

Curriculum Vitae

Subhankar Karmakar

Professor, Environmental Science and Engineering Department, ESED (Formerly Centre for Env. Sci. Engg., CESE);

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PRESENT STATUS

Professor in the Environmental Science and Engineering Department (ESED) at the Indian Institute of Technology Bombay (IIT Bombay), Mumbai, India, since December 3, 2018. Currently holds the *Vinaya & Samir Kapoor Chair Professorship* in the Centre for Climate Studies (CCS) since January 2023. Previously served as the Head of the Environmental Science and Engineering Department for a three-year tenure from July, 2021 to July, 2024.

RESEARCH EXPERIENCE

1. *Associate Professor* (September 2014 – December 2018) at Environmental Science and Engineering Department, Indian Institute of Technology Bombay; Mumbai; India.
2. *Visiting Scholar* (June 2010 - October 2010) at Nicholas School of the Environment, Duke University, North Carolina, USA. (Host Professor: Prof. K. H. Reckhow)
3. *Assistant Professor* (December 2007 – September 2014) at Environmental Science and Engineering Department, Indian Institute of Technology Bombay; Mumbai; India.
4. *Post-doctoral fellow* (November 2006 – November 2007) at Department of Civil and Environmental Engineering, The University of Western Ontario, London, Ontario, Canada. (Post-doctoral Supervisor: Prof. S. P. Simonovic)

EDUCATION

Indian Institute of Science, Bangalore, India

Doctor of Philosophy (Ph. D.)

August 2000 to October 2006 *

Water Resources and Environmental Engineering

Department of Civil Engineering

Title of the thesis: Grey optimization for uncertainty modeling in water resources systems

Supervisor: Prof. P. P. Mujumdar

Jalpaiguri Government Engineering College, West Bengal, India

Bachelor of Engineering (B.E), Department of Civil Engineering

August 1994 to July 1998

* Upgraded to the Ph.D. degree programme from the Master's degree programme at the Indian Institute of Science, Bangalore, in 2002, after an evaluation by the Senate Committee based on academic excellence.

RESEARCH INTERESTS

Analysis of Hydro-climatic Extremes, Vulnerability, Impacts and Risks, and Spatio-temporal Mapping:

Multivariate flood, drought and heatwave (extreme and oppressive) frequency analyses, non-stationary modeling of hydro-climatic extremes; Mapping vulnerability to natural and human-induced hazards using GIS (at regional- and country-scales) || Near-real-time flood forecasting || Sociohydrological modeling: human-flood and human-environment interactions || flood risk and resilience mapping || key risks analysis and mapping including complex, compound, cascading risks under a range of climate scenarios.

Environmental and Water Resources Systems: development of optimization models for surface water quality management, irrigation water management, solid waste management (facility location problem), floodplain planning and management, landfill leachate contamination risk assessment, optimal design of water & wastewater conveyance systems, design & evaluation of water quality monitoring network.

Environmetrics: multivariate statistical surface water quality assessment, evaluation of trophic states (particularly for lakes and reservoirs), rationalization of water quality monitoring stations.

Uncertainty Modeling and Decision Science for Environmental Systems: probabilistic, fuzzy and interval approaches; multi-attribute decision-making

ACADEMIC HONORS

- Work done in DST-Centre of Excellence (CoE) in Climate Studies project (2018-2024) adjudged “Excellent” (December 2023) by expert committee appointed by Dept. of Science and Tech., Govt. of India.
- Vinaya & Samir Kapoor Chair in Climate Studies, Interdisciplinary Program in Climate Studies (2023).
- Research Excellence Award 2020, IRCC, IIT Bombay.
- Professor S.P. Sukhatme Award for Excellence in Teaching 2019, IIT Bombay.
- 5 Excellence in Ph.D. Thesis Awards at IIT Bombay won by my students (4 as Main Supervisor and 1 as Co-supervisor). 7 distinguished research fellowships (excluding travel grants), and 12 best paper/poster awards won by my students.
- Vice-chairperson, International Conference on Flood Management (ICFM) Ad Hoc Committee, 2020 - till now < https://www.icfm.world/pdf/ICFM8_Book.pdf >
- Over all coordinator (as Head, ESED) National Jal Jeevan Mission (NJJM), Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India Level-1 & Level-2 courses, Total 8 sessions (Oct 21, 2021 to Feb 25, 2022).
- Work done in DST Fast Track Project adjudged “Excellent” (May 2014) by expert committee appointed by Dept. of Science and Tech., Govt. of India.
- Fast Track Project Grant for Young Scientists from Science and Engineering Research Council (SERC), Department of Science and Technology (DST), India (2011).
- BOYSCAST Fellowship 2009 - 2010 from Dept. of Science & Tech., Govt. of India, to conduct research on Ecological Engineering at Nicholas School of Environmental, Duke University, North Carolina, USA.
- Post-doctoral fellowship for November 2006 – November 2007 from Department of Civil and Environmental Engineering, The University of Western Ontario, London, Ontario, Canada.

- Recommendation for the Upgradation of Registration from Master's degree programme to Ph. D. degree programme by the Senate Committee, Indian Institute of Science, Bangalore, with the effect from 30th October 2002, decided on academic excellence basis.
- Member, Editorial Advisory Board, Journal of Disaster Advances, India (2012 - 2015).
- Associate Editor, Frontiers in Water and Built Environment Journal (from 2019 till date).
- Editorial Board Member (Environmental Engineering) of the Scientific Reports journal published by Nature Portfolio (2022-till date).
- Managing Guest Editor, Special Issue (January 2021) - Water Security in Floodplains, Science of the Total Environment, Elsevier.
- Member, American Geophysical Union (AGU).
- Member, International Water Association (IWA).
- Member, International Society of Ecotoxicology and Environmental Safety, Germany.
- Member, Technical committee, National Conference on Sustainable Water, Environmental Planning and Management (SWEPM-2010), BITS-Pilani, Hyderabad campus, March 5th-6th, 2010.
- National Advisory Committee Member, HYDRO 2019 International Conference, 18-20, December, 2019, Osmania University (in association with Indian Society for Hydraulics), India.
- National Advisory Committee Member, 26th International Conference on Hydraulics, Water Resources and Coastal Engineering, HYDRO 2021 INTERNATIONAL at SVNIT Surat, Gujarat, India, December 23-25, 2021
- National Advisory Committee Member, HYDRO 2022, 27th International conference on hydraulics, water resources, environmental and coastal engineering, 22nd-24th December, 2022, Indian Society for Hydraulics (ISH), Pune, organized by Department of Civil Engineering, Punjab Engineering College, Chandigarh
- "Grey fuzzy optimization model for water quality management of a river system" – by S. Karmakar and P. P. Mujumdar has been selected as one of the 25 hottest articles of Advances in Water Resources (Pub: Elsevier, Netherlands) for the periods of April-June, 2006; July-Sep., 2006 and Oct.-Dec., 2006.
- "A two-phase grey fuzzy optimization approach for water quality management of a river system " – by S. Karmakar and P. P. Mujumdar has been selected as one of the 25 hottest articles of Advances in Water Resources (Pub: Elsevier, Netherlands) for the periods of Jan.-March, 2007; April-June, 2007.
- The Institute Scholarship for pursuing Ph. D. in the Indian Institute of Science, Bangalore (2000 to 2006).
- The Graduate Aptitude Test in Engineering (GATE) scholarship for higher studies.
- Member of the Institute of Engineers (India).
- The National Scholarships in 12th standard (1994) and 10th standard (1992).

PUBLICATIONS (Citations: 5806, h-index: 44, i10-index: 94)

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 ORCID: <https://orcid.org/0000-0002-1132-1403>

Papers in refereed journals

1. Mondal, K., Ghosh, M., & Subhankar Karmakar (2025). Global sensitivity analysis in a complex 1D-2D coupled hydrodynamic model: flood hazard and resilience perspectives over an urban catchment. Sustainable Cities and Society, 106279. **IF:10.5**
2. Ghosh, M., Paul, S., Ghosh, S., & Subhankar Karmakar (2025). Assessment of Rainfall Forecasts and Flood Risk in a Coastal Urban Catchment Considering Different Urban Canopy Scenarios, Journal of Flood Risk Management, 2025; 18:e70028, <https://doi.org/10.1111/jfr3.70028>. **IF:3.0**
3. Patidar, G., Paris, A., Indu, J., & Subhankar Karmakar (2025). How can SWOT derived water surface elevations help calibrating a distributed hydrological model?. Journal of Hydrology, 132968. **IF:5.9**

4. Parmar, J., Mohanty, M. P., & Subhankar Karmakar (2025). Need for judicious selection of runoff inputs in a global flood model. *Environmental Research Letters*, 20(2), 024032. **IF:5.8**
5. Sudharsan, N., Singh, J., Ghosh, S., & Subhankar Karmakar (2025). Increasing risk of oppressive heatwaves over India in the future warming. *arXiv preprint arXiv:2501.13359*.
6. Chandel, V. S., Banerjee, B., Subhankar Karmakar, & Ghosh, S. (2024). Deep Learning based Statistical Downscaling for Enhanced Representation of Indian Monsoon Rainfall Extremes and Variability Preserving Climate Dynamics. *Authorea Preprints*.
7. Dalal, G., Chaudhary, S., Dutta, R., Subhankar Karmakar, Koppa, A., & Hari, V. (2024). East–West asymmetry in intensity, duration, frequency of heatwaves over Northern India. *Environmental Research Letters*, 19(12), 124089. **IF:5.9**
8. Ghosh, M., Ghosh, S., & Subhankar Karmakar (2024). Assessment of socio-economic strategies for managing regional flood risk in an urban coastal catchment. *Urban Climate*, 58, 102142. **IF:6.0**
9. Patidar, G., Indu, J., & Subhankar Karmakar (2024). Extending SUB-Daily River Discharge data over India (GUARDIAN). *Scientific Data*, 11(1), 1155. **IF:5.8**
10. Ghosh, M., Ghosh, S., & Subhankar Karmakar (2024). Assessment of flood risk in a coastal city considering multiple socio-economic vulnerability scenarios. *Proceedings of IAHS*, 386, 299-306.
11. Ranjan, R., & Subhankar Karmakar (2024). Compound hazard mapping for tropical cyclone-induced concurrent wind and rainfall extremes over India. *npj Natural Hazards*, 1(1), 15.
12. Shilin, A., Ghosh, S., & Subhankar Karmakar (2024). Flipping of temperature and precipitation trends over the Indian subcontinent due to diametrically opposing influence of GHGs and aerosols. *Environmental Research Letters*, 19(6), 064045. **IF: 5.8**
13. Ganjir, G., Reddy, M. J., & Subhankar Karmakar (2024). Agricultural drought hazard assessment in Maharashtra, India. *European Water* 85/86: 3-12, 2024. **IF: 2.4**
14. Anoop, S., Ramana, M. V., Subhankar Karmakar, & Ghosh, S. (2024). Evaluating pulse-reserve characteristics of Soil-Plant continuum in India using remote sensing. *Journal of Hydrology*, 130913. **IF:6.4**
15. Thakur, D. A., Mohanty, M. P., Mishra, A., & Subhankar Karmakar, (2024). Quantifying flood risks during monsoon and post-monsoon seasons: An integrated framework for resource-constrained coastal regions. *Journal of Hydrology*, 630, 130683. **IF: 6.4**
16. Tripathy, S. S., Chaudhuri, S., Murtugudde, R., Mhatre, V., Parmar, D., Pinto, M., Subhankar Karmakar, ... & Ghosh, S. (2024). Analysis of Mumbai floods in recent years with crowdsourced data. *Urban Climate*, 53, 101815. **IF: 6.4**
17. Das, R., Chaturvedi, R. K., Roy, A., Subhankar Karmakar, & Ghosh, S. (2023). Warming inhibits increases in vegetation net primary productivity despite greening in India. *Scientific Reports*, 13(1), 21309. **IF: 4.9**
18. Deo, A., Arora, A., & Subhankar Karmakar, (2023). Decision support algorithm to revamp homestead vegetable production for climate resilience and nutrition security. *Smart Agricultural Technology*, 6, 100340.
19. Patel, P., Ankur, K., Jamshidi, S., Tiwari, A., Nadimpalli, R., Busireddy, N. K. R., Subhankar Karmakar, ... & Niyogi, D. (2023). Impact of urban representation on simulation of hurricane rainfall. *Geophysical Research Letters*, 50(21), e2023GL104078. **IF: 5.58**

