

CAREER SUMMARY

Dr. Aiswarya is a dedicated hydrologist specializing in hydrologic modelling, stochastic hydrology, geoinformatics and water resources management. She earned her Ph.D. from the University of Melbourne, where she significantly contributed to improving streamflow predictions in ungauged basins using remotely sensed data. Currently a Research Associate at the Institute for Climate Change Studies, her work focuses on assessing the impacts of climate change on Kerala's water resources. During her previous role as a post-doctoral fellow at IIT Bombay, she developed bias correction strategies for satellite precipitation products over the Western Ghats, India, and contributed to the project titled "Integrated Water Resource Management of the Upper Godavari River Basin." Additionally, she has provided consultancy services for NABARD, focusing on watershed development. Proficient in programming and software tools for water resource management, Dr. Aiswarya is passionate about bridging research and practical applications to address the challenges posed by climate change and water resource sustainability.

EXPERIENCE

Research Associate, Institute for Climate Change Studies, Kottayam **2023 - Present**

This work involves understanding the impact of climate change on the rainfall patterns in Kerala. The study examines its impacts on various aspects such as reservoir water levels, groundwater availability, and the susceptibility of Kerala to floods and droughts. I am also a part of the project 'State Specific Action Plan' for the water sector in Kerala.

Project Consultant- Journal Publication, NABARD (National Bank for Agriculture and Rural Development) Consultancy Services, Hyderabad **2022 - 2023**

My primary responsibilities involved drafting journal articles and evaluating publications originated from watershed development and management activities carried out within the Palanadu district of Andhra Pradesh under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

Post-Doctoral Fellow, Indian Institute of Technology Bombay **2018- 2020**

The post-doctoral research aimed to assess the suitability of various Remotely Sensed (RS) precipitation products for streamflow modelling, utilizing conceptual rainfall-runoff models. Four conceptual models (GR4J, AWBM, Sacramento, HYMOD) were compared with distributed models like SWAT and SHETRAN. Bias in three RS products (PERSIANN, TMPA-3B42RT, CMORPH) was observed, leading to the development of a multiplicative error-based bias correction strategy for the Western Ghats. The post-doctoral research resulted in 4 journal articles, 1 book chapter, and 3 conference publications.

Senior Project Technical Assistant, Indian Institute of Technology Bombay **2016 - 2017**

I was part of the collaborative project 'Integrated Water Resource Management (IWRM) of Upper Godavari River Basin,' led by Water And Land Management Institute (WALMI), Aurangabad, eWater Australia, and Indian Institute of Technology Bombay (IITB). The project aimed to enhance equitable water access across the basin using the 'Source' model developed by eWater Australia. This work resulted in two conference publications.

EDUCATION

Ph.D. from **University of Melbourne, Australia** **2012 - 2017**

Ph.D. Title: Calibration of hydrologic model using remotely sensed land surface variables

MTech. from **Indian Institute of Technology Bombay** **2010 - 2012**

Masters' subject/specialization: Geoinformatics and Natural Resources Engineering **CGPA: 9.57**

BTech. from **Kelappaji College of Agricultural Engineering and Technology, Kerala** **2005 - 2009**

Agricultural University
BTech subject/specialization: Agricultural Engineering **CGPA: 8.6**

AWARDS/RECOGNITIONS

- Awarded with **Melbourne Teaching Certificate** (A Professional Development Program for University of Melbourne staff with teaching responsibilities), November 2015
- **INNRIA best paper award** for the theme Environmental and Atmospheric Applications during the conference Geomatrix-2012, Mumbai
- Won 3rd prize in **Annual Business Plan Competition** conducted by University of Kerala, April 2009

