Rajani Kumar Pradhan

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Experience

2025 – 2025 **Marie Skoda Curie Action (MSCA) Postdoctoral Fellow** at University of Padova, Padova, Italy [October 2025 to Present]

2024 – 2025 **Postdoctoral Research Associate** at University of Massachusetts Amherst, MA, USA [August 2024 to August2025]

2024 – 2024 **Postdoctoral Research Associate** at Czech University of Life Sciences Prague, Czech Republic [May 2024 to July 2024]

2017 – 2019 **Junior Research Fellow** at Banaras Hindu University, Varanasi, in a project titled 'Long-term monitoring of precipitation and evapotranspiration for discharge prediction in selected catchments of Kosi River basin' funded by the Department of Science & Technology (DST), GoI [February 2017 to October 2019]

Education

2019 – 2024 **Ph.D. in Landscape Engineering, at the Faculty of Environmental Science, Czech University of Life Sciences Prague, Czech Republic.**
Thesis title: *The Global Precipitation Measurement Mission: Performance evaluation across multiple spatio-temporal scales.*

2023 – 2023 **Erasmus Internship** at University of Padova, Italy [May2023 to June 2023].

2014 – 2016 **Master of Science in Environmental Science, Central University of Rajasthan, India.**
Thesis title: *Potential impact of climate change on precipitation of Rajasthan, India*.

2011 – 2014 **Bachelor of Science (Chemistry, Botany, Zoology), Government Degree College (Men) Srikakulam, Andhra Pradesh.**

Research Publications

Journal Articles

1. **Pradhan, R. K.**, Andreadis, K. M., Langhorst, T (2025). Assimilating SWOT Level-4 River discharge into a macroscale hydrologic model. Under review: *Remote Sensing of Environment*. doi: 10.2139/ssrn.5336997. [IF = 11.4]

2. **Pradhan, R. K.**, Markonis, Y., Marra, F., Nikolopoulos, E. I., Papalexiou, S. M., and Levizzani, (2025) V. Diurnal Variability of Global Precipitation: Insights from Hourly Satellite and Reanalysis Datasets. *Hydrology and Earth System Sciences*. doi: hess-29-4929-2025. [IF = 5.8]

3. Singh, U., Nasreen, S., Tripathi, G., Mehrishi, P., **Pradhan, R. K.**, Bestakova, Z., ... & Hanel, M. (2025). Disaggregating IMERG satellite precipitation over Czech Republic: an innovative approach using hybrid Extreme Gradient Boosting based on Fuzzy Spatial-Temporal

Multivariate Clustering. *J Big Data*. doi:10.1186/s40537-025-01208-4. [IF = 6.4]

4. Markonis, Y., Vargas Godoy, M. R., **Pradhan, R. K.**, Pratap, S., Thomson, J. R., Hanel, M., ... & Papalexiou, S. M. (2024). Spatial partitioning of terrestrial precipitation reveals varying dataset agreement across different environments. *Communications Earth & Environment*. doi: 10.1038/s43247-024-01377-9. [IF = 8.9]

5. Vargas Godoy, M. R., Markonis, Y., Rakovec, O., Jenicek, M., Dutta, R., **Pradhan, R. K.**, ... & Hanel, M. (2024). Water cycle changes in Czechia: a multi-source water budget perspective. *Hydrology and Earth System Sciences.* doi:10.5194/hess-28-1-2024. [IF = 5.8]

6. Rahim, A., Markonis, Y., Cuřín, V., **Pradhan, R. K.**, & Máca, P. (2023). Systematic analysis of flash drought research: contribution, collaboration, and challenges. *Theoretical and Applied Climatology*. doi:10.1007/s00704-023-04584-0. [IF = 3.5]

7. **Pradhan, R. K.**, & Markonis, Y. (2023). Performance evaluation of GPM IMERG precipitation products over the tropical oceans using Buoys. *Journal of Hydrometeorology*. doi: 10.1175/JHM-D-22-0216.1. [IF = 3.8]

8. **Pradhan, R. K.,** Markonis, Y., Vargas Godoy, M. R.*, Villalba-Pradas, A., Andreadis, K. M., Nikolopoulos, E. I., ... & Hanel, M. (2022). Review of GPM IMERG performance: A global perspective*. Remote Sensing of Environment*, *s8*. doi: 10.1016/j.rse.2021.112754. [IF = 13.5]

9. Srivastava, P. K., **Pradhan, R. K.,** Petropoulos, G. P., Pandey, V., Gupta, M., Yaduvanshi, A., ... & Sahai, A. K. (2021). Long-Term Trend Analysis of Precipitation and Extreme Events over Kosi River Basin in India. *Water*. doi: 10.3390/w13121695. [IF = 3.0]

10. Srivastava, P. K., Singh, P., Mall, R. K., **Pradhan, R. K.**, Bray, M., & Gupta, A. (2020). Performance assessment of evapotranspiration estimated from different data sources over agricultural landscape in Northern India. *Theoretical and Applied Climatology*. doi: 10.1007/s00704-019-03076-4. [IF = 3.5]

11. **Pradhan RK,** Srivastava PK, Maurya S, Singh SK, Patel DK (2019). Integrated framework for soil and water conservation in Kosi River Basin*. Geocarto International* doi: 10.1080/10106049.2018.1520921. [IF = 3.5]

12. **Pradhan RK,** Sharma D, Panda SK, Dubey SK, Sharma A (2018). Changes of precipitation regime and its indices over Rajasthan state of India: impact of climate change scenarios experiments. *Climate Dynamics*. doi:10.1007/s00382-018-4334-9. [IF = 4.06]

13. Sharma A, Sharma D, Panda SK, Dubey SK, **Pradhan RK** (2018). Investigation of temperature and its indices under climate change scenarios over different regions of Rajasthan state in India. *Global and Planetary Change*. doi:10.1016/j.gloplacha.2017.12.008. [IF = 4.4]

Conferences Attended

1. **Pradhan, R. K**. and Markonis, Y.(2024). Diurnal Variability of Global Precipitation: Insights from Hourly Satellite and Reanalysis Datasets. In *European Geosciences Union General Assembly*, Vienna, Austria, 24-28 April [Oral].

