

# Dr. Chandan Pradhan

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## Research Interests

- Remote Sensing
- Fluvial Hydraulics
- River Engineering
- Sediment Dynamics in Fluvial Systems

## Educational Qualification

### Ph. D. in Department of Civil Engineering (2022)

Indian Institute of Technology Guwahati

### M-Tech in Water Resources Engineering and Management (2016)

Department of Civil Engineering

Indian Institute of Technology Guwahati

### B-Tech (Civil Engineering, 2013)

Indira Gandhi Institute of Technology, Sarang, Odisha

## Publications

1. **C. Pradhan**, Ketan K Nandi, Rishikesh Bharti, Subashisa Dutta (2023), Developing process-based geomorphic indicators for understanding river dynamics of a highly braided system: Implications for designing resilience based management strategies, **CATENA**, Volume 232, 107411. <https://doi.org/10.1016/j.catena.2023.107411>
2. **C. Pradhan**, S. K. Padhee, R. Bharti & S. Dutta (2022). A process-based recovery indicator for anthropogenically disturbed river system. **Scientific Reports**, 12 (1), 1-14. [10.1038/s41598-022-14542-x](https://doi.org/10.1038/s41598-022-14542-x)
3. **C. Pradhan**, V. Chembolu, S. Dutta, & R. Bharti (2021). Role of effective discharge on morphological changes for a regulated macrochannel river system. **Geomorphology**, 385, 107718. <https://doi.org/10.1016/j.geomorph.2021.107718>
4. **C. Pradhan**, V. Chembolu, R. Bharti & S. Dutta (2021). Regulated rivers in India: research progress and future directions. **ISH Journal of Hydraulic Engineering**, <https://doi.org/10.1080/09715010.2021.1975319>
5. **C. Pradhan**, V. Chembolu & S. Dutta (2019). Impact of river interventions on alluvial channel morphology. **ISH Journal of Hydraulic Engineering**, 25:1, 87-93. <https://doi.org/10.1080/09715010.2018.1453878>
6. K.K. Nandi, **C. Pradhan**, S. Dutta, K.K. Khatua (2023). Identifying the stability trajectory of a large braided Brahmaputra River using reach-scale process-based approach. **Journal of Hydrology**. Volume 626, Part B. <https://doi.org/10.1016/j.jhydrol.2023.130329>
7. K.K. Nandi, **C. Pradhan**, S. K. Padhee, S. Dutta, K.K. Khatua (2022). Understanding the Entropy-based Morphological Variability and Energy Expenditure Mechanism of a large Braided River System. **Journal of Hydrology**, 615, Part A <https://doi.org/10.1016/j.jhydrol.2022.128662>
8. K.K. Nandi, **C. Pradhan**, S. Dutta, & K.K. Khatua (2022). How dynamic is the Brahmaputra? Understanding the process-form-vegetation interactions for hierarchies of energy dissipation. **Ecohydrology**, 15, e2416 <https://doi.org/10.1002/eco.2416>
9. V. G. Rangarajan, R. Bharti, S. K. Mondal, **C. Pradhan**, & S. Dutta (2018). Remote Sensing for Martian Studies: Inferences from Syrtis Major. **Journal of the Indian Society of Remote Sensing**, 46(9), 1537-1551. <https://doi.org/10.1007/s12524-018-0826-7>

## Book Chapters

1. **C. Pradhan**, S. Dutta, & R. Bharti (2023). Exploring Large Braided River Systems: Understanding the Dynamics and Pathways of River Recover. Recent Development in River Corridor Management. Lecture Notes in Civil Engineering 376, [https://doi.org/10.1007/978-981-99-4423-1\\_10](https://doi.org/10.1007/978-981-99-4423-1_10)
2. **C. Pradhan**, S.K. Padhee, S. Dutta, & R. Bharti (2022). Assessment of Fluvial Controls and Cross-Sectional Recovery Indicators in a Large Regulated River. Recent Trends in River Corridor Management. Lecture Notes in Civil Engineering, vol 229. Springer, Singapore. [https://doi.org/10.1007/978-981-16-9933-7\\_3](https://doi.org/10.1007/978-981-16-9933-7_3)
3. **C. Pradhan**, Suresh Modalavalasa, S. Dutta & Rishikesh Bharti (2020). A geomorphic approach to evaluate river recovery potential for regulated river basin. In Riverflow 2020, 7th-10th July, 2020, Delft, Netherland DOI: 10.1201/b22619-253
4. S.K. Padhee, **C. Pradhan**, K.K. Nandi, & S. Dutta, (2022). Development of a Semi-distributed Rainfall-Runoff Model for Water Budgeting in Macropore Dominated Hilly River Basins, Water Sci., Technol. Library, Vol. 113, Swatantra Kumar Dubey et al. (Eds): Soil-Water, Agriculture, and Climate Change