PUBLICATIONS

Journals

1. **Kunnath-Poovakka, A.**, and T. I. Eldho (2023), Bias Correction of Satellite Precipitation Products for Hydrologic Modelling in Western Ghats Region, India, *Journal of Hydrologic Engineering*, 28(4), 04023010. <https://doi.org/10.1061/JHYEFF.HEENG-569>
2. **Kunnath-Poovakka, A.**, D. Ryu, T. I. Eldho, and B. George (2021), Parameter Uncertainty of a Hydrologic Model Calibrated with Remotely Sensed Evapotranspiration and Soil Moisture, *Journal of Hydrologic Engineering*, 26(3), 04020070. [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.000205](https://doi.org/10.1061/(ASCE)HE.1943-5584.000205)
3. Anshuman, A., **A. Kunnath-Poovakka**, and T. I. Eldho (2019), Towards the use of conceptual models for water resource assessment in Indian tropical watersheds under monsoon-driven climatic conditions, *Environmental Earth Sciences*, 78(9), 282. <https://doi.org/10.1080/09715010.2018.1556124>
4. **Kunnath-Poovakka, A.**, and T. I. Eldho (2019), A comparative study of conceptual rainfall-runoff models GR4J, AWBM and Sacramento at catchments in the upper Godavari river basin, India, *Journal of Earth System Science*, 128(2), 33. <https://doi.org/10.1007/s12040-018-1055-8>
5. Anshuman, A., **A. Kunnath-Poovakka**, and T. I. Eldho (2018), Performance evaluation of conceptual rainfall-runoff models GR4J and AWBM, *ISH Journal of Hydraulic Engineering*, 27(4), 365-374. <https://doi.org/10.1007/s12665-019-8281-5>
6. **Kunnath-Poovakka, A.**, D. Ryu, L. Renzullo, and B. George (2018), Remotely sensed ET for streamflow modelling in catchments with contrasting flow characteristics: an attempt to improve efficiency, *Stochastic Environmental Research and Risk Assessment*, 32(7), 1973-1992. <https://doi.org/10.1007/s00477-018-1528-y>
7. **Kunnath-Poovakka, A.**, D. Ryu, L. Renzullo, and B. George (2016), The efficacy of calibrating hydrologic model using remotely sensed evapotranspiration and soil moisture for streamflow prediction, *Journal of hydrology*, 535, 509-524. <https://doi.org/10.1016/j.jhydrol.2016.02.018>

Book Chapters

1. Sreedevi, S., **A. Kunnath-Poovakka**, and T. I. Eldho. "Comparison of Conceptual and Distributed Hydrological Models for Runoff Estimation in a River Basin." *The Ganga River Basin: A Hydrometeorological Approach*. Springer, Cham, 2021. 135-148

Conferences Presentations

- **Kunnath-Poovakka, A.**, Sinan Nizar, Jainet, Sudheer K.P. (2024). 'Exploring the Spatiotemporal Variations, Drivers and Consequences of Unusual Rainfall Patterns During 2023 In Kerala, India'. 36th Kerala Science Congress, Kasaragod, February 2024.
- **Kunnath-Poovakka, A.**, and E. T. Iype (2020). A Method for Bias Correction of Remotely Sensed Precipitation across Western Ghats Region of India, paper presented at EGU General Assembly Conference Abstracts. p.8431
- **Kunnath-Poovakka, A.**, and T. I. Eldho (Mar 2018), Catchment Classification in Data-Scarce Regions Using a Linear Classification Technique, International Conference on Water Resources (ICWR 2018), Thiruvananthapuram, Kerala, India
- Aatish, A., T. I. Eldho, and **A. Kunnath-Poovakka** (Jan 2018). Performance Evaluation of SWAT with a Conceptual Rainfall- Runoff Model GR4J a Catchment in Upper Godavari River Basin. International SWAT Conference, Conference Proceedings, Chennai, Tamil Nadu, India,101.

- **Kunnath-Poovakka, A.**, and T. I. Eldho (Nov 2017). Comparison of Conceptual Rainfall-Runoff Models for Water Resources Assessment in a River Basin. 9th International Conference on Geomorphology, New Delhi, India
- Anshuman, A., **A. Kunnath-Poovakka**, and T. I. Eldho (Dec 2017), Performance Evaluation of Conceptual Rainfall-Runoff Models GR4J and AWBM. Hydro 2017, Ahmedabad, Gujarat, India
- Ryu, D., A. Kunnath Poovakka, L. Renzullo, and B. George (2014), The Potential of Remotely Sensed Evapotranspiration and Soil Moisture Retrievals in Calibrating Land Surface Models, AGUFGM, 2014, H41A-0779.
- **Kunnath-Poovakka, A.**, D. Ryua, L. Renzullo, R. Pipunica, and B. George (Dec 2013) Calibration of Land Surface Model Using Remotely Sensed Evapotranspiration and Soil Moisture Predictions. Proceedings of the 20th International Congress on Modelling and Simulation MODSIM2013, Adelaide, Australia [Available at <http://www.mssanz.org.au/modsim2013/L19/poovakka.pdf>] (Peer reviewed).
- **Aiswarya, K. P.**, Y. Bhavani Kumar, and J. Adinarayana (Feb 2012), Convective Boundary Layer Height Determination Using LIDAR, Geomatrix'12, an International Conference on Geospatial Technologies (This paper won INNRIA Best Paper Award for the theme 'Environmental and Atmospheric Applications').
