CURRICULUM VITAE

Dr. Swadhina Koley

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Vidwan Id: 595834

Years of Experience:

5+ years (1.5 years in JSAC, Ranchi, 2.5 years in IARI, New Delhi)

Areas of expertise

Remote sensing-based vegetation analysis; Seasonal cropping pattern analysis; Agriculture-Climate interaction; Spatial Analysis and Modelling; GIS-based modeling; Multi-criteria Decision modeling; Agricultural drought assessment; Climate extremities impact on agriculture.

Professional Experience

Mar 2025 – Present: Assistant Professor, Department of Geography, School of Basic and Applied Sciences, Adamas University, Barasat, Kolkata, India.

Oct 2022 – Mar 2025: Principal Project Associate – I, Division of Environment Science, Indian Agricultural Research Institute, Pusa, New Delhi, India.

Dec 2015 – Jul 2017: Junior Research Fellow, Jharkhand Space Applications Center, Ranchi, India.

Educational Qualification

2023: PhD (Agricultural remote sensing), Birla Institute of Technology, Mesra

2015: M.Sc. (Remote Sensing & GIS), Vidyasagar University, West Bengal (84.42%; **Gold Medallist**)

2012: B.Sc. (Physics Hons.), Serampore College, University of Calcutta (57.25%)

2009: Higher Secondary (Science), Serampore Girls High School, WBCHSE (84.14%)

2007: Madhyamik, Serampore Girls High School, WBBSE (89.25%)

Publication in International Peer-reviewed Journals

1. **Swadhina Koley** and Jeganathan C. (2026). Leveraging multi-sensor satellite imagery for analyzing crop seasonality. Food and Humanity. DOI: https://doi.org/10.1016/j.foohum.2026.101166. ISSN: 2949-8244.
2. Arvind Dhaloiya, **Swadhina Koley**, Manjar Alam, Soora Naresh Kumar (2025). Analyzing soil loss dynamics in the Indian Himalayan Region using geospatial approach. Spatial Information Research. DOI: https://doi.org/10.1007/s41324-025-00667-4. ISSN: 2366-3294.
3. **Swadhina Koley**, Manjar Alam, Soora Naresh Kumar (2025). Integrating Statistical Analysis and Decision-Making to Assess Flood Susceptibility in Indian Mountainous Agroecosystems. Journal of Earth System Science. DOI: https://doi.org/10.1007/s12040-026-02781-9. ISSN: 0973-774X.
4. Pratibha Prakash, **Swadhina Koley**, Soora Naresh Kumar, Ramesh Chand Harit, Jitendra Kumar Gupta, Ravi Kumar (2025). Remote sensing-based leaf area index estimation of spring wheat through machine- learning approaches. Journal of the Indian Society of Remote Sensing. DOI: https://doi.org/10.1007/s12524-025-02347-0. ISSN: 0974-3006.
5. **Swadhina Koley** and Jeganathan C. (2025). Optimizing Cropping Intensity Through an Integrated MCDM Framework: A Step Toward Sustainable Agriculture. Process Integration and Optimization for Sustainability. DOI: https://doi.org/10.1007/s41660-025-00566-z. ISSN: 2509-4246.
6. **Swadhina Koley** and Soora Naresh Kumar (2024). Machine learning-based potential loss assessment of maize and rice production due to flash-flood in Himachal Pradesh, India. Environmental Monitoring and Assessment. DOI: https://doi.org/10.1007/s10661-024-12667-2. ISSN: 1573-2959.
7. **Swadhina Koley** and Jeganathan C. (2023). Evaluating the Climatic and Socio-economic Influences on the Agricultural Drought Vulnerability in Jharkhand. Environmental Monitoring and Assessment. DOI: https://doi.org/10.1007/s10661-022-10557-z. ISSN: 1573-2959.
8. **Swadhina Koley** and Jeganathan C. (2021). Sentinel 1 and Sentinel 2 for Cropland Mapping with Special Emphasis on the usability of Textural and Vegetation Indices. Advances in Space Research. DOI: https://doi.org/10.1016/j.asr.2021.10.020. ISSN: 0273-1177.
9. **Swadhina Koley** and Jeganathan C. (2020). Estimation and evaluation of high spatial resolution surface soil moisture using multi-sensor multi-resolution approach. Geoderma. DOI: https://doi.org/10.1016/j.geoderma.2020.114618. ISSN: 1872-6259.

Publication in National Journal

1. Pratibha Prakash, **Swadhina Koley**, S. Naresh Kumar, R. C. Harit, Bidisha Chakrabarti, Manoj Shrivastava (2024). Evaluating the Impact of Surface Water Dynamics on Agriculture in the Semi-arid Region – A Case Study of Bundelkhand, India. Ecology Environment and Conservation.

