geophysical Union (AGU) Fall Meeting, 01-17 December 2020, online.
- + AGU Fall Meeting General Student Travel Grant to present poster in 2019 American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, U.S.A (09-13 Dec 2019).
- + IIT Delhi Research Excellence Travel Award (RETA) 2019, a grant to highly meritorious top 20% research scholars of IIT Delhi.
- + SPIE Student Travel Grant by SPIE and the Symposium and Conference Chairs of SPIE Security & Defence 2019 to deliver an oral presentation in SPIE 2019 Remote Sensing Conference in Strasbourg, France. (09-11 Sept. 2019).
- + DST International Travel Support Grant by the Science and Engineering Research Board, Dept. of Science and Technology (DST), Govt. of India, 2019 for participating in EGU General Assembly 2019, Austria (07-12 April 2019).
- + CSIR Travel Grant by Council of Scientific & Industrial Research (CSIR)-Human Resource Development Group, a premier national R&D organisation in India for participating in EGU General Assembly 2019, Austria (07 April 2019 to 12 April 2019).
- + Scholarship by Ministry of Human Resource Development, Govt. of India for PhD
- + Scholarship from Ministry of Human Resource Development, Govt. of India for pursuing M. Tech after qualifying Graduate Aptitude Test in Engineering.
- + 2nd distinction in a paper presentation on 'Public Sector Enterprise & Policy Shift' at NIT Allahabad.
- + Best bridge-design award for bridge making competition in Annual Techno-Management Festival 2012 of NIT Allahabad.
- + Runner-up in 'Fading blue' competition held at Annual Techno-Management Festival, NIT Allahabad.

## Position of Responsibility

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- + Departmental Under-Graduate Committee (DUGC) member, Dept. of Civil Engineering, IIT (ISM) Dhanbad, 2024-26
- + Member, Standing Appellate Committee (SAC), All India Council for Technical Education (AICTE) Team Member, NBA, Civil Engineering, IIT (ISM) Dhanbad
- + Departmental Faculty Scrutiny Committee, Dept. of Civil Engineering, IIT (ISM) Dhanbad, 2023-24.
- + Departmental Grievance Redressal Committee, Dept. of Civil Engineering, IIT (ISM) Dhanbad, 2023-25.
- + Departmental Purchase Committee, Dept. of Civil Engineering, IIT (ISM) Dhanbad, 2023-24.
- + Member of Hydrology Section Student Subcommittee (H3S) in American Geophysical Union (AGU-H3S) during 2021-2022.
- + Volunteer in 2019 American Geophysical Union (AGU) Fall Meeting Student Volunteer Program, Development Department Fundraising Program at San Francisco, CA, U.S.A (9-13 Dec 2019).
- + Volunteer and Interactor in Ishaan Vikas Scheme for introducing school kids to research, Ministry of Human Resource and Development Programme at IIT Delhi, 2015.
- + Teaching Assistance at Indian Institute of Technology Delhi, India
  - a. Undergraduate Course: Tutorial & laboratory instructor of Engineering Hydrology (2015-2021).
  - b. Postgraduate Course: Laboratory instructor of MATLAB and Simulation Laboratory (2016-2020).
- + Event coordinator of the National level technical event (Environs) at Annual Techno-Management Festival (Avishkar 2013) of NIT Allahabad.

## Teaching

✚ CED508 Engineering Hydrology & Hydraulics	2024-2025 Winter	Post-Graduate	
✚ CED403 Advanced Hydrology	2024-2025 Monsoon	Under-Graduate	
✚ NCEI101 Engineering Graphics	2024-2025 Monsoon	Under-Graduate	
✚ NCEC504 Computational Laboratory	2024-2025 Monsoon	Post-Graduate	
✚ CED536 Water Resources System Planning & Management	2023-2024 Monsoon	Under-Graduate	IIT (ISM) Dhanbad
✚ CEI101 Engineering Graphics	2023-2024 Monsoon	Under-Graduate	
✚ CEI202 Fluid Mechanics & Machines	2022-2023 Winter	Under-Graduate	
✚ CEI101 Engineering Graphics	2022-2023 Winter	Under-Graduate	

## Research Supervision

✚ L N Sudarshan	2023 July - Present	PhD	
✚ Naveen Bhagat	2022-2024	MTech	IIT (ISM) Dhanbad
✚ Vikash Prasad	2023-Present	MTech	
✚ Shubham Kumar	2023-Present	MTech	

## Invited Talks

- ✚ Invited talk on “Applications of Geospatial technique in estimating hydrological events” [Summer School in Geospatial Science and Technology](#) (Level-2), 14 June-4 July 2024, organized by the Dept. of Civil Eng. & Dept. of Environmental Science & Eng., IIT (ISM), Dhanbad, India supported by National Geospatial Program, Dept. of Science & Technology, Gov. of India.
- ✚ Invited talk on “Applications of Geoinformatics in Water and Environmental Engineering” in [Winter School in Geospatial Science and Technology](#) (Level 1), 10 Feb-02 Mar 2023, organized by the Dept. of Civil Eng. & Dept. of Mining Eng., IIT (ISM), Dhanbad, India, supported by National Geospatial Program, Dept. of Science and Technology, Gov. of India.
- ✚ Invited talk (online) on the [Environment Awareness program](#) for children at a school in Rishikesh on 2nd June 2023 based on the 7 themes of mission LiFE, organized by THDC India Limited.

## Professional Membership

- ✚ Member of The Institution of Engineers, India
- ✚ Life Member of Indian Water Resources Society, Roorkee India

## Reviewer

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| ✚ Scientific Reports                  | ✚ Climatic Change                              | ✚ Heliyon |
| ✚ Water Resources Management          | ✚ Journal of The Institution of Engineers      |           |
| ✚ Journal of Hydrologic Engineering   | ✚ Environmental Monitoring & Assessment        |           |
| ✚ Journal of Earth System Science     | ✚ Journal of Applied Meteorology & Climatology |           |
| ✚ Theoretical and Applied Climatology |  |           |