20. Ghosh, M., Shastri, H., Ghosh, S., & Subhankar Karmakar, (2023). A Novel Response Priority Framework for an Urban Coastal Catchment Using Global Weather Forecasts-Based Improved Flood Risk Estimates. *Journal of Geophysical Research: Atmospheres*, 128(17), e2023JD038876. **IF: 4.4**
21. Sadhwani, K., Eldho, T. I., & Subhankar Karmakar, (2023). Investigating the influence of future landuse and climate change on hydrological regime of a humid tropical river basin. *Environmental Earth Sciences*, 82(9), 210. **IF: 3.1**
22. Mondal, K., Bandyopadhyay, S., & Subhankar Karmakar, (2023). Framework for global sensitivity analysis in a complex 1D-2D coupled hydrodynamic model: Highlighting its importance on flood management over large data-scarce regions. *Journal of Environmental Management*, 332, 117312. **IF: 8.91**
23. Sadhwani, K., Eldho, T. I., Jha, M. K., & Subhankar Karmakar, (2022). Effects of dynamic land use/land cover change on flow and sediment yield in a monsoon-dominated tropical watershed. *Water*, 14(22), 3666. **IF: 3.53**
24. Deroliya, P., Ghosh, M., Mohanty, M.P., Ghosh, S., Durga Rao, K.H.V., and Subhankar Karmakar, (2022) A novel flood risk mapping approach with machine learning considering geomorphic and socio-economic vulnerability dimensions. *Science of The Total Environment*, Elsevier, 851, p.158002. **IF: 10.754**
25. Mohanty, M.P., Durga Rao, K.H.V., Subhankar Karmakar, (2022) An integrated approach of flood risk assessment over a severely flood-prone coastal region using geomorphic classifiers and socio-economic indicators. *Journal of Geomatics*, Indian Society of Geomatics (in print).
26. Deo, A., Subhankar Karmakar, and Arora, A., (2022) Rainwater harvesting and water balance simulation-optimization scheme to plan sustainable second crop in small rain-fed systems. *Journal of Environmental Management*, Elsevier, 323, p.116135. **IF: 8.910**
27. Patidar, G., Subhankar Karmakar, and Indu, J., (2022) Flood mapping from proxy surface water and ocean topography (SWOT) satellite mission data over India. *Geocarto International*, Taylor & Francis, pp.1-18. **IF: 3.450**
28. Jain, S.K. and Subhankar Karmakar, (2022) Managed retreat as an adaptation tool for inland and coastal flooding. *Current Science*, Indian Academy of Sciences, 122(10), pp.1115-1116. **IF: 1.169**
29. Nair, A.S., Soman, M.K., Girish, P., Subhankar Karmakar, and Indu, J., (2022) Evaluating SWOT Water Level Information Using a Large Scale Hydrology Simulator: A Case Study Over India. *Advances in Space Research*, Elsevier, 70, pp. 1362–1374. **IF: 2.611**
30. Sekharan, S., Samal, D.R., Phuleria, H.C., Chandel, M.K., Gedam, S., Kumar, R., Sethi, V., Supate, A.R. and Subhankar Karmakar, (2022) River pollution monitoring over an industrial catchment in urban ecosystem: Challenges and proposed geospatial framework. *Environmental Challenges*, Elsevier, 7, p.100496.
31. Nair, A.S., Verma, K., Subhankar Karmakar, Ghosh, S. and Indu, J., (2022) Exploring the potential of SWOT mission for reservoir monitoring in Mahanadi basin. *Advances in Space Research*, Elsevier, 69(3), pp.1481-1493. **IF: 2.611**
32. Verma, K., Nair, A.S., Jayaluxmi, I., Subhankar Karmakar, and Calmant, S., (2021) Satellite altimetry for Indian reservoirs. *Water Science and Engineering*, Elsevier, 14(4), pp.277-285.
33. Tripathy, S.S., Subhankar Karmakar, and Ghosh, S., (2021) Hazard at weather scale for extreme rainfall orecast reduces uncertainty. *Water Security*, Elsevier, 14, p.100106.
34. Singh, J., Ghosh, S., Simonovic, S.P. and Subhankar Karmakar, (2021) Identification of flood seasonality and drivers across Canada. *Hydrological Processes*, Wiley, 35(10), p.e14398. **IF: 3.784**

35. Patel, P., Subhankar Karmakar, Ghosh, S., Aliaga, D.G., and Niyogi, D., (2021) “Impact of green roofs on heavy rainfall in tropical, coastal urban area. *Environmental Research Letters*, IOP Publishing, 16(7), 074051. **IF: 6.947**
36. Hari, V., Dharmasthala, S., Koppa, A., Subhankar Karmakar, Kumar, R., (2021) “Climate hazards are threatening vulnerable migrants in Indian megacities. *Nature Climate Change*, 11(8), 636-638. **IF: 28.862**
37. Malakar, K., Mishra, T., Hari, V., Subhankar Karmakar, (2021) “Risk mapping of Indian coastal districts using IPCC-AR5 framework and multi-attribute decision-making approach. *Journal of Environmental Management*, Elsevier, 294, 112948. **IF: 8.910**
38. Budakoti, S., Chauhan, T., Murtugudde, R., Subhankar Karmakar, Ghosh, S., (2021) “Feedback from vegetation to interannual variations of indian summer monsoon rainfall. *Water Resources Research*, American Geophysical Union, 57(5). **IF: 6.159**
39. Mohanty, M.P., Subhankar Karmakar, (2021). WebFRIS: An efficient web-based decision support tool to disseminate end-to-end risk information for flood management. *Journal of Environmental Management*, Elsevier, 288, p.112456. **IF: 8.910**
40. Mishra, H., Singh, J., Subhankar Karmakar, Kumar, R., (2021). An integrated approach for modeling uncertainty in human health risk assessment, *Environmental Science and Pollution Research*, Springer, <https://doi.org/10.1007/s11356-021-14531-z>. **IF: 5.190**
41. Mohanty, M.P. Subhankar Karmakar, (2021). Hydrodynamic Flood Modelling of Large Regions Under Data-Poor Situations: A Case Study of Jagatsinghpur District, Odisha. *International Journal of Business Analytics (IJBAN)*, 8(2), pp.1-16.
42. Ghosh, M., Singh, J., Sekharan, S., Ghosh, S., Zope, P.E., Subhankar Karmakar, (2021). Rationalization of automatic weather stations network over a coastal urban catchment: A multivariate approach. *Atmospheric Research*, Elsevier, 254, p.105511. **IF: 5.965**
43. Tripathy, S.S., Bhatia, U., Mohanty, M., Subhankar Karmakar, Ghosh, S., (2021). Flood evacuation during pandemic: a multi-objective framework to handle compound hazard. *Environmental Research Letters*, IOP Publishing 16(3), p.034034. **IF: 6.947**
44. Ghosh, M., Mohanty, M.P., Kishore, P. Subhankar Karmakar, (2021). Performance evaluation of potential inland flood management options through a three-way linked hydrodynamic modelling framework for a coastal urban watershed. *Hydrology Research*, IWA Publishing. 52(1), pp.61-77. (Accepted in 2020). **IF: 2.752**
45. Varekar, V., Yadav, V. Subhankar Karmakar, (2020). Rationalization of water quality monitoring locations under spatiotemporal heterogeneity of diffuse pollution using seasonal export coefficient. *Journal of Environmental Management*, Elsevier. 277, p.111342. **IF: 8.910**
46. Yadav, V., Kalbar, P.P., Subhankar Karmakar, Dikshit, A.K., (2020). A two-stage multi-attribute decision-making model for selecting appropriate locations of waste transfer stations in urban centers. *Waste Management*, Elsevier. 114, pp.80-88. **IF: 8.816**
47. Mohanty, M.P., Sahil, M., Subhankar Karmakar, (2020). Flood management in India: A focussed review on the current status and future challenges. *International Journal of Disaster Risk Reduction*, Elsevier. 49, 101660. **IF: 4.842**
48. Sudharsan, N., Subhankar Karmakar, Fowler, H.J., Hari, V., (2020). Large-scale dynamics have greater role than thermodynamics in driving precipitation extremes over India. *Climate Dynamics*, Springer, 55(9), pp.2603-2614. **IF: 4.901**

49. Hari, V., Villarini, G., Subhankar Karmakar, Wilcox, L.J., Collins, M., (2020). Northward propagation of the Intertropical Convergence Zone and strengthening of Indian summer monsoon rainfall. *Geophysical Research Letters*, American Geophysical Union. 47(23), p.e2020GL089823. **IF: 5.576**
50. Mohanty, M.P., Nithya, S., Nair, A.S., Indu, J., Ghosh, S., Bhatt, C.M., Rao, G.S., Subhankar Karmakar, (2020). Sensitivity of various topographic data in flood management: Implications on inundation mapping over large data-scarce regions. *Journal of Hydrology*, Elsevier 590, p.125523. **IF: 6.708**
51. Tripathy, S.S., Vittal, H., Subhankar Karmakar, Ghosh, S., (2020). Flood risk forecasting at weather to medium range incorporating weather model, topography, socio-economic information and land use exposure. *Advances in Water Resources*, Elsevier, 146, p.103785. **IF: 5.361**
52. Patel, P., Subhankar Karmakar, Ghosh, S., Niyogi, D., (2020). Improved simulation of very heavy rainfall events by incorporating WUDAPT urban land use/land cover in WRF. *Urban Climate*, Elsevier, 32, 100616. **IF: 6.663**
53. Singh, J., Subhankar Karmakar, Paimazumder, D., Ghosh, S., Niyogi, D., (2020). Urbanization alters rainfall extremes over the contiguous United States. *Environmental Research Letters*, IOP Publishing, 15(7), 074033. **IF: 6.947**
54. Gusain, A., Mohanty, M. P., Ghosh, S., Chatterjee, C., Subhankar Karmakar, (2020). Capturing transformation of flood hazard over a large River Basin under changing climate using a top-down approach. *Science of The Total Environment*, Elsevier, 726, 138600. **IF: 10.754**
55. Mohanty, M. P., Sherly, M. A., Ghosh, S., Subhankar Karmakar, (2020). Tide-Rainfall Flood Quotient: An incisive measure of comprehending a region's response to storm-tide and pluvial flooding. *Environmental Research Letters*, IOP Publishing. 15(6), 064029. **IF: 6.947**
56. Sharma, T., Vittal, H., Subhankar Karmakar, Ghosh, S., (2020). Increasing agricultural risk to hydro-climatic extremes in India. *Environmental Research Letters*, IOP Publishing, 15(3), 034010. **IF: 6.947**
57. Vittal, H., Subhankar Karmakar, Ghosh, S., Murtugudde, R, (2020). A comprehensive India-wide social vulnerability analysis: highlighting its influence on hydro-climatic risk. *Environmental Research Letters*, IOP Publishing, 15(1), 014005. **IF: 6.947**
58. Mohanty, M.P., Vittal, H., Yadav, V., Ghosh, S. Srinivasa Rao, G., Subhankar Karmakar, (2020). A new bivariate risk classifier for management considering hazard and socio-economic dimensions. *Journal of Environmental Management*, Elsevier, Volume 255, 109733. **IF: 8.910**
59. Rehana, S., Rajulapati, C.R., Ghosh, S., Subhankar Karmakar, Mujumdar, P., (2020). Uncertainty quantification in water resource systems modeling: Case studies from India. *Water*, 12(6), p.1793. **IF: 3.530**
60. Yadav, V., Subhankar Karmakar, (2020). Sustainable collection and transportation of municipal solid waste in urban centers. *Sustainable Cities and Society*, Elsevier, 101937. **IF: 10.696**
61. Gusain, A., Ghosh, S., Subhankar Karmakar, (2020). Added value of CMIP6 over CMIP5 models in simulating Indian summer monsoon rainfall. *Atmospheric Research*, Elsevier, 232, 104680. **IF: 5.369**
62. Ghosh, S., Subhankar Karmakar, Saha, A., Mohanty, M. P., Ali, S., Raju, S. K., ... Murty, P. L. N., (2019). Development of India's first integrated expert urban flood forecasting system for Chennai. *Current Science*, Indian Academy of Sciences, 117(5), 741-745. **IF: 1.169**
63. Patel, P., Ghosh, S., Kaginalkar, A., Islam, S., Subhankar Karmakar, (2019). Performance evaluation of WRF for extreme flood forecasts in a coastal urban environment. *Atmospheric Research*, Elsevier, 223, 39-48. **IF: 5.965**