2. **Pradhan, R. K**. and Markonis, Y.(2023). Multi-source assessment of uncertainty over the tropical ocean. In *European Geosciences Union General Assembly*, Vienna, Austria, 24-28 April [Poster].

3. **Pradhan, R. K**. and Markonis, Y.(2023). Diurnal Variability of Global Precipitation: Insights from Hourly Satellite and Reanalysis Datasets. In *American Geophysical Union Fall Meeting*, San Francisco, California, 11-15 December [Poster].

4. **Pradhan, R. K.,** and Markonis, Y.(2022). Performance evaluation of GPM IMERG precipitation over the tropical oceans using Buoys. In *American Geophysical Union Fall Meeting*, Chicago, Illinois,15-16 December [Poster].

5. **Pradhan, R. K.,** and Markonis, Y.(2022). Performance evaluation of GPM IMERG precipitation

over the tropical oceans. In *INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES*, Montpelier, France, 01-05 April [Poster].

6. **Pradhan, R. K.**, and Markonis, Y.,, (2020). Performance of GPM IMERG Precipitation: A Literature Investigation. In *EARTH OBSERVATION FOR WATER CYCLE SCIENCE*, held online on 16-19 November 2020 [Oral].

7. **Pradhan R. K.**, Pradas, A. V., Rahim, A., Vargas, M., & Markonis, Y (2020). "A review and synthesis of GPM products efficiency: Preliminary results". In *URSI GASS*, Rome, Italy; 29 Aug. - 5 Sep. 2020 (Summary paper) [Oral].

8. **Pradhan RK.,** Sharma D., (2019). Projection of Changes in Future Precipitation over Rajasthan Using LARS-WG. In *Kostelecké Inspirování conference*, Prague, Czech Republic, 12-15 November 2019 [Oral].

Book Chapter

1. **Pradhan, R. K.**, Maurya, S., & Srivastava, P. K. (2019). Morphometric Analysis and Prioritization of Sub-Watersheds in the Kosi River Basin for Soil and Water Conservation. In *Wastewater Reuse and Watershed Management*: Engineering Implications for Agriculture, Industry, and the Environment (pp. 353-368). CRC

Technical Strength

Languages	English, Odia, Telug, and Hindi
Programming	R, Python, Shell scripts, CDO, LaTeX
Models	SWAT, VIC, QGIS, ArcGIS

Awards and Achievements

2024 **Marie Skłodowska-Curie Postdoctoral Fellowship (MSCA PF)** by European Union.

2024 **Roland Schlich travel support** to participate in the EGU General Assembly Vienna.

2022 **Rector's Prize (1st place**) for PhD students with outstanding research and publication.

2022 **Roland Schlich travel support** to participate in the EGU General Assembly Vienna.

2017 **University Grant Commission (UGC)-**National Eligibility Test (NET) for Lectureship in Environmental Sciences.

Grants Received

2024 Extreme Precipitation Response to Temperature Variations: The Role of Storm Types and Global Circulation Patterns. *Principal Investigator*, MSCA Fellow, European Union 2025-2027 (Euro 1,93,643.28).

2023 Intercomparison of diurnal cycle of precipitation estimates over the global ocean in 2001-2020, *Principal Investigator*, 2022-2023 (IGA[1]).

2022 Estimation of tropical oceanic precipitation: A multi-datasets approach, *Principal Investigator*, 2021-2022 (IGA).

2021 Performance evaluation of GPM IMERG precipitation over the tropical Oceans, *Principal Investigator*, 2020-2021 (IGA).

2021 Water Cycle Intensification Over Czech Republic, *Scientific Collaborator*, 2021-2023 (UGS).

[1] IGA and UGS are research grants for Ph.D. Candidates and groups of Young Researchers, respectively (Funding 6 000 – 10 000 EUR each).

2020 A review and synthesis of GPM products efficiency: A global perspective, *Principal Investigator*, 2019-2020 (IGA).

Academic Services

- Peer-reviewed manuscripts for Journal of Hydrology, Journal of Hydrometeorology, Water, Remote Sensing, Environment Development and Sustainability, Theoretical and Applied Climatology, Remote Sensing in Earth System Sciences and other journals.

Society Membership

- American Geophysical Union
- European Geosciences Union

Teaching and Mentorship

- Exploratory Data Analysis (ZVX114E) for Bachelor of Environmental Science, Czech University of Life Sciences Prague, 2022-2024.
- Master's Thesis Co-advisor, Czech University of Life Sciences Prague (2022–2023) Application of Machine Learning to Satellite Data for Classification of Precipitation Spatial Characteristics.
  Student: Mariia Kavalerova (Master's program)

References

Dr Yannis Markonis Associate Professor, Department of Water Resources &Environmental Modeling, Czech University of Life Sciences Prague, Czech Republic.
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Dr Konstantinos Andreadis Associate Professor, Department of Civil and Environmental Engineering, University of Massachusetts Amherst, MA, USA.
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