Conference Proceedings/Abstracts Published

1. **Swadhina Koley** (2025). Deciphering Seasonal Cropping Patterns using Sentinel-1 Time-Series Data and Machine-learning Approach, in: IEEE AGERS, 17-18 December, 2025, Indonesia, pp. 632-636.
2. **Swadhina Koley**, Jeganatham Chockalingam, Abhisek Santra, Pulakesh Das (2025). Quantifying Climate-Vegetation Relationship through Explainable Random Forest Regressor and Uncertainty Analysis, in: ISG-ISRS National Symposium, 25-27 November 2025, Kolkata, India, pp. 163.
3. **Swadhina Koley** and Mohit Kumar (2025). A Geospatial Framework for Assessing Urban Environmental Criticality: A Case of Kidderpore, Kolkata, in: GIFTS Summit, 1-3 September 2025, Pune, India, pp. 315-320.
4. Mohit Kumar and **Swadhina Koley** (2025). Identifying temperature 'hotspots' for increasing urban resilience to heat stress in Kolkata, West Bengal, India, in: GIFTS Summit, 1-3 September 2025, Pune, India, pp. 333-339.
5. **Swadhina Koley** and Jeganathan, C., (2024). Machine Learning-Based Prediction of Vegetation Growth in the Projected Climatic Scenario, in: Mediterranean Geosciences Union, 4th Annual Meeting, 25-28 November 2024, Barcelona, Catalonia, Spain. ***(Proceedings in progress)***.
6. **Swadhina Koley** and Jeganathan, C., (2021). Evaluating the Climatic and Socio-Economic Influences on the Agricultural Drought Vulnerability in Jharkhand, in: National Symposium on Advances in Remote Sensing (NS-ARS21), 9-11 December 2021, Ranchi, India, pp. 18-19. ***(Best Paper Award)***
7. **Swadhina Koley** and Jeganathan, C., (2020). Estimation of the Green and Blue Water Footprint of Kharif Rice using Remote Sensing Techniques: A Case Study of Ranchi, in: IEEE International India Geoscience and Remote Sensing Symposium. 2-4 December 2020, Ahmedabad, India, pp. 1-4.
8. **Swadhina Koley** and Jeganathan, C., (2020). Assessing the impact of climate change on the vegetation health and predicting future drought vulnerability, in: ISRS-ISG National Symposium. 18-19 December 2020, Ahmedabad, India, p. 24.
9. **Swadhina Koley** and Jeganathan C., (2019). Vegetation Health Index as an indicator of drought: A case study of Khunti District over two contrasting monsoon rainfall period. 3rd World Clean Environment Summit 2019. 19-21 August 2019. St. Xaviers College, Ranchi, Jharkhand. ***(Best Paper Award)***
10. **Swadhina Koley** and Jeganathan C. (2018). Geospatial Technology: the emerging global trend towards the new horizon of sustainable agriculture. National Conference for Education in Science, Mathematics & Technology. 11th August 2018. Taurian World School, Ranchi. ***(2nd Best Paper Award)***

Book Chapter Published

1. **Swadhina Koley**, Nikita Roy Mukherjee, Manjar Alam (2026). Land Degradation Vulnerability Assessment in a Semi-arid Ecosystem in India Using Geospatial Techniques: A Case Study of Nashik, Maharashtra. In: Pal, S.C., Chatterjee, U., Ruidas, D. (eds) Soil Degradation, Desertification and Restoration. Sustainability Solutions, vol

1. Springer, Cham. https://doi.org/10.1007/978-3-031-92277-0_9. ISBN 978-3-031-92277-0
2. **Swadhina Koley** and Jeganathan C. (2025). Extraction of Fallow Lands in the Rabi Season Using Time-Series Landsat 8 Imageries. In: Mutanga, O., Pandey, P.C., Das, S., Chatterjee, U. (eds) Revealing Ecosystem Services Through Geospatial Technologies. Springer Remote Sensing/Photogrammetry. Springer, Cham. https://doi.org/10.1007/978-3-031-98048-0_3. ISBN: 978-3-031-98048-0.

Reports Published

1. Sharma et al. (2016). Crop Acreage Estimation in Jharkhand using Satellite Remote Sensing Data. Year 2015-16. Published by Jharkhand Space Application Centre, Govt. of Jharkhand, as a part of the Jharkhand Crop Information System (JCIS) Project, a state level project executed over the state of Jharkhand to monitor the crop acreage in different season.

Poster Presentation

1. Bara, A., Singh, B., **Koley, S.**, & Jeganathan, C. (2019). Land Suitability Modelling for Agriculture Expansion using Geospatial Technology: A Case Study of Ranchi District. 3rd World Clean Environment Summit. Ranchi.