64. Gusain, A., Vittal, H., Kulkarni, S., Ghosh, S., Subhankar Karmakar, (2019). Role of vertical velocity in improving finer scale statistical downscaling for projection of extreme precipitation. *Theoretical and Applied Climatology*, Springer, 137(1-2), 791-804. **IF: 3.410**
65. Shastri, H., Ghosh, S., Paul, S., Shafizadeh-Moghadam, H., Helbich, M., Subhankar Karmakar, (2019) "Future urban rainfall projections considering the impacts of climate change and urbanization with statistical–dynamical integrated approach." *Climate Dynamics*, Pub. Springer, 1-19. 52: 6033. <https://doi.org/10.1007/s00382-018-4493-8>. **IF: 4.901**
66. Yadav, V., Subhankar Karmakar, Kalbar, P. P., and Dikshit, A. K., (2019). PyTOPS: A Python based tool for TOPSIS. *SoftwareX*, Elsevier, 9, 217-222. **IF: 2.868**
67. Shashikanth, K., Ghosh, S., Vittal, H., Subhankar Karmakar, (2018). Future projections of Indian summer monsoon rainfall extremes over India with statistical downscaling and its consistency with observed characteristics. *Climate dynamics*, Springer, 51(1-2), 1-15. <https://doi.org/10.1007/s00382-017-3604-2>. **IF: 4.901**
68. Devanand, A., Ghosh, S., Paul, S., Subhankar Karmakar, Niyogi, D., (2018). Multi-ensemble regional simulation of Indian monsoon during contrasting rainfall years: role of convective schemes and nested domain. *Climate dynamics*, Springer, 50(11-12), 4127-4147. DOI 10.1007/s00382-017-3864-x. **IF: 4.901**
69. Mohanty, M. P., Sherly, M. A., Ghosh, S., Subhankar Karmakar, (2018) "Regionalized design rainfall estimation: An appraisal of inundation mapping for flood management under data-scarce situations." *Water Resources Management*, Springer, 32 (14), 4725-4746. **IF: 4.426**
70. Yadav, V., Subhankar Karmakar, Dikshit, A. K., Bhurjee, A. K., (2018) "Interval-valued facility location model: An appraisal of municipal solid waste management system", *Journal of Cleaner Production*, Elsevier, Vol.171, pp. 250-263. **IF: 11.072**
71. Mishra, H., Subhankar Karmakar, Kumar, R., Kadambala, P., (2018) "A long-term comparative assessment of human health risk to leachate-contaminated groundwater from heavy metal with different liner systems", *Environmental Science and Pollution Research*, Springer, Vol. 25(3), pp. 2911-2923. **IF: 5.190**
72. Sharma, T., Vittal, H., Chhabra, S., Salvi, K., Ghosh, S., Subhankar Karmakar, (2018) "Understanding the cascade of GCM and downscaling uncertainties in hydro-climatic projections over India" *International Journal of Climatology*, John Wiley & Sons Ltd, Vol. 38, pp. e178-e190. **IF: 3.651**
73. Paul, S., Ghosh, S., Mathew, M., Devanand, A., Subhankar Karmakar, Niyogi, D., (2018) "Increased Spatial Variability and Intensification of Extreme Monsoon Rainfall due to Urbanization", *Scientific Reports*, Nature Publishing Group, Vol. 8 (1), pp. 3918. **IF: 4.997**
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Papers in refereed conference

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2. Ranjan, R., & Subhankar Karmakar (2024). Compound Wind and Rainfall Extremes from Tropical Cyclones in India: A First High-Resolution Hazard Mapping. AGU24. (Oral Presentation).
3. Chakraborty, A., Ghosh, S., & Subhankar Karmakar (2024, April). India-wide Extreme Rainfall Driven Flood Hazard Forecasting. In EGU General Assembly Conference Abstracts (p. 2485).
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5. Patidar, G., Indu, J., & Subhankar Karmakar (2024, April). Improving Flood Mapping Capabilities and Hydrological Model Calibration in India through the Surface Water and Ocean Topography (SWOT) Mission. In EGU General Assembly Conference Abstracts (p. 146).
6. Patra, N.R., & Subhankar Karmakar (2024, September). Investigating perceptions of flood resilience: Methodological insights and implications for India. In 8th Indian Water Week 2024, Bharat mandapam, Hall No. 12A, Pragati Maidan, New Delhi, India, 17-20 September 2024, (IWW 2024 recommendations, p. 55). (Oral Presentation).
7. Dev, I., Chakraborty, A., & Subhankar Karmakar (2024, January). Comprehensive socioeconomic vulnerability analysis using robust DEA technique at the sub-district scale in Maharashtra. In Undergraduate Research Conclave (ResCon) 2024, IIT Bombay, Maharashtra, India, 10-14 January 2024. (Poster presentation).
8. Ranjan, R., Hari, V., Ghosh, S., Subhankar Karmakar, (2024, March). Exploring Concurrent Hazards of Marine Heatwaves & Tropical Cyclones in North Indian Ocean. In IMSP National Symposium on Heatwaves, (IMSP Abstract heatwaves 2024, pp. 66), Pune, India, 18-19 March 2024, (Poster Presentation).
9. Shilin A., Subhankar Karmakar, (2024, March). Heat Stress Hazard Mapping: Insight to a Novel Approach. In IMSP National Symposium on Heatwaves, (IMSP Abstract heatwaves 2024, pp. 39), Pune, India, 18-19 March 2024, (Poster Presentation), (**received Best Poster Award**).

10. Ganjir, G., Reddy, J., & Subhankar Karmakar, (2024). Reliability–Resilience–Vulnerability Analysis of Droughts Over Maharashtra. In International Conference Innovation in Smart and Sustainable Infrastructure (pp. 87-98). Springer, Singapore.
11. Ranjan, R., Subhankar Karmakar, (2024, February). High-Resolution Risk Mapping of Extreme Wind Hazard over India. In National Environmental Conference 2024, IIT Bombay, India, 15-17 February 2024, (NEC 2024 Abstracts, pp. 74). (Oral Presentation), (**received Best Oral Presentation Award**).
12. Parmar, J., Subhankar Karmakar, (2024, February). Identification of Dominant Flood Descriptors for Flood Risk Analysis. In National Environmental Conference 2024, IIT Bombay, India, 15-17 February 2024, (NEC 2024 Abstracts, pp. 127). (Oral Presentation).
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22. Sadhwani, K., Eldho, T. I., Jha, M. K., & Subhankar Karmakar, (2022, December). Impacts of landuse/land cover change on flow and sediment yield in monsoon dominated watershed. In AGU Fall Meeting Abstracts (Vol. 2022, pp. GC34B-02).

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48. Sherly, M. A., Janadri, K. K., Subhankar Karmakar, (2019) “Fuzzy cognitive mapping of flood risk perception and adaptive capacity of slum communities over the most flood-prone city in India”, Proceedings of 4th IMA International Conference on Flood Risk, Swansea, UK, 12-13 September 2019 (Oral Presentation, Published in proceedings)
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53. Patel, P., Aliaga, D., Subhankar Karmakar, Ghosh, S., & Niyogi., D., (2019) "Green Roofs to mitigate the urban extreme precipitation events? An experimental study over Mumbai, India." In AGU Fall Meeting 2019. AGU, 2019 (Poster Presentation)
54. Ghosh, M., Singh, J., Subhankar Karmakar, Ghosh, S., (2019) “Nonstationary Frequency Analysis over a Flood Prone Indian Catchment”, 11th World Congress on Water Resources and Environment, 49-50, Madrid, Spain, 25-29 June 2019 (Oral Presentation, Published in proceedings)
55. Mohanty, M.P., Subhankar Karmakar, Ghosh, S., (2019) “WEBFRIS: A web-based flood information system for enhanced resilience through risk awareness”, 11th World Congress on Water Resources and Environment, 35-36, Madrid, Spain, 25-29 June 2019 (Oral Presentation, Published in proceedings)
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Patent:

Ghosh, S., Shrabani T. and Subhankar Karmakar, “Method for Real Time Forecasting of Flood Risk Considering Hazard, Exposure and Vulnerability,” Indian Patent - Grant No.: 553017, Filing Date: January 01, 2020.

Products developed: Include any details of commercialization (or acceptance by a company)

- (a) Development of a Climate Adaptation Mobile App for 103 blocks in the states of Chattisgarh, Odisha, and Bihar (in 2018): Accepted by IPE Global and submitted to Infrastructure for Climate Resilient Growth (ICRG) programme (Ministry of Rural Development, GoI) for Climate Resilient work planning to be used in Mahatma Gandhi National Rural Employment Gurantee Act (MGNREGA). [with Prof. P. Banerji (PI) and Prof. S. Ghosh, Civil Engg., IIT Bombay; Prof. S. Karmakar (developed a complete Vulnerability assessment module), ESED, IIT Bombay]

- (b) A Web-based Expert System for Real time Flood Forecasting System in Chennai: accepted by the Project Review Monitoring Committee set up by Principal Scientific Advisor to the Government of India and transferred to Integrated Coastal and Marine Area Management (ICMAM, now National Centre for Coastal Research - NCCR), Chennai (Ministry of Earth Sciences, GoI) in 2018 [with Prof. S. Ghosh (PI), Prof. Indu J., Prof. M.R. Behera, Civil Engg.]. Prof. S. Karmakar was the lead in developing a complete 3-way Flood modeling module.
- (c) The technology developed for a comprehensive mapping of flood risk in changing climate in the sponsored research project funded by STC-IITB (ISRO) (2014 – 2018, project code 14ISROC009) has been shared with National Remote Sensing Centre (NRSC), ISRO on 19th June 2018. The proposed framework is successfully demonstrated on Jagatsinghpur district located in the lower Mahanadi basin, Odisha by the PI, Prof. S. Karmakar.

MAJOR CONSULTANCY SERVICES

1. ICRG: Technical Support on Climate Resilient Design for MGNREGA Works, Funding agency - ICRG Project for IPE Global (2017-18) as Co-PI
2. Technical Audit on Surya II Water Supply Scheme, Funding agency - Gharpure Engineering and Construction (P) Ltd. (2016-18) as **PI**
3. Technical Inspection of 100 MLD Vasai Virar Water Supply Scheme, Funding agency - Gharpure Engineering and Construction (P) Ltd. (2015-16) as Co-PI
4. Assessment of Pollution Load in Ulhas River Catchment and Preparation of Action Plan for Control of Water Pollution of River Ulhas, River Waldhuni and Ulhas Creek, Funding agency - Maharashtra Pollution Control Board (2014-16) as **PI**
5. Assessment of effluent discharge from JK Paper Ltd, Unit-CPM and water quality assessment of Ghodanala and river Tapi, Funding agency - J. K. Paper Ltd. (2014-15) as Co-PI

SPONSORED RESEARCH PROJECTS

14 Completed (8 as PI, 6 as Co-PI), **5 Ongoing** (4 as PI, 1 as Co-PI)

Sr. No.	From	To	Role	Agency Name	Project Title	Cost (in Lakhs) *	Status
1	2024	2027	PI	IITB-GESH	A Flood Information System to Spatially Map the Flood Resilience at a National-scale	63.5	Ongoing
2	2025	2028	PI	Department of Science and Technology, GoI (Climate, Energy and Sustainable Technology, CEST)	Urban Climate Extremes: Early Warning and Impact Assessment	250.0	Approved