## Conferences (International/National)

1. **C. Pradhan**, S. Dutta & R. Bharti (2023) Sediment Connectivity and River Recovery: Application of Pertinent River Science Concepts in Himalayan Catchments, 3rd International Conference on River Corridor Research and Management (RCRM 2023).
2. **C. Pradhan**, K.K. Nandi, S.K. Padhee, S. Dutta & R. Bharti (2023) Evaluating the Influence of Hydrological Changes on the Process-based River Recovery Trajectory in Asian River Systems, AOGS 2023 Singapore.
3. **C. Pradhan**, K.K. Nandi, S.K. Padhee, R. Bharti & S. Dutta (2022). Understanding River Recovery for Indian Rivers: Emerging Challenges and Solutions, AGU Fall Meeting 2022.
4. **C. Pradhan**, S. Dutta & R. Bharti (2021). Understanding River Freedom Space and Seasonal Variation of Surface Water Dynamics in Large Fluvial Landscapes: Implications for Floods and Anthropogenic Stress, AGU Fall Meeting 2021.
5. **C. Pradhan**, S. Dutta & R. Bharti (2021). Assessing The River Freedom Space along the continuum of braided channel patterns using advanced geo-spatial analysis, 4th International Conference on the status and future of the World's Large Rivers, Moscow 2021.
6. **C. Pradhan**, S.K. Padhee, S. Dutta & R. Bharti (2021). An entropy-based investigation on the river recovery potential in a regulated river basin, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-9362, <https://doi.org/10.5194/egusphere-egu21-9362>, 2021.
7. **C. Pradhan**, S.K. Padhee, S. Dutta & R. Bharti (2021). Assessment of transport effectiveness and recovery trajectory in regulated Mahanadi river, International Conference on River Corridor Research and Management (RCRM 2021), IIT Jammu, 2021/2/27.
8. **C. Pradhan**, S. Pani, S. Dutta & R. Bharti (2019). Temporal Changes in Geomorphic Effectiveness of Floods in Regulated River Basins, 2019/7/29, 16th Annual Meeting, AOGS 2019, Singapore.
9. **C. Pradhan**, S. Dutta & R. Bharti (2017). A spatio- Temporal Analysis of Channel Migration using Remote sensing, field investigation and GIS techniques: The Kameng River (Lower Reach), India; 9th International conference of Geomorphology, 6-11th November, 2017, New Delhi, India.
10. **C. Pradhan**, R. Bharti and S. Dutta (2017). Assessment of post-impoundment geomorphic variations along Brahmani River using remote sensing, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, TX, 2017, pp. 5598-5601, DOI: 10.1109/IGARSS.2017.8128274.
11. **C. Pradhan**, V. Chembolu and S. Dutta (2016). Impacts of River Interventions on Alluvial Channel Morphology- Hydro International, Organized by Indian Society of Hydraulics, 8-10th December, 2016, CWPRS, Pune.
12. K. K. Nandi, **C. Pradhan**, K. K. Khatua, & S. Dutta (2022). Assessment of braided dynamics of a large river system with respect to the energy dissipation mechanism using cloud computing technique. In AGU Fall Meeting 2022.

13. K. K. Nandi, A. Akkimi, **C. Pradhan**, S. Dutta, & K. K. Khatua (2021, December). Entropy Based Relation Between In-stream Green Corridor and Channel Stability of a Large Braided Brahmaputra River. In AGU Fall Meeting 2021.
14. K. K. Nandi, **C. Pradhan**, J. Sultan, S. Dutta, & K. K. Khatua (2021). Energy Dissipation Modeling in Highly Braided Brahmaputra River, HYDRO 2020- International Conference
15. L.L. Sahoo, K.K. Nandi, A. Anjaneyulu, **C. Pradhan**, A. Dubey, S. Dutta; Catchment Scale Vulnerability Assessment of Physio-climatic Characteristics in the Brahmaputra River Basin; AOGS 2021.
16. S. K. Saha, **C. Pradhan**, S. Dutta; Soil Erosion Assessment in Anthropogenically disturbed Ungauged Himalayan Catchment Using Geospatial Techniques; Abstract submitted to AGU Fall Meeting 2021.
17. K.K. Nandi, **C. Pradhan**., Dutta. S., K.K. Khatua; Sediment transport and morphological characterization for a large braided river using hydrodynamic modeling, 4th International Conference on the status and future of the World's Large Rivers, Moscow 2021.
18. A. Siddharth, **C. Pradhan**, M. Suresh, S. Dutta (2019). Effect of In-stream Variable on the Lower Mahanadi River, India, 2019/7/31, 16th Annual Meeting, AOGS 2019, Singapore.
19. M. Suresh, **C. Pradhan**, S. Dutta, V. Kulkarni (2019). Flow Structure in Meandering Channel with Vegetation, 2019/7/31, 16th Annual Meeting, AOGS 2019, Singapore.

### Talks/Presentations:

1. Delivered a lecture on HEC-RAS hydrodynamic model in two-day training program entitled “River Bank Erosion Stabilization and River Modelling under National Hydrology Project” at Department of Civil Engineering, IIT Guwahati.
2. Delivered a lecture on ‘Implications of Google Earth Engine in Hydro-ecological Modeling’ to Assam State Water Resources Engineers in workshop conducted by NHP Project.
3. Delivered a lecture on ‘River Recovery and Use of Geospatial Techniques’ in 5th Pre-event of the 2nd UN-WGI Congress, Gauhati University, India
4. Delivered a lecture on “Implications of GEE in Fluvial Geomorphology” at IIT Guwahati-2021
5. Delivered a lecture on “HEC-RAS and flood management in the Brahmaputra River basin” at Tezpur University-2015

### Peer Review:

1. International Journal of Applied Earth Observation and Geoinformation
2. Remote Sensing Applications Society and Environment
3. Journal of Hydrology
4. ISH Journal of Hydraulic Engineering

### Societal Membership

1. (ISH) The Indian Society for Hydraulics
2. (IAHR) International Association for Hydro-environment Engineering and Research
3. ASCE Membership
4. (BSG) British Society of Geomorphology
5. AGU Membership
6. (EGU) Membership, European Geosciences Union
7. (AOGS) Asia Oceania Geosciences Society Membership