Training/Workshops/Webinars attended

1. Complex Lithology Discernment using Backscattering and Textural Component of SAR Images in Arid Areas. IEEE GRSS Kolkata Chapter. April 27, 2024.
2. Advanced Application of AI/ML in Geospatial Domain. IEEE Kolkata Chapter. January 27, 2024.
3. Geospatial Data Analytics using Deep Learning. IEEE Kolkata Chapter. October 3, 2023.
4. Geodata Processing using Python. Indian Institute of Remote Sensing, Dehradun. February 20-24, 2023.
5. Capacity Building on Simulation Modelling and Climate Change Research Towards Knowledge Based Agriculture. ICAR – Indian Agricultural Research Institute. 17th November – 7th December, 2022.
6. Two-Day Brainstorming Workshop on Modeling fault zone induced surface mass transport in Himalayan orogenic terrains for the study of fault related areas in Himalayan towns. March 16 – 17, 2020. BIT, Mesra.
7. One Day Workshop on Coal Chemistry and the Health Impacts of Coal. 10th December, 2019. BIT, Mesra.
8. 1st Research Scholars Colloquium. September 1 – 2, 2019. BIT, Mesra.
9. DST sponsored five-day short-term course-cum-training program on InSAR: Theory, Processing and Application. August 12 – 16, 2019. MNNIT, Allahabad.
10. Three-Day Certificate course on Introduction to R-Programming Language for Geostatistical Data Analysis. June 10 – 12, 2019. IIT (ISM), Dhanbad.

11. ISPRS-GEOGLAM-ISRS Post Workshop International Tutorial on Advances in Remote Sensing in Agriculture. Feb 21-22, 2019. New Delhi.
12. International Workshop on Earth Observations for Agricultural Monitoring (Organized by ISPRS WG III/10 & ISRS). Feb 18 – 20, 2019. New Delhi.
13. Workshop on National Information System for Climate and Environmental Studies (NICES) Data Programme. 31st January, 2019. BIT, Mesra.
14. GIAN course on Transdisciplinary Climate Services to Prepare for Climate Change. December 17 – 21, 2018. NIT, Patna.
15. Three-Day Workshop on Design & Style of a PhD Thesis and Reference Management using Open Source Solutions. March 29 – 31, 2018. IIT (ISM), Dhanbad.
16. RS & GIS Applications in Water Resource Management. May 22 – June 09, 2017. ISRO, India.
17. Microwave Remote Sensing and its Applications. April 10 – April 27, 2017. ISRO, India.
18. Remote Sensing and GIS Applications in Carbon Forestry. February 16 – March 10, 2017. ISRO, India.
19. Basics of Remote Sensing, Geographical Information System & Global Navigation Satellite system. August 22 – November 18, 2016. ISRO, India.
20. Geoweb Services and Geoportal Applications. June 28 – July 15, 2016. ISRO, India.
21. Geospatial Technologies for Urban Planning. February 11 – March 15, 2016. ISRO, India.

Professional Membership

1. Indian Society of Remote Sensing (Life Member)
2. Indian Society of Geomatics (Life Member)
3. IEEE Professional Member (Till 31st December, 2025)

Role as a Reviewer

1. Journal of the Indian Society of Remote Sensing (Springer Nature)
2. Environmental Monitoring and Assessment (Springer Nature)
3. Earth Science Informatics (Springer Nature)
4. Environmental Geochemistry and Health (Springer Nature)
5. Scientific Reports (Springer Nature)
6. Environmental Science and Policy (Elsevier)
7. Environmental Earth Sciences (Springer Nature)
8. Applied Geomatics (Springer Nature)
9. Discover Hazards (Springer Nature)

Achievements/Awards/Recognitions

1. DST AWSAR Awardee (2020)
2. Gold medallist in post-graduation (2015)
3. GATE 2022 (Geomatics Engineering, AIR – 73, Score – 609)
4. GATE 2015 (Geology & Geophysics, Score – 185)
5. Best paper award in NS-ARS21 (2021).
6. Best paper award in 3rd World Clean Environment Summit (2019).

7. 2nd Best paper award in National Conference on Education in Science, Mathematics & Technology (2018).

Invited Talk

- One Day Sensitization Workshop on "Popular Science Writing" under DST AWSAR Program. 13 July 2022. Ranchi University.

Referees

1. **Dr. Soora Naresh Kumar**
   Principal Scientist & Head (Division of Environmental Sciences),
   ICAR- Indian Agricultural Research Institute,
   Pusa, New Delhi – 110012, India
   Ph – (+91) 88269 63224
   Email – nareshkumar.soora@gmail.com

2. **Dr. C. Jeganathan**
   Professor & Dean,
   Birla Institute of Technology, Mesra,
   Ranchi – 835215, India,
   Ph – (+91) 77638 59236,
   Email – jeganathanc@bitmesra.ac.in

3. **Dr. Akhouri Pramod Krishna**
   Professor,
   Birla Institute of Technology, Mesra,
   Ranchi – 835215, India,
   Ph – (+91) 99315 77628
   Email – apkrishna@bitmesra.ac.in

4. **Dr. Dipanwita K. Dutta**
   Assistant Professor,
   Vidyasagar University, West Midnapore,
   West Bengal – 721102, India,
   Ph – (+91) 90519 84465,
   Email – dipanwita@mail.vidyasagar.ac.in