Sr. No.	From	To	Role	Agency Name	Project Title	Cost (in Lakhs) *	Status
3	2024	2026	Co-PI	Ministry of Human Resource Development (Ministry of Education (MoE), GoI)	Promoting Satellite based Agricultural System Modelling to Support Agricultural Risk Management for Food Security and Rural Welfare.	25	Ongoing
4	2022 (July)	2025 (June)	PI	Department of Science and Technology, GoI (through GISE hub)	Development of a Web-based Flood-risk Forecasting system for Maharashtra	23.9	Ongoing
5	2021	2025 (April)	PI	IRCC, IIT Bombay (Award grant)	A Web-based Flood Information System to Spatially Map the Flood-risk	5.0	Ongoing
6	2019	2022	PI	STC-IITB (ISRO)	Mapping flood risk in data poor regions enforcing combined geomorphic and socio-economic indicators: An application to Jagatsinghpur District Odisha	23.5	Completed
7	2018	2024	PI	Department of Science and Technology, GoI	DST-Centre of Excellence in Climate Studies, IIT Bombay †	750.0	Completed
8	2019	2022	Co-PI	Department of Science and Technology, GoI	Autonomous wireless sensor network for Real-time water Quality Monitoring	239.0	Completed
9	2020	2023	Co-PI	DST-CNRS Targeted Programme, GoI	Monitoring and modelling of the Mahanadi river basin in preparation of the SWOT	31.3	Completed
10	2018	2022	Co-PI	Ministry of Water Resources (MoWR), GoI	Impact of climate change on water resources in river basins from Tadri to Kanyakumari	128.0	Completed
11	2013	2019	PI	IRCC	IRCC, IITB internship schemes: 01 (2013-14) 01 (2017), 01 (2018-19), 01 (2023), 01 (2024), 01 (2025)	6.0	Completed
12	2016	2019	Co-PI	Ministry of Earth Sciences (MoES), GoI (Indo-UK)	Coupled Human And Natural Systems Environment (CHANSE) for water management under uncertainty in the Indo-Gangetic Plain	98.8	Completed
13	2016	2018	Co-PI	Office of the Principal Scientific Advisor, GoI	Design of an Expert System for Flood Forecasting and Management for the city of Chennai (1.5 years in mission mode)	271.0	Completed
14	2014	2018	PI	STC-IITB (ISRO)	A Comprehensive Mapping of Flood Risk in Changing Climate: An Application to Jagatsinghpur District, Orissa	41.0	Completed
15	2014	2018	PI	Ministry of Earth Sciences (MoES), GoI	Near-Real-Time Urban Flood Forecasting System	93.0	Completed

Sr. No.	From	To	Role	Agency Name	Project Title	Cost (in Lakhs) *	Status
16	2014	2018	Co-PI	Ministry of Earth Sciences (MoES), Gol	Seasonal Hydrologic Predictions based on Regional Forecasts of Monsoon Rainfall with CWRP and Statistical Downscaling	99.0	Completed
17	2012	2016	PI	Thane Municipal Corporation	Evaluation of trophic state of lakes in thane city	2.0	Completed
18	2012	2015	PI	Department of Science & Technology, Gol	Multivariate flood frequency analysis: nonparametric approach [adjudged "Excellent" in May 2014 by expert committee appointed by DST.	18.6	Completed
19	2008	2012	PI	IRCC Seed Grant	Uncertainty modeling in waste load allocation for a river system	5.0	Completed

* Total sponsored projects of **INR 2173.6 lakhs** (**INR 1281.5 lakhs** as Principal Investigator, and **INR 892.1 lakhs** as Co-principal Investigator)

† The DST-sponsored Centre of Excellence in Climate Studies at IIT Bombay (DST-CoECS, IIT Bombay) was established in 2012 as India's first DST-CoE in Climate Change under the National Mission on Strategic Knowledge for Climate Change (NMSKCC). The recent phase of the project (Phase-II) commenced in March 2018 and was successfully completed in March 2024 under the leadership of Principal Investigator Prof. Subhankar Karmakar, alongside Co-investigators Prof. Subimal Ghosh, Prof. Chandra Venkataraman, and Prof. Trupti Mishra. DST-CoECS, IIT Bombay, focused broadly on critical climate change areas, including Dynamics and Modelling, Impact and Adaptation, Mitigation and Policy, and Aerosol and Air-quality. The research group associated with the centre involved 15 faculty members across 9 disciplines, highlighting the project's interdisciplinary nature. The centre's interdisciplinary Ph.D. programme trained 15 climate change professionals (13 Ph.D. scholars and 2 research associates). From 2018-2024, DST-CoECS achieved substantial research outcomes, including approximately 110 high-impact international journal publications, 60+ international conference proceedings, and contributions to 22 course designs. Notable research accomplishments include India's first irrigation module, comprehensive coastal vulnerability/risk maps, agricultural and flood risk mapping at multiple scales, and innovative tools like the Sentinel-1 based Inland water dynamics Mapping System (SIMS). Additionally, the centre filed three patents and conducted over 100 capacity-building programmes. The overall performance of the DST-CoECS at IIT Bombay was adjudged "Excellent" by an expert committee appointed by the Department of Science and Technology, Government of India, in December 2023.

SELECTED INVITED RESEARCH PRESENTATIONS

1. Invited Session Talk: "Country-Scale Flood Risk Mapping Using GFM-Derived Hazards and Vulnerability Analysis," 3rd Asia International Water Week (AIWW) in Beijing, China, scheduled from 23rd to 28th September 2024 (presented in virtual mode).

2. Invited Session Talk: "Mapping Floods Across Different Scales: Global, Regional, and Local," represented the International Conferences on Flood Management (ICFM; www.icfm.world), Session T3A3, 10th World Water Forum, May 18-25, 2024 | Bali, Indonesia.
3. Invited Session Talk: "Performance evaluation of potential structural, socio-economic and nature-based solutions for flood risk reduction," in the session - *Nature-based Solutions for water-related disaster prevention and mitigation*, The XVIII World Water Congress will take place in Beijing, China, 11 to 15 September 2023.
4. Invited Session Talk: "Mapping Flood Risk under Changing Climate," The China Institute of Water Resources and Hydropower Research (IWHR), Beijing, China, 13th September 2023.
5. Keynote lecture on "Mapping flood risk under changing climate" in the 26th International Conference on Hydraulics, Water Resources and Coastal Engineering HYDRO 2021 INTERNATIONAL at SVNIT Surat, Gujarat, India December 23-25, 2021.
6. Invited talk on Urban Flood Risk Management, AICTE short-course, IIT Madras, March 22 - 27, 2021.
7. Keynote speaker in the online faculty development programme "State-of-the-Art Experimental and Numerical Techniques in Civil Engineering" organized by the Department of Civil Engineering, Saintgits College of Engineering, sponsored by the A P J Abdul Kalam Technological University from 1st - 22nd March 2021, SAINTGITS COLLEGE OF ENGINEERING (Approved by AICTE & Affiliated to APJ Abdul Kalam Technological University), Kottayam, Kerala, 2 March 2021.
8. Hydro-climatic Extremes and Flood Management using Risk Mapping, ATAL ACADEMY, Government of India Sponsored Short Term Course, Organized by MME Department, NIT Durgapur; January 18-22, 2021.
9. Online Winter School - 2020 on Adaptive Management of Floods in coastal wetlands in the Context of a Changing Climate, CTARA, IIT Bombay, 7 - 13 December, 2020.
10. An Introduction to Uncertainty Modeling of Environmental Systems, TEQIP Course on "Introduction to Environmental Engineering" For Government College of Technology Coimbatore - Organized by Environmental Science and Engineering Department, IIT Bombay, 14-23 December 2020.
11. Plenary talk in the 1st International Conference on Urban Science and Engineering (ICUSE), 28 -29 Feb 2020, Centre for Urban Science and Engineering, Indian Institute of Technology Bombay, Mumbai, *India on Urban Flood Forecasting and Risk Mapping: Present Status and Future Needs*.
12. Invited talk in AICTE funded Faculty Development Programme (FDP) on "Applications of GPS and Remote Sensing in Civil Engineering", 10th January 2020 at SPCE, Mumbai, on *Risk Assessment and Mapping through Remote Sensing and GIS for Flood Management*.

13. Invited talk on *Urban Flood Forecasting and Risk Management: Present Status and Future Needs* at Department of Civil Engineering, Indian Institute of Technology Indore, 7 October 2019.
14. Invited talk on *Flood Management* in the Preparatory Meeting of DST-CNRS project on Monitoring and Modelling of the Mahanadi river basin in preparation of the SWOT, 17 September 2019, IIT Bombay, India
15. Invited talk in the National Workshop on Urban Climate Network, on *Understanding the urban climate processes of Mumbai city and generating extremes (floods and heat-waves) projections, risk-vulnerability maps* held on 2-3 August 2019, Interdisciplinary Centre for Water Research (ICWaR), IISc Bangalore, India.
16. Invited talk in TEQIP III FDP on "Innovative Technologies for Sustainable Water Resources Management", June 10, 2019 at VJTI, Mumbai, on *The Need for Uncertainty Modeling and Risk Analysis on Environmental and Hydro-climatic Systems*.
17. Invited talk in the National conference on Flood Early Warning for Disaster Risk Reduction, 30-31 May 2019, National Remote Sensing Centre (NRSC), Hyderabad, India on *Real-time Integrated Flood Forecasting for Chennai*.
18. Invited talk in the workshop - "Urban Floods" on *Urban Flood Risk Mapping: Present Status and Future Needs* held on 27-29 June, 2018; IISc Bangalore, India.
19. Invited presentation on *Rationalization of Water Quality Monitoring Networks in India* in Environmental Science & Technology Symposium - India, held on April 7, 2018, at Shiv Nadar University, organized by American Chemical Society (ACS), India Chapter.
20. Invited presentation on "GIS-based Risk Mapping and Uncertainty Modeling for Scientific Flood Management" in Short Term Training Program on - "Application of Remote Sensing and GIS in Disaster Management: Response, Recovery and Reconstruction" Mahatma Education Society's Pillai HOC College of Engineering & Technology, Rasayani, Department of Civil Engineering, 5 - 11 January 2018.
21. Invited presentation on "Urban Flood Risk Mapping: Present Status and Future Needs" in DST's National Workshop on "Urban Climate: Science, Impacts and Adaptation" as part of proposed DST's National Network Programme on Urban Climate, 21- 22 September, 2017; IIT Bhubaneswar, India.
22. Keynote lecture on *Uncertainty Modeling and Risk Analysis of Environmental and Hydro-climatic Systems*, in the 5th National Conference on "Role of Engineers in Nation Building" (NCRENB 2017), VIVA Inst. of Tech, Virar, India, 3-4 March 2017.
23. Invited presentation on "Climate Change Impact Assessment" in GIAN programme on Climate Change: Science, Impacts and Adaptation (1-8 December 2016) organized by Prof. Dev Niyogi, Purdue University; Prof. U.C. Mohanty, IIT Bhubaneswar; Prof. V. Vinoj, IIT Bhubaneswar.

24. Invited lecture on *Uncertainty Modeling and Human Health Risk Assessment: A Case Study of Municipal Solid Waste Management*, Quantitative Sustainability Assessment (QSA) Division, DTU Management Engineering, Technical University of Denmark (DTU), Denmark, 22 June 2016.
25. Keynote lecture on "Uncertainty Modeling and Risk Analysis of Environmental and Hydro climatic Systems" in the 4th Annual International Conference entitled "India Biodiversity Meet – 2016 (IBM 2016)" held in Indian Statistical Institute (ISI), Kolkata, India, October 24-27, 2016.
26. Invited presentation on "Uncertainty modeling" in the Workshop - "Statistical Applications for Environmental Analysis and Modeling" September, 21-23, 2016, Health Physics Auditorium, CTCRS building Anushaktinagar, Bhaba Atomic Research Centre, Mumbai, India
27. Invited talk in the workshop - "Water Security under Global Change" on *Rationalization of Surface Water Quality Monitoring Network* held on April 13, 2015, jointly organised by the Center for Ecology and Hydrology (CEH), Wallingford, UK and the Department of Civil Engineering, Indian Institute of Science, Bangalore, Bangalore, India.
28. Invited talk in the Session 3 - *Uncertainty modelling and impacts assessment on Assessing Impacts of Climate Change* held on March 20, 2015 at the Centre for Excellence in Climate Studies, Indian Institute of Technology Bombay, Victor Menezes Convention Centre, IIT Bombay, Powai, Mumbai 400076, India.
29. Invited talk in the Royal Society and DST Scientific Seminar on "Water, Food and Energy Nexus" on *Rationalization of river water quality monitoring network* considering seasonal variation of pollution loads, held on March 2, 2015, IIT Gandhinagar, Gandhinagar.
30. Invited presentation on *Design of sampling locations for river water quality monitoring considering seasonal variation of discrete and diffuse pollution loads* on 10 May 2013 at Centre for Water Resources Development and Management (CWRDM), Kozhikode, Kerala, An Institution of the Kerala State Council for Science, Technology and Environment, Government of Kerala.
31. Invited presentation in one-day workshop on Building climate resilient cities: responding to the emerging water crisis, on *Risk Management, Floods and Climate Change*. Monash Sustainability Institute and TERI, New Delhi, January 30, 2013.
32. Invited presentation in a Brain-storming session on Downscaling and Impact Assessment for River-basin Scale Studies, on *Vulnerability, Hazard and Risk to Extremes*. Indian National Committee on Climate Change (INCCC), Ministry of Water Resources (MoWR), New Delhi, October 19, 2012.
33. Invited presentation on *Flood Risk-Vulnerability Analysis*, Centre for Hazards Research, Department of Civil and Environment Engineering, National University of Singapore, SINGAPORE, January 6, 2011.

