Kaushlendra Verma

Post-Doctorate at
Meteo-France, Toulouse

Date of Birth: Nov. 10, 1992

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Interests

- Remote Sensing
- Satellite Altimetry
- Hydrological Modelling
- Machine Learning

Skills

Programming:
- Python
- Bash scripting

Operating System:
- Linux, Windows

Software:
- ArcGIS, ERDAS, SNAP and QGIS

Hydrological Models:
- ISBA-CTRIP
- WRF, WRF-Hydro
- SWAT+

Working Knowledge:
- High-Performance Computing
- Google Cloud Computing

Research Objective

In my current post-doctorate position at Meteo-France, through CNES Post-Doctoral Fellowship for 2022. My research revolves around practical applications of the SWOT satellite-altimetry mission, with a focus on advancing global space hydrology.

Experience

2023 – 2025 **Post-Doctorate** — **Meteo-France, Toulouse**
Title: Towards a global scale SWOT-CTRIP hydrological data assimilation system.
Supervisor: Simon Munier and Aaron Boone

Education

2018 – 2022 **Ph.D. in Remote Sensing** — **IIT Bombay, India**
Title: Potential of Surface Water and Ocean Topography (SWOT) Mission for Inland Hydrology.
Supervisor: Prof. J. Indu
Grade: CGPA: 7.64/10

2016 – 2018 **M.Tech. in Water Resource Engineering** — **VNIT-Nagpur, India**
Title: Validation of Sensitivity of GRACE and GLDAS data to Groundwater variation within basaltic aquifer system using spatial analysis and ANN.
Supervisor: Dr. Y.B.Katpatal
Grade: CGPA: 9.26/10

2010 – 2014 **B.Tech. in Civil Engineering** — **UPTU, India**
Title: Analysis and Design of a multi-storey buildings.
Supervisor: Mr. Shailendra Kumar Prajapati
Grade: 75.88/100%

2010 **SSC or Intermediate in Science and Mathematics** — **UP Board, India**
Grade: 75.00/100%

2007 **HSC or Highschool in Science and Mathematics** — **UP Board, India**
Grade: 67.3/100%

Other Training

2023 **Adaptation and development of skills** — **CERFACS**
Title: Training on Data Assimilation by Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique.

2020 **Community WRF-Hydro Modeling System Abridged Virtual Training** — **NCAR**
Title: First virtual abridged WRF-Hydro Training Workshop by National Center for Atmospheric Research.

2016 **Rainwater Harvesting and Artificial Recharge** — **Ministry of W.R., India**
Title: Training on Rainwater Harvesting and Artificial Recharge Organized by Ministry of Water Resource, River development and Ganga Rejuvenation Act C.G.W.B. India.

Teaching Experience

Position as Teaching Assistant

Spring'19, 20 **CE 712: Digital Image Processing** — **IIT Bombay**
Title: Digital Image Processing of Remotely Sensed Satellite Data Geodesy Laboratory.

Fall'20 **CE 716: Data Processing** — **IIT Bombay**
Title: Data Processing in Remote Sensing using Python and SNAP.

Hobbies

I do science communication through stories on my LinkedIn. I actively participate in sports and served as the hostel sports secretary of IIT Bombay. I also served on the hostel election commission committee in 2021, and was positioned as the Academic Unit Representative for Academic Affairs in 2022, and hostel warden nominee.

Metrics

Profiles

Languages

Hindi (First Language)

English (Second Language)

Co-Curricular and Extra Curricular Activities

Short-term Courses

2016 **Global Initiative of Academic Networks** **IIT BBS**
Title: Extreme Weather and Climate Variability: Observation, Understanding and Prediction.

2016 **Global Initiative of Academic Networks** **IIT Madras**
Title: Hydro-informatics for Integrated Water Resource Management using SWAT-Model.

Training

2021 Data Visualization and Information Design: Create a Visual Model.
2020 Training Course in Science Journalism (TCSJ), Indian Science Communication Society.

Awards and Achievements

2023-25 Centre National d'Etudes Spatiales (CNES)-Post Doctoral Fellowship 2022.
2021 Awarded AGU Fall meeting 2021 Travel Grant.
2018-23 Awarded MHRD India Fellowship for pursuing Ph.D.
2016-18 Awarded MHRD India Fellowship for pursuing M.Tech.

International-Collaboration

NASA Early Adopters Project: SWOT Mission-2021

- My Ph.D. was the part of the project "Examining the potential of SWOT mission in Hydrometeorology over India" lead by my supervisor **Prof. J. Indu**, in the collaboration with **Dr. Stephane Calmant** (Laboratoire d'Études en Géophysique et Océanographie Spatiales LEGOS). Through the DST-CNRS project I did a scientific visit at INRAE and LEGOS from Nov,2021 to Jan,2022.

Publications

Journals

- **Verma K.**, and Indu J. (2023), "Applicability of SWOT data in calibrating WRF-Hydro hydrological model over the Tawa River basin", Geocarto International, 38(1). 10.1080/10106049.2023.2185292
- **Verma K.**, Nair A., Indu J., Karmakar S. and Calmant S. (2021), "Satellite Altimetry for Indian Reservoirs", Water Science and Engineering, 14(4),277-285.10.1016/j.wse.2021.0
- **Verma K.**, and Indu J. (2021),"Effect of satellite altimetry sampling error in estimating reservoir storage and outflow",Geocarto International. 10106049.2021.1980615
- Nair A. **Verma K.**, Ghosh S., Karmakar S. and Indu J. (2021), "Exploring the potential of SWOT mission for reservoir monitoring in Mahanadi basin", Advances in Space Research, 69 (3),1481-1493. 10.1016/j.asr.2021.11.019
- **Verma, K.**, and Katpatal, Y. B. (2019),"Groundwater Monitoring Using GRACE and GLDAS Data after Downscaling Within Basaltic Aquifer System", Groundwater, 58(1),143–151. 10.1111/gwat.12929

International Conferences

- **Verma K.**, Munier S., Boone A., and Le Moigne P. (2023). "Advancing Global-Scale River Discharge Estimation: A Novel Framework for Assimilating SWOT altimetry using CTRIP-HyDAS.", Hydrospace.
- **Verma K.**, and Indu J. (2021). "Assessing the Potential of the Surface Water and Ocean Topography (SWOT) Mission for Reservoir Monitoring over India", AGU Fall Meeting.

- **Verma K.**, Katpatal Y.B. and Chengot R.(2018). "Performance evaluation of SWAT Model for groundwater variability analysis in Venna river basin of central India", International Conference and Workshop on Soil and Water Assessment Tool at Indian Institute of Technology Madras ICSR.

- **Verma K.** and Katpatal Y.B. (2018). "Soil moisture variability correlation with GLDAS data using SWAT-Model output data for Upper Godavari River basin", International Conference and Workshop on Soil and Water Assessment Tool at Indian Institute of Technology Madras ICSR.

Book Chapter

- Indu J., Nair A., Pradhan A., Mangla R., Krishnan S. **Verma K.**, and Huggannavar V. (2022), "Terrestrial water budget through radar remote sensing", In Earth Observation, Radar Remote Sensing, Elsevier, 123-148. 10.1016/B978-0-12-823457-0.00005-7

- **Verma K.** and Katpatal Y.B. (2021). "Monitoring of Soil Moisture Variability and Establishing the Correlation with Topography by Remotely Sensed GLDAS Data. In: Pandey A., Mishra S., Kansal M., Singh R., Singh V. (eds) Water Management and Water Governance. Water Science and Technology Library, vol 96. Springer, Cham. 10.1007/978-3-030-58051-3_10