34. Invited presentation on *Optimizing the Monitoring Program in the Neuse Estuary: A Design based on Entropy within a Hierarchical Spatio-Temporal Bayesian Framework*, Nicholas School of the Environment, Duke University, North Carolina, USA, August 30, 2010.
35. Invited presentation on *Systems Techniques and Uncertainty Modeling for Water Resources and Environmental Management*, Nicholas School of the Environment, Duke University, North Carolina, USA, June 22, 2010.
36. Invited presentation on *Vulnerability and Risk analysis of Urban Flooding Problems* in National Workshop on Coastal Urban Flood Hazards & Management, Supported by DST, February 19-20, 2010, at IIT Bombay, Mumbai, India.
37. Invited presentation on *Risk Management* in Puri, Orissa, India, organized by Monash University through AUSAID funding 21-22 November 2009.
38. Invited presentation on *Flood Management* in Monash University, 1-2 September 2009, Melbourne, Australia.
39. Invited presentation in Division of Environmental and Water Resources Engineering, School of Civil & Environmental Engineering (CEE) under the GlobalTECH programme on *Systems Techniques and Uncertainty Modeling in Water Resources Management*, 6-8 April 2009, Nanyang Technological University, Singapore.
40. Keynote presentation on *Assessing Vulnerability to Natural Hazards* at Pravara Rural Engineering College, Loni (under Pune University, India) on 26th September 2008.
41. Invited presentation on *Advances of grey optimization in water quality management*, in the Brainstorming Work shop on Application of Advanced Soft Computing Techniques in Geo-Spatial Data Analysis, Supported by DST, September 22-23, 2008, Department of Civil Engineering, Indian Institute of Technology Bombay, Mumbai, India.

TEACHING EXPERIENCE (from ESED and Centre for Climate Studies, IIT Bombay)

Prof. Karmakar has extensive teaching experience at IIT Bombay, India, contributing significantly to both undergraduate (UG) and postgraduate (PG) education. He has taught over 15 unique courses across various academic sessions at IIT Bombay. He designed and developed three new courses: 'Introduction to Risk Analysis' (CM 801/601, sole instructor), 'Simulation and Optimization Techniques in Environmental Systems' (ES 407, sole instructor), and 'Introduction to Climate Change' (CM 803/603 – designed with Prof. C. Venkataraman, Prof. S. Ghosh, Prof. T. Mishra and Prof. A.B. Rao). These courses have been integral components of the curriculum, offered as UG core and PG elective courses in Centre for Climate Studies and within the Environmental Science and Engineering Department. His diverse teaching portfolio underscores his significant role in developing comprehensive education programs focused on risk analysis, environmental systems modeling, and climate studies.

Academic year & Semester	Course (number and name)	Credits	Co-instructors (if any)	Remarks
2024-2025 Spring (Ongoing semester)	CM 801: Introduction to Risk Analysis* (the UG component CM 601 was merged with CM 801)	6	None	Full (offered from Centre for Climate Studies, also an ESED PG elective)
	ES 664: Environmental Systems Modelling	6	Prof. A. Shriwastav, Prof. Vamsi, B.	33.3% sharing
2024-2025 Autumn	ES 407: Simulation & Optimization Techniques in Environmental Systems*	6	Prof. Tabish Nawaz	50% sharing
	ES 657: Water Resources and Environmental Hydraulic	6	Prof. Vamsi, B.	50% sharing
2023-2024 Spring	CM 801: Introduction to Risk Analysis* (the UG component CM 601 was merged with CM 801)	6	None	Full (offered from Centre for Climate Studies, also an ESED PG elective)
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. Chakraborty, A.	50% sharing
2023-2024 Autumn	ES 301: Introduction to Fluid Mechanics	6	None	Full
	ES 407: Simulation & Optimization Techniques in Environmental Systems*	6	Prof. Tabish Nawaz	50% sharing
	ES 657: Water Resources and Environmental Hydraulic	6	Prof. Vamsi, B.	50% sharing
2022-2023 Spring	CM 801: Introduction to Risk Analysis* (the UG component CM 601 was merged with CM 801)	6	None	Full (offered from IDP Climate Studies, also an ESED PG elective)
	ES 206: Water Resources & Open Channel Flow	6	Prof. Vamsi, B.	50% sharing
2022-2023 Autumn	ES 301: Introduction to Fluid Mechanics	6	None	Full
	ES 407: Simulation & Optimization Techniques in Environmental Systems*	6	Prof. Tabish Nawaz	50% sharing
	ES 659: Mathematics and Statistics for Environmental Engineering	6	Prof. A. Shriwastav	50% sharing
2021-2022 Spring	CM 801: Introduction to Risk Analysis* (the UG component CM 601 was merged with CM 801)	6	None	Full (offered from IDP Climate Studies, also an ESED PG elective)
	ES 206: Water Resources & Open Channel Flow	6	Prof. Vamsi, B.	50% sharing
	ES 216: GIS Aided Environmental Planning and Management	6	Prof. Srinidhi, B.	50% sharing
2021-2022 Autumn	ES 301: Introduction to Fluid Mechanics	6	None	Full
	ES 407: Simulation & Optimization Techniques in Environmental Systems*	6	Prof. Tabish Nawaz	50% sharing
	ES 659: Mathematics and Statistics for Environmental Engineering	6	Prof. A. Shriwastav	50% sharing
2020-2021 Spring	ES 206: Water Resources & Open Channel Flow	6	Prof. A. Garg	50% sharing

Academic year & Semester	Course (number and name)	Credits	Co-instructors (if any)	Remarks
	ES 216: GIS Aided Environmental Planning and Management	6	Prof. S. Durbha (CSRE)	50% sharing
2020-2021 Autumn	ES 301: Introduction to Fluid Mechanics	6	None	Full
	ES 655: Environmental Management	6	Prof. A. Garg	50% sharing
	ES 659: Mathematics and Statistics for Environmental Engineering	6	Prof. A. Shriwastav	50% sharing
2019-2020 Spring	ES 206: Water Resources & Open Channel Flow	6	Prof. M. Sahu	50% sharing
	CM 801/601(UG): Introduction to Risk Analysis*	6	None	Full (offered from IDP Climate Studies, also an ESED PG elective)
2019-2020 Autumn	CM 803/CM 603(UG): Introduction to Climate Change*	6	Prof. A.B. Rao, Prof. T. Mishra	33.3% sharing (offered from IDP Climate Studies)
	ES 221: Mathematics Foundation	6	Prof. A. Shriwastav	50% sharing
	ES 301: (UG and PG combined) Introduction to Fluid Mechanics	6	None	Full
	ES 655: Environmental Management	6	Prof. A. Garg	50% sharing
2018-2019 Spring	ES 200: Environmental Studies: Science and Engineering	6	Prof. V. Sethi, Prof. M. Chandel	33.3% sharing
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg, Prof. S. P. Singh	33.3% sharing
	ES 206: Water Resources & Open Channel Flow	6	Prof. M. Sahu	50% sharing
	CM 801/601(UG): Introduction to Risk Analysis	6	None	Full (offered from IDP Climate Studies, also an ESED PG elective)
2018-2019 Autumn	ES 221: Mathematics Foundation	6	Prof. A. Shriwastav	50% sharing
	ES 207: Introduction to Fluid Mechanics	6	None	Full
	ES 655: Environmental Management	6	Prof. A. Garg	50% sharing
2017-2018 Spring	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 206: Water Resources & Open Channel Flow	6	None	Full
	CM 801/601(UG): Introduction to Risk Analysis	6	None	Full (offered from IDP Climate Studies, also a CESE PG elective)
2017-2018 Autumn	ES 221: Mathematics Foundation	6	Prof. A. Shriwastav	50% sharing

Academic year & Semester	Course (number and name)	Credits	Co-instructors (if any)	Remarks
	ES 207: Introduction to Fluid Mechanics	6	None	Full
	CM 803/CM 603 (UG): Introduction to Climate Change	6	Prof. A.B. Rao, Prof. C. Venkataraman	33.3% sharing
	ES 655: Environmental Management	6	Prof. A. Garg	50% sharing
2016-2017 Spring	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 206: Water Resources & Open Channel Flow	6	None	Full
	CM 801: Introduction to Risk Analysis	6	None	Full (offered from IDP Climate Studies, also a CESE PG elective)
2016-2017 Autumn	ES 221: Mathematics Foundation	6	None	Full
	ES 207: Introduction to Fluid Mechanics	6	Prof. A. Garg	50% sharing
	CM 803/CM 603 (UG): Introduction to Climate Change	6	Prof. A.B. Rao, Prof. C. Venkataraman	33.3% sharing
2015-2016 Spring	ES 668: Environmental Computational Laboratory	2 (Lab)	None	Full
	ES 254: Environmental Computational Laboratory	3 (Lab)	None	Full
	ES 206: Water Resources & Open Channel Flow	6	None	Full
	CM 801: Introduction to Risk Analysis	6	None	Full (offered from IDP Climate Studies, also a CESE PG elective)
2015-2016 Autumn	ES 221: Mathematics Foundation	6	None	Full
	ES 207: Introduction to Fluid Mechanics	6	Prof. A. Garg	50% sharing
	CM 803: Introduction to Climate Change	6	Prof. A.B. Rao, Prof. C. Venkataraman	33.3% sharing
2014-2015 Spring	ES 668: Environmental Computational Laboratory	2 (Lab)	None	Full

Academic year & Semester	Course (number and name)	Credits	Co-instructors (if any)	Remarks
	ES 254: Environmental Computational Laboratory	3 (<u>Lab</u>)	None	Full
	ES 206: Water Resources & Open Channel Flow	6	Prof. A. Garg	50% sharing
	ES 270: Environmental Statistics	6	Prof. S. Mukherji	50% sharing
	ES 670: Environmental Statistics	6	Prof. S. Mukherji	50% sharing
	CM 801: Introduction to Risk Analysis	6	None	Full course. Offered from IDP Climate Studies
2014-2015 Autumn	ES 221: Mathematics Foundation	6	None	Full
	ES 207: Introduction to Fluid Mechanics	6	Prof. A. Garg	50% sharing
2013-2014 Spring	ES 668: Environmental Computational Laboratory	2 (<u>Lab</u>)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 254: Environmental Computational Laboratory	3 (<u>Lab</u>)	None	Full
	ES 206: Water Resources & Open Channel Flow	6	Prof. A. Garg	50% sharing
	ES 270: Environmental Statistics	6	Prof. S. Mukherji	50% sharing
	ES 670: Environmental Statistics	6	Prof. S. Mukherji	50% sharing
2013-2014 Autumn	ES 221: Mathematics Foundation	6	None	Full
	ES 207: Introduction to Fluid Mechanics	6	Prof. A. Garg	50% sharing
2012-2013 Spring	ES 668: Environmental Computational Laboratory	2 (<u>Lab</u>)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 254: Environmental Computational Laboratory	3 (<u>Lab</u>)	None	Full
	ES 206: Water Resources & Open Channel Flow	6	Prof. A. Garg	50% sharing
	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. V. Sethi, Prof. A. Garg	33.3% sharing
2012-2013 Autumn	ES 221: Mathematics Foundation	6	None	Full
	CM 801: Introduction to Risk Analysis	8	None	Full course. Offered from IDP Climate Studies
2011-2012 Spring	ES 668: Environmental Computational Laboratory	2 (<u>Lab</u>)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 254: Environmental Computational Laboratory	3 (<u>Lab</u>)	None	Full
	ES 206: Water Resources & Open Channel Flow	6	Prof. A. Garg	50% sharing
	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. V. Sethi, Prof. S.K.Chaudhari	33.3% sharing
2011-2012	ES 221: Mathematics Foundation	6	None	Full

Academic year & Semester	Course (number and name)	Credits	Co-instructors (if any)	Remarks
Autumn	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. V. Sethi, Prof. A. Garg	33.3% sharing
2010-2011 Spring	ES 668: Environmental Computational Laboratory	2 (Lab)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 254: Environmental Computational Laboratory	3 (Lab)	None	Full
	ES 270: Environmental Statistics	6	Prof. S. Mukherji	50% sharing
	ES 206: Water Resources & Open Channel Flow	6	None	Full
	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. R.S.Patil, Prof. A. Garg	33.3% sharing
2009-2010 Spring	ES 668: Environmental Computational Laboratory	2 (Lab)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. A.K.Dikshit, Prof. R.S. Patil, Prof. S. Mukherji	25% sharing
2009-2010 Autumn	ES 651: Environmental Monitoring Laboratory	6 (Lab)	Prof. A. Garg, Prof. S. Suresh	33.3 sharing
	ES 200: Environmental Studies: Science and Engineering (UG Common)	3	Prof. A.K.Dikshit, Prof. R.S. Patil, Prof. S. Mukherji	25% sharing
2008-2009 Spring	ES 668: Environmental Computation Laboratory	2 (Lab)	None	Full
	ES 600: Environmental Science and Engineering (PG Institute Elective)	6	Prof. A. Garg	50% sharing
2008-2009 Autumn	ES 655: Environmental Management	6	Prof. S.R.Asolekar	50% sharing
	ES 651: Environmental Monitoring Laboratory	6 (Lab)	Prof. A. Garg, Prof. S.Suresh	33.3% sharing
2007-2008 Spring	ES 680: GIS for Environmental Planning and Management	6	Prof. A.K.Dikshit	50% sharing
	ES 664: Environmental Systems Modelling	6	Prof. R.S.Patil	50% sharing

*The following courses are designed/ developed by Subhankar Karmakar:

1. **CM 801/ 601: Introduction to Risk Analysis** (This course was developed in 2012 and has been running as a core in IDP in Climate Studies and as an elective at CESE) [It has an UG component, CM 601]
2. **ES 407 (HC-4 as per the proposal): Simulation and Optimization Techniques in Environmental Systems** (This course was developed in 2009, which has been added in the list of honors courses for new B.Tech.-M.Tech. dual degree programme at ESED) – I have offered this course first time in Autumn 2021-22.
3. **CM 803/ 603: Introduction to Climate Change** (This course was developed in 2014 and has been running as a core in IDP in Climate Studies, now Centre for Climate Studies) [had an UG component, CM 603]

ADMINISTRATIVE ACTIVITIES

Sl. No.	Category	Function
1	Head, ESED	July 2021 – July 2024
2	Research Infrastructure Funding Committee (RIFC), IRCC, IIT Bombay	March 2020 – March 2023
3	Member, Undergraduate Academic Performance Evaluation Committee (UGAPEC), IIT Bombay	Jan 2021 – Jan 2024
4	Member of Post-graduate Committee (at CUSE)	Jan 2019 – <u>till date</u>
5	Member of Interdisciplinary Programmes Committee (IDPC) (at IDP in Climate Studies)	Continuing participation in department policy decisions during 2012-2014 and Jan 2017 to April 2022
6	Convener, DST Project Coordination Committee (at IDP in Climate Studies) as Principal investigator of DST-Centre of Excellence on Climate Studies sponsored project	2012 to 2017 (as a member), March 2018 – March 2024 (Convener of the committee)
7	Convener, Committee for Interdisciplinary Dual Degree Programme (IDDDP) at IDP in Climate Studies	Feb. 2021 - Sept 2021 (with Prof. S Ghosh, Prof. T Mishra, Prof. S Balasubramanian, Prof. M R Behera, Prof. K Lanka) To fulfill the need of climate education for UG students at IIT Bombay.
8	Joint Convener, Faculty Search Committee (at ESED)	April 2019 – August 2021 (with Prof. M. K. Chandel)
9	Member of Department Policy Committee (at ESED)	Participation in department policy decisions (Aug. 2013 – Dec. 2016; May 2019 – August 2021)
10	M.Sc. - Ph.D. programme Coordinator & Faculty Advisor (at ESED)	Continuing participation (past and present) from 2010 – Aug., 2021 in all activities related to M.Sc.-Ph.D. dual degree programme with Prof. Sumathi Suresh (two years) and Prof. L. P. Padhye (ten months), Prof. S. Mukherji (three years), Prof. S P Singh (two years)
11	Member of Post-graduate Committee (at ESED)	Jan. 2018 – Jan. 2021
	Member of Under-graduate Committee (at ESED)	March 2025 – till date
12	Time Table Coordinator (at ESED)	Time-Table coordinator from 2009 till August 2020 [jointly worked with Prof. S. Mukherji for 1 yr, Prof. S. R. Asolekar for 1 yr and Prof. L. P. Padhye 1 yr, Prof. V. Sethi 2 yrs, Prof. A. Chakraborty 1.5 yrs]
13	IRCC Summer Internship Programme Coordinator (at ESED)	2012-2017
14	PhD Admission Coordinator (at IDP in Climate Studies)	Spring 2013, Autumn 2014
15	PhD Faculty Advisor (at IDP in Climate Studies)	2016

Sl. No.	Category	Function
16	1st Summer School Coordinator (at IDP in Climate Studies)	July 2014
17	Computer Committee in-charge (at ESED)	Participated on all computer related issues at CESE jointly with Prof. S. Suresh (2 yrs) and Prof. S. K. Chaudhari (1 yr) (Oct. 2009 – June 2013)
18	M.Tech. and Ph.D. Faculty Advisor (at ESED)	Faculty advisor for M.Tech. and Ph.D. students for a year
19	ESEA Vice-President (at ESED)	Provided inputs for Environmental Science and Engineering Association (ESEA) at CESE for 1 year (2012-13)
20	Website interface coordinator (at ESED)	CESE website coordinator for a year, but finally could not complete updation of the website as the team outsourced suddenly dissolved and did not deliver the proposed work
21	Publicity and Website coordinator (at IDP in Climate Studies)	2014-2017
22	Centre Representative and many institute-level responsibilities	in GATE, JAM, IITJEE (Old), and IITJEE Adv.
23	Assoc. Warden, Hostel-1	Facilitating smooth function of hostel activities during 2009 – 2012

MAJOR PROFESSIONAL ACTIVITIES (Journal review, project assessments, membership of professional committees/bodies, conferences organized, etc.)

Sl. No.	Category	Function
1	Member, Editorial advisory board	Journal of Disaster Advances , India (2012-2015)
	Associate Editor	Frontiers in Water and Built Environment Journal (from 2019 till date)
	Editorial Board Member (Environmental Engineering)	Scientific Reports journal published by Nature Portfolio (2022-till date).
	Managing Guest Editor	Special Issue (January 2021) - Water Security in Floodplains, Science of the Total Environment, Elsevier .
	Special Issue Editor	Special Issue: Risk Forecasting of Extreme Weather (February 2021) – with Dr. Vittal H., Sustainability, MDPI
	Special Issue Editor	Special Issue: Lowering Risk by Increasing Resilience (August 2021) – with Prof. S P Simonovic and Prof. Z Cheng, Water, MDPI
2	Membership	(1) American Geophysical Union, USA (2) International Society of Ecotoxicology and Environmental Safety, Germany (3) International Water Association (IWA) (4) Institute of Engineers, India
3	Member, Technical committee	National Conference on Sustainable Water, Environmental Planning and Management (SWEPM-2010), BITS-Pilani, Hyderabad campus, 5-6 March 2010
4	Reviewer of Journals	Advances in Civil Engineering, Advances in Engineering Software, Advances in Water Resources (Elsevier), International Journal of Geographical

Sl. No.	Category	Function
		Information Science, ISH Journal of Hydraulic Engineering, Journal of Climate, Climate Dynamic, Journal of Computing in Civil Engineering (American Society for Civil Engineers), Journal of Earth System Science, Journal of Flood Risk Management (Wiley), Journal of Hydrologic Engineering (ASCE), Journal of Hydrology (Elsevier), Journal of Hydro-Meteorology, Water Resources Research (AGU), and many more.
5	RPC member at IIT Bombay	RPC member (as examiner) of PhD students at IIT Bombay
6	IIT Bombay Golden Jubilee Year Activities – CESE event coordinator (2008)	<p>(1) Organized the lecture of Professor Rao Y. Surampalli, Engineer Director, USEPA, Kansas City on January 28, 2008, on Nanotechnology and the Environment.</p> <p>(2) Organized the lecture of Prof. Sherwood Rowland, Nobel Laureate, on Greenhouse Effect and Global Warming on February 11, 2008.</p> <p>(3) Organized WED-2008, for celebrating World Environment Day on June 5, 2008; and Tree Plantation Programme on June 4, 2008.</p>
7	Indo Australian Workshop on “Climate Change and Water Resources” (2008, 2009)	Organizing committee member
8	“External Reviewer” of Thesis	<p>M.Tech. (Walchand College of Engg., Shangli) (June 2010)</p> <p>Ph.D. (Jadavpur University, Kolkata) (July 2009, July 2015, Aug. 2020)</p> <p>Ph.D. (Jawaharlal Nehru Technological University, Hyderabad) (March 2016)</p> <p>Ph.D. (NIT, Rourkela) (January 2019)</p> <p>Ph.D. (IIT Kharagpur) (November 2020 and August 2021)</p> <p>Ph.D. (IIT Guwahati) (March 2022), and many more.</p>
9	Reviewer of Proposal	Reviewer of (1) DST, (2) MoWR, (3) MoES, (4) Environmental Biotechnology Division, Department of Biotechnology, Ministry of Science & Technology, Government of India proposals, and many more
10	Technical expert	<p>Served as an expert in the Regional Workshop on Training Need Assessment and PDS under “National Hydrology Project” at CWPRS, Pune, February 25, 2016 organized under National Hydrology Project, by National Institute of Hydrology, Roorkee under Ministry of Water Resources, Govt. of India.</p> <p>DST, Engineering Science - Start-up Research Grant (SRG), Civil Engineering, Special invited committee member, 2020.</p> <p>GATE 2021 New Discipline of ES Paper – committee member.</p> <p>External Expert, IoE Proposal evaluation for the Department of Civil Engineering, IIT Delhi, 21st October, 2020.</p> <p>External Committee Member, Evaluation of a faculty member for regularization, Indian Institute of Technology Patna, Bihar, April 2020.</p> <p>DST, GoI, Engineering Science - Start-up Research Grant (SRG), Civil Engineering, Committee member, May 2021-April 2023.</p> <p>External Committee Member, Review of the Centre for Climate and Environmental Studies (CCES), IISER, Kolkata, July 2022.</p>

Sl. No.	Category	Function
		Member of “Dahanu Taluka Environmental Protection Authority” (June 2022 – July 2024) constituted by the Honorable Supreme Court of India and entrusted with the conservation and sustainable development of the eco-fragile region of Dahanu Taluka in Palghar District, State of Maharashtra, India.

MAJOR EXTENSION ACTIVITIES (Outreach activities under CEP/QIP/NPTEL etc.)

Sl. No.	Category	Function
1	CEP and QIP course	<p>(1) Continuing Education and Quality Improvement Programme (CE&QIP) Short Term Course Advances in Urban Water Engineering and Management 10 – 14 December, 2018 Course Coordinators Prof. Pradip Kalbar, Centre for Urban Science and Engineering (CUSE), Prof. Subhankar Karmakar, Centre for Environmental Science and Engineering (CESE)</p> <p>(2) QIP and CEP short term course on “Hydro-climatic Modeling and Climate Change Impacts Assessment” 30 June 04 - July, 2014; Coordinators: Prof. S. Karmakar, Centre for Environmental Science and Engineering and Prof. Subimal Ghosh, Department of Civil Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India</p> <p>(3) QIP and CEP short term course on “Impacts of Climate Change, Urbanization and Land-Use-Land-Cover Change on Water Resources”, 30 May – 3 June, 2016; Coordinators: Prof. S. Karmakar, Centre for Environmental Science and Engineering and Prof. Subimal Ghosh, Department of Civil Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India</p> <p>(4) CEP on DESIGN & IMPLEMENTATION OF ONLINE MONITORING SYSTEM FOR ALL CYCLES OF SWM, jointly organized by Prof. Subhankar Karmakar, Centre for Environmental Science and Engineering, IIT Bombay and Prof. Munish Chandel during (i) 25-27 February (Session ES10A) 2015.</p> <p>(5) CEP on DESIGN & IMPLEMENTATION OF ONLINE MONITORING SYSTEM FOR ALL CYCLES OF SWM, jointly organized by Prof. Subhankar Karmakar, Centre for Environmental Science and Engineering, IIT Bombay and Prof. Munish Chandel during 9-11 March (Session ES10B) 2015.</p> <p>(6) QIP and CEP short term course on “<i>Advanced Hydrologic Modeling for Climate Change Impacts Assessment</i>” 18 – 22 February, 2013; Coordinators: Prof. S. Karmakar, Centre for Environmental Science and Engineering and Prof. Subimal Ghosh, Department of Civil</p>

Sl. No.	Category	Function
		<p>Engineering, Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India</p> <p>(7) QIP and CEP short term course on “<i>Hydrologic Impacts of Climate Change and Sustainable Development</i>” July 04 - 05, 2008; Coordinators: Prof. Subimal Ghosh, Department of Civil Engineering; Prof. S. Karmakar, Centre for Environmental Science and Engineering; and Prof. R. Maity, (now at Indian Institute of Technology Kharagpur), Indian Institute of Technology Bombay, Powai, Mumbai 400 076, India</p> <p><i>Lectures in QIP-CEP</i></p> <p>(a) Delivered three lectures in the CEP course on Engineering Mechanics, organized by Prof. D. Choudhury, Department of Civil Engineering, IIT Bombay. Organized at Government Polytechnic, Ahmedabad on April 24, 2008.</p> <p>(b) An invited talk in a CEP on REGIONAL MODELING OF CLIMATE CHANGE, organized by Prof. Subimal Ghosh, Civil Engineering, IIT Bombay, Mumbai, 3 March 2015.</p>
3	NPTEL web course	<p>Developed a web course on “Advanced Hydrology” under National Programme on Technology Enhanced Learning (NPTEL), funded by MHRD (2011-12).</p> <p>Prepare total 40 lectures note divided into 9 modules.</p> <p>The course emphasizes on the computational aspects of advanced hydrology at a post-graduate level, and provides a balanced approach to important applications in hydrologic engineering and science. The fundamental mechanisms of hydrologic cycle with the probabilistic approaches are discussed in a logical progression. The concept of watershed modeling has been discussed in detail along with a few selected watershed models. The slides have been designed in a self-explanatory fashion so as to facilitate the learning process easier and more interesting.</p> <p>For further detail please visit: <http://npTEL.iitm.ac.in/downloads/105101002/></p>
4	MoU between IIT Bombay and Thane Municipal Corporation (TMC)	An MoU was signed between IIT Bombay and TMC for research collaborations through my initiative. Signed and submitted on 28-05-2012

Sl. No.	Category	Function
5	MoU between IIT Bombay and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	An MoU was signed between IIT Bombay and ICRISAT for research collaborations through my initiative. Signed and submitted on 16-11-2017
6	National conference (at ESED) organized as organizing committee member	National Environmental Conference: IIT Bombay Diamond Jubilee Year Conference' on Jan 31- Feb 2, 2019 on the occasion of the Diamond Jubilee Year of the institute.
7	Webinars and virtual meetings (from DST-CoECS, IIT Bombay) organized	<p>Brainstorming session (virtual) on activities under State Knowledge Management Centre on Climate Change, Maharashtra with Department of Science and Technology, Govt. of India; Interdisciplinary Programme in Climate Studies (IDPCS), IIT Bombay; and Department of Environment, Govt. of Maharashtra, 7 August, 2020.</p> <p>e-School on Climate Science & Policy, 17-28 August 2020, Interdisciplinary Programme in Climate Studies (IDPCS), IIT Bombay.</p> <p>Webinar on "Scope for Technology Development & Entrepreneurship in Climate Studies" on 17 March 2021, Interdisciplinary Programme in Climate Studies (IDPCS), IIT Bombay.</p> <p>Webinar on "Climate Resilient Engineering Design" on 24 March 2021, Interdisciplinary Programme in Climate Studies (IDPCS), IIT Bombay.</p> <p>e-School on Climate Science & Policy, 16-27 August 2021, Interdisciplinary Programme in Climate Studies (IDPCS), IIT Bombay.</p>
8	International Conference (at ESED) organized as Head, ESED	Organized 'International Conference on Environmental Science and Engineering' (ICESE-2022) in virtual mode at ESED, IIT Bombay, 20-22 January 2022, Mumbai.
9	Over all coordinator (as Head, ESED) National Jal Jeevan Mission (NJJM), Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India Level-1 & Level-2 courses, Total 8 sessions (2021-22)	<p>Instructor and Organizer: National Jal Jeevan Mission (NJJM) Level-1 course titled "Climate change risk assessment and water security challenges," conducted during 23-24 February 2022 (Session-1)</p> <p>Instructor and Organizer: National Jal Jeevan Mission (NJJM) Level-1 course titled "Climate change risk assessment and water security challenges," conducted during 9-10 March 2022 (Session-2)</p>

RESEARCH GUIDANCE

Doctoral research guidance: **21 completed** (14 Students as main supervisor and 7 as co-supervisor) || Masters' and Bachelor's research guidance: **Completed total 47** (29 M.Tech. students), including externally registered and international students || Post-doctoral fellows: 3 mentored and co-mentored

i. Doctoral research guidance

Sr. No.	Name	Completed/ongoing	Other guides, if any	Thesis topic
1	Dr. Pradip P. Kalbar (at CESE) (Currently Faculty at IIT Bombay)	Completed (2013)	Prof. S. R. Asolekar, CESE (main supervisor)	Life Cycle Based Decision Support Tool for Selection of Wastewater Treatment Alternative (Received Excellence in Ph.D. thesis Award 2014, IIT Bombay)
2	Dr. Tejaswini B. Kurwatti (at CESE) (Colleague Teacher category, Currently Faculty at PHCET, Rasayani)	Completed (2015)	None	Comprehensive Evaluation of Trophic States of Lentic Water Bodies
3	Dr. Vikas B. Varekar (at CESE) (Currently Faculty at VJTI, Mumbai)	Completed (2016)	None	Design and Evaluation of Surface Water Quality Sampling Locations
4	*Dr. Sherly M.A. (at IITB-MonashAcademy) (Currently Faculty at TERI, Delhi)	Completed (2016)	Prof. Chan, Monash University, Australia Prof. Rau, Shantau University, China (Co-supervisors)	Using GIS and other Methods to Understand and Quantify the Vulnerability of a Megacity like Mumbai to Floods
5	Dr. Vittal. H. (at CESE) (Currently Faculty at IIT(ISM) Dhanbad)	Completed (2017)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Spatial and Temporal Variations of Hydrologic Extremes over India (Received Excellence in Ph.D. thesis Award 2017, IIT Bombay)
6	Dr. Harshit Mishra (at CESE) (Currently Founder & Consultant at EHM Consultancy Pvt. Ltd.)	Completed (2017)	Prof. Rakesh Kumar, CESE and NEERI (Co-supervisor)	Assessment and Management of Risk to Landfill Leachate Contamination
7	Dr. Hiteshri Shastri (at IDP Climate studies) (Currently Faculty at Charotar University of Science and Tech.)	Completed (2016)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Understanding Impacts of Urbanization on Rainfall patterns in India
8	Dr. Vinay Yadav (at CESE) (Currently Faculty at IIT Kharagpur)	Completed (2018)	Prof. A. K. Dikshit (Co-Supervisor)	Interval Optimization Approach for Solid Waste Management (Received Excellence in Ph.D. thesis Award 2020, IIT Bombay)

Sr. No.	Name	Completed/ongoing	Other guides, if any	Thesis topic
9	Dr. Jitendra Singh (at CESE) (Currently PDF at ETH Zurich)	Completed (2018)	None	Nonstationary analysis of hydroclimatic extremes
10	Dr. Swati Singh (at IDP Climate studies) (Currently Project Scientist at LSCE CEA Saclay Paris)	Completed (2019)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Revisiting the Association of Indian Monsoon with Oceanic Circulation
11	Dr. Tarul Sharma (at IDP Climate studies) (Currently Senior Researcher at IWMI)	Completed (2019)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Agricultural Risk Assessment under Climate Change Scenario
12	Dr. Mohit Prakash Mohanty (at CESE) (Currently Faculty at IIT Roorkee)	Completed (2019)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	A Comprehensive mapping of flood risk under changing climate (Received Excellence in Ph.D. thesis Award 2021, IIT Bombay)
13	Dr. Aditya Gusain (at CESE) (Currently Senior Environmental Engineer at EMC LLP)	Completed (2020)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Understanding precipitation-flood flow association under changing climate
14	Dr. Anjana Devanand (at IDP Climate studies) (Currently Research Associate at University of New South Wales)	Completed (2020)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Feedback from Human-Natural Land Processes to the Indian Summer Monsoon
15	Dr. Pratiman Patel (at IDP Climate studies) (Currently PDF at NUS Singapore)	Completed (2021)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Rainfall Forecasting through Regional Weather Modelling: An Application to Near Real-Time Flood Forecasting
16	Dr. Mousumi Ghosh (at IDP Climate studies) (Currently PDF at The University of Alabama)	Completed (July 2022)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Flood management for an urban coastal catchment: Implications on near real-time risk forecasting and mapping (Received Mr. Prashant Dave Best Ph.D. Thesis Award 2024, IIT Bombay)
17	Dr. Aniket Deo (at CTARA) (Currently Research Associate at Borlaug Institute for South Asia)	Completed (March 2022)	Prof. Amit Arora, CTARA (main supervisor)	Micro-planning of farm resources: multi-stage model to support crop planning and improve farmer's incentives
18	Dr. Shrabani Sailaja Tripathy (at IDP Climate studies) (Currently PDF at The University of Alabama)	Completed (March 2022)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Real-time Flood Risk Forecasting and Evacuation

Sr. No.	Name	Completed/ongoing	Other guides, if any	Thesis topic
19	Dr. Naveen S. (at ESED) (Currently PDF at The University of Texas at Austin)	Completed (Nov. 2022)	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	A Comprehensive Analysis of Extreme Climate Events over India Focusing on Precipitation Extremes and Heatwaves
20	Dr. Sachin Budakoti (at IDP Climate studies) (Currently PDF at the Lund University)	Completed (April 2024)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Feedback from Terrestrial vegetation to the Indian Summer Monsoon Rainfall
21	Dr. Kashish Sadhwani (at Civil Engg.) (Currently a Senior Advisor- Catastrophe Modelling @GallagherRe)	Completed (Nov 2024)	Prof. T.I. Eldho, Civil Engg. (main supervisor)	Assessment on the Impacts of Climate and Landuse Changes on Hydrological Extreme Events at Regional/River Basin Scale
22	Dr. Vikram Singh Chandel (at Centre for Climate Studies) Currently a postdoc at IIT Bombay)	Completed (Feb 2025)	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Data driven methods to assess predictability in Hydro-climatic systems
23	Ms. Anokha S. (at Centre for Climate Studies)	Ongoing	Prof. Pradip Kalbar, CUSE, and Prof. Arpita Mondal, Civil Engg. (Co-supervisors)	Mapping Social Vulnerability and Risk to Hydro-Climatic Extremes Over India
24	Mr. Kaustav Mondal (at ESED)	Ongoing	None	A Framework for global sensitivity analysis in a complex 1D-2D coupled hydrodynamic model: Highlighting its importance on flood mapping over large data-scarce region
25	Mr. Jayesh Parmar (at ESED)	Ongoing	None	Analysis of flood-generating factors to understand past, present and future flood risk
26	Mr. Ravi Ranjan (at ESED)	Ongoing	None	First Assessment of compound risk to tropical cyclones over India
27	Mr. Ankan Chakraborty (at Centre for Climate Studies)	Ongoing	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	India - wide Flood Risk Forecasting Considering Socioeconomic Dimensions
28	Mr. Nirul Ranjan Patra (at ESED)	Ongoing	None	Flood resilience assessment for India
29	Mr. Sabirul Sk (at Centre for Climate Studies)	Ongoing	Prof. Subimal Ghosh, Civil Engg. (Co-supervisor)	Flood susceptibility mapping using geomorphic flood descriptors
30	Ms. Sweta Singh (at ESED)	Ongoing	None	Nationwide coastal flood hazard assessment
31	Mr. Himanshu N. Choudhary (at ESED)	Ongoing	None	Application of remote sensing for flood mapping and forecasting
32	Ripan Das (at Centre for Climate Studies)	Ongoing	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Carbon Sequestration Potential of Greener India
33	Manish Kumar Dhasmana (at	Ongoing	Prof. Arpita Mondal, Civil Engg.	Attribution of floods to anthropogenic climate change

Sr. No.	Name	Completed/ ongoing	Other guides, if any	Thesis topic
	<u>Centre for Climate Studies</u>)		(main supervisor)	
34	Girish Patidar (at <u>Centre for Climate Studies</u>)	Ongoing	Prof. Indu J., Civil Engg. (main supervisor)	Flood mapping using SWOT data over India
35	Devdyuti Bose at <u>Centre for Climate Studies</u>)	Ongoing	Prof. Trupti Mishra, SJMSOM (main supervisor)	Quantification of loss and damage by disasters and evaluation of recovery financing Mechanisms
36	Anoop Sampelli (at <u>Centre for Climate Studies</u>)	Ongoing	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Contribution of soil-vegetation interactions to water cycle.
37	Gaurav Ganjir (at <u>Centre for Climate Studies</u>)	Ongoing	Prof. M. Janga Reddy, Civil Engg. (main supervisor)	Risk Assessment and Prediction of Agricultural Drought under Changing Climate
38	Puja Tripathy (at <u>Centre for Climate Studies</u>)	Ongoing	Prof. Subimal Ghosh, Civil Engg. (main supervisor)	Regional Crop Suitability Modelling Towards Sustainable Cropping Systems Under Climate Change and Future Water Availability
39	Satyabrata Pattanayak (at ESED)	Ongoing	Prof. Suparna Mukherji, ESED (main supervisor)	Evaluation of Aquifer Water Quality, Water Quality Index and Human Health Risk Assessment

* The Tata Consultancy Services Ltd (TCS) supported my former Ph.D. research scholar Ms. Sherly M. A. for implementing a research project on *Urban Flood Risk Mapping of Mumbai City*. She worked in my lab from 2011-2016 as IIT Bombay - Monash Academy research scholar (co-supervisors: Prof. T. Chan, Monash University, Australia; Prof. Rau, Shantau University, China).

ii. Post-doctoral fellows mentored

Sr.no.	Name	From	To	Research area
1	Dr. Shelly Bogra (<u>IDP in Climate Studies</u> , as co-mentor)	Feb, 2018	Jan, 2020	Carbon foot-print of India: regional analysis
2	Dr. Ram Ratan (<u>IDP in Climate Studies</u> , as co-mentor)	July, 2017	June, 2019	Analysis of temperature extremes over India
3	Dr. Mousumi Ghosh (<u>IDP in Climate Studies</u> , as Mentor)	July, 2022	October, 2022	Socio-economic adaptive alternatives to alleviate regional flood risk for future climate scenarios

iii. Master's and Bachelor's research guidance (Completed total 47, 29 M.Tech. students)

Sr. No.	Degree	Name	Completed/ ongoing	Other guides, if any	Thesis topic
1.	M.Tech.	Mr. M. Rupas Kumar	Completed	None	A Multiobjective Optimization Model for Lake Eutrophication Control
2.	M.Tech.	Mr. N. Subrahmanyam	Completed	None	Impact of Skeletonization on Uncertainty Modeling of Water Distribution Networks

Sr. No.	Degree	Name	Completed/ongoing	Other guides, if any	Thesis topic
3.	M.Tech.	Mr. Rahul B. Kumbhar	Completed	Prof. S. R. Asolekar, CESE (main supervisor)	Experimental Study of Bilge Water Treatment Using coagulation and Optimization
4.	M.Tech.	Ms. Gunjan Chandel	Completed	None	Vulnerability Assessment to Natural and Environmental Hazards
5.	M.Tech.	Mr. Sohom Mandal	Completed	None	River Water Quality Management: An Interval Optimization Approach
6.	M.Tech.	Mr. Soumyajit Sen	Completed	None	Estimation of Design Rainfall and Comparative Rainfall Data Analysis from Two Gauging Stations in Mumbai City, India
7.	M.Tech.	Mr. Sumit Kumar Jha	Completed	None	Urban Flood Modelling Considering Spatial Variability of Rainfall over Mumbai City
8.	M.Tech.	Mr. Tilik Tena (from Ethiopia)	Completed	Prof. RAAJ Ramsankaan, Civil Engg. (co-supervisor)	A Holistic Geospatial Approach to Select Suitable Site for Wastewater Treatment Plant at Bahir Dar City, Ethiopia
9.	M.Tech.	Mr. Rathod Merwan Kishanrao	Completed	None	A Framework for Characterization and Assessment of Municipal Solid Waste Landfill Leachate: An Application to Turbhe Landfill, Navi Mumbai, India
10.	M.Tech.	Mr. Roshan Appa	Completed	Prof. Subimal Ghosh, Civil Engg. (co-supervisor)	Projection of Hydro-Climatic Extremes with New Generation Climate Models
11.	M. Tech.	Mr. Amul Patwal	Completed	None	Multi-model Ensemble of CMIP5 Simulation to Project all India Rainfall
12.	M. Tech.	Mr. Murari Harsha Vardhan	Completed	None	Modelling crop yield under climate change scenarios: A nation-wide study
13.	M. Tech.	Mr. Kadambala Praneeth	Completed	None	Quantification of Human Health Risk to MSW Landfill Leachate Contamination under Different Liner Scenarios
14.	M. Tech.	Mr. Saurabh Gairola	Completed	None	Understanding the Effects of Human Intervention, Calibration and Climate Change on Hydrological Variables in India
15.	M. Tech.	Mr. Shrey Pathak	Completed	None	Understanding the impacts of climate change and LULC change on hydrologic variables in india
16.	M. Tech.	Mr. Nikhil Pratap Saini	Completed	None	Drought Risk Mapping Under Changing Climate for Indian Subcontinent: A Nonstationary Modelling Approach

Sr. No.	Degree	Name	Completed/ongoing	Other guides, if any	Thesis topic
17.	M. Tech.	Mr. Pushpendra Kishore	Completed	None	Flood Hazard Mapping for a Coastal Urban Catchment: A 3-way Coupled Modelling Approach
18.	M. Tech.	Mr. Prakhar Deroliya	Completed	None	Mapping Flood Risk in Data-Poor Regions Enforcing Combined Geomorphic and Socio-economic Indicators
19.	M. Tech.	Mr. Govind Kumar Vaishnav	Completed	None	Drought Risk Mapping Under Changing Climate for Indian Subcontinent
20.	M. Tech.	Mr. Pravin Nanasaheb Chavan	Completed	None	Mapping Flood Resiliency at a Regional Scale
21.	M. Tech.	Mr. Abhinav Agrawal	Completed	None	Regional Flood Inundation Modelling using a Global Flood Model
22.	M. Tech.	Mr. Pratik Pradhan	Completed	Prof. V. Sethi, ESED (main supervisor)	Studies with chemical transport model for regional air quality management
23.	M.Sc. (in M.Sc.-Ph.D.)	Mr. Harshit Mishra	Completed	Prof. D N Singh, Civil, IIT Bombay (co-supervisor)	Assessment and Management of Risk to Landfill Leachate Contamination
24.	M.Sc. (in M.Sc.-Ph.D.)	Mr. Jitendra Singh	Completed	None	Nonstationary Frequency Analysis for Flood Risk Management
25.	M.Sc. (in M.Sc.-Ph.D.)	Mr. Vinay Yadav	Completed	Prof. A. K. Dikshit, CESE (co-supervisor)	An Interval Optimization Approach to Municipal Solid Waste Management
26.	M.Sc. (in M.Sc.-Ph.D.)	Ms. Surbhi Chhabra	Completed	None	Hydrologic Modelling using Variable Infiltration Capacity Model
27.	M. Phil.	Ms. Surbhi Chhabra	Completed	None	Hydrologic Modelling using Variable Infiltration Capacity Model
28.	M.Sc.	Mr. Sahil Mudgil	Completed	None	A Computational Framework to create a Flood Inundation Library for Real-Time Forecasting
29.	M.Sc.	Mr. Saurabh Kumar	Completed	None	Understanding the Principal Mechanism of Heat Waves over India
30.	M.Sc. (ASI, IIT Bombay)	Mr. Pankaj Kumar	Completed	None	Bivariate Flood Frequency Analysis: A Comparative Study of Nonparametric, Parametric and Copula-based Approaches
31.	M.Sc. (Applied Stat. and Informatics, IIT Bombay)	Mr. Tarkeshwar Singh	Completed	None	Nonstationary flood Frequency Analysis

Sr. No.	Degree	Name	Completed/ongoing	Other guides, if any	Thesis topic
32.	M.Sc. (Applied Stat. and Informatics, IIT Bombay)	Ms. Shivani Mudgal	Completed	None	A Nonstationary Approach to Drought Frequency Estimation
33.	M.Sc. (Applied Stat. and Informatics, IIT Bombay)	Mr. Dileep Vishwakarma	Completed	None	A Statistical Approach to Toxicological Risk Assessment
34.	M.Sc. (Applied Stat. and Informatics, IIT Bombay)	Mr. Love Gupta	Completed	None	Nonstationary Modeling of Long Records of Rainfall and Temperature over India
35.	M.Sc. (external, Cochin University)	Mr. Musthafa, O. M.	Completed	None	Evaluation of River Water Quality Monitoring Networks: A Multivariate Statistical Approach on Indian Case Studies
36.	M.Sc. (external, Indian Institute of Information Technology & Management, Kerala)	Ms. Varsha Vijaykumar M.	Completed	None	Assessment of Vulnerability to Natural or Human-induced Hazards in an Overpopulated Urban Region
37.	B.Tech. (external, Chemical Engineering at Univ. Inst. of Chemical Tech. in NMU, Jalgaon)	Mr. Shahrukh Sheikh	Completed	None	Induced Impact of Climate Change on Quality of Fresh Water: A Data Driven Analysis on Major Indian River.
38.	M.Sc. (External)	Ms. Nithya S.	Completed	None	A comparative assessment of 1D 2D coupled flood inundation modelling for data scarce regions using DEM from different sources
39.	M. Tech.	Ms. Varsha Meena	Completed	None	Coastal flood vulnerability mapping of India
40.	M. Tech.	Ms. Priyanka Danane	Completed	None	Application of Remote Sensing for flood crop loss assessment
41.	M.Sc.	Ms. Sweta Singh	Completed	None	Coastal flood hazard assessment
42.	M.Sc.	Mr. Himanshu N. Choudhary	Completed	None	Application of remote sensing for flood mapping and forecasting
43.	B.Tech.-M.Tech. dual degree	Mr. Nihar Sunil Mahajan	Completed	None	Global flood risk mapping under changing climate

Sr. No.	Degree	Name	Completed/ongoing	Other guides, if any	Thesis topic
44.	B.Tech.- M.Tech. dual degree	Mr. Dnyansheel Virendra Bansod	Completed	None	Coastal flood risk assessment of India
45.	B.Tech.- M.Tech. dual degree	Mr. Mohammed Ayaz Ghonia	Completed	None	Climate-induced agricultural vulnerability mapping for India: An indicator-based approach
46.	B.Tech.- M.Tech. dual degree	Mr. R Adithiyan Susil	Completed	None	Climate-Induced Agricultural Vulnerability Mapping for India using Machine Learning techniques
47.	M. Tech.	Ms. Priyanka Danane	Completed	None	Application of Remote Sensing for flood crop loss assessment
48.	M. Tech.	Mr. Ajay Kothari	Ongoing	Prof. Vinay Yadav, IITKGP	Novel web-based application for sustainable and integrated municipal solid waste management facilities in India
49.	B.Tech.- M.Tech. dual degree	Ms. Isha Dev	Ongoing	None	Mapping of hydroclimatic risk for the state of Maharashtra at a finer-resolution
50.	B.Tech.- M.Tech. dual degree	Ms. Poojita Mishra	Ongoing	None	Optimizing Adaptive Strategies for Sustainable Floodplain Management under Changing Climate Conditions
51.	B.Tech.- M.Tech. dual degree	Mr. Pandey Arnav	Ongoing	None	Hyperlocal Forecasting and Risk Mapping of Heat Stress for Urban Catchments using AI/ML
52.	B.Tech.- M.Tech. dual degree	Mr. Harshvardhan Thorat	Ongoing	None	Agricultural Risk Assessment and Mapping using Adaptive Computation

Summer internship students (through IIT Bombay and IRCC internship schemes):

Supervised 01 (in 2008), 06 (in 2009), 02 (in 2010), 02 (in 2011), 01 (in 2012), 02 (in 2013), 01 (in 2014), 01 (in 2015), 01 (in 2017), 01 (in 2018), 01 (in 2019), 01 (in 2023), 01 (in 2024), 01 (in 2025)

COMPUTING SKILLS

Operating Systems - UNIX, LINUX and Windows; *Programming Language* - C++, Visual Basic; *Modeling and Analysis Tools* - MATLAB, R, Hyper LINGO (Language for INteractive General Optimization), Statistica, LandSIM, MIKE Flood and SPSS.

Subhankar Karmakar

March' 2025

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