

Prajwal Khanal

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Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Enschede

INTERESTS	Remote sensing of vegetation; soil–vegetation–atmosphere interaction; land surface models and deep learning.
EDUCATION	PhD, Geo-Information Science and Earth Observation Feb 2023—... <i>University of Twente and Planet Labs, the Netherlands</i> – WUNDER: field-scale soil moisture and fluxes for agricultural drought monitoring. – Supervisors: Prof. dr. Bob Su, dr. Yijian Zeng and dr. Joost Beckers. M.Sc., Environmental Engineering, Technical University of Munich Nov 2020—Dec 2022 – Graduated 1.4/5.0 (1 = best). Thesis: soil moisture controls on vegetation, in <i>Biogeosciences</i>. B.E., Civil Engineering, Institute of Engineering, Tribhuvan University, Nepal Nov 2014—Aug 2018 – Ranked 20th out of 192, 77.7%. Thesis: flood inundation mapping, Babai River.
EMPLOYMENT	Research Intern, Max Planck Institute for Biogeochemistry, Jena Mar 2022—Feb 2023 – Near-surface soil moisture vs. terrestrial water storage, controls on global vegetation. Student Research Assistant, Technical University of Munich Nov 2021—Feb 2023 – Flood inundation maps for the Ouémé (Benin) and Naryn (Kyrgyzstan) rivers, HEC-RAS. Working Student, Jena-Geos Ingenieurbüro GmbH, Munich May 2021—Dec 2021 – Excel/VBA tool for greenhouse-gas accounting: combustion, refrigeration, transport. Freelance Civil Engineer, ECEP, Kathmandu, Nepal Dec 2018—Dec 2022 – Business plans for community water supply projects, Government of Nepal. – Smart water supply master plan for Lumbini, Ministry of Urban Development.
PUBLICATIONS	<i>Peer-reviewed</i> Moutahir, H., Sulzer, M., Kiese, R., ... Khanal, P. , et al. (2026). <u>Matching scales of eddy covariance measurements and process-based modelling: assessing spatiotemporal dynamics of carbon and water fluxes in a mixed forest in Southern Germany.</u> <i>Biogeosciences</i> , 23, 1719–1738. Zeng, Y., Alidoost, F., Schilperoort, B., ... Khanal, P. , et al. (2025). <u>Towards an open soil-plant digital twin based on the STEMMUS-SCOPE model, following open science.</u> <i>Computers & Geosciences</i> , 205, 106013. Khanal, P. , Hoek van Dijke, A. J., Schaffhauser, T., et al. (2024). <u>Relevance of near-surface soil moisture vs. terrestrial water storage for global vegetation functioning.</u> <i>Biogeosciences</i> , 21(6), 1533–1547. Bhattarai, P., Khanal, P. , Tiwari, P., et al. (2019). <u>Flood inundation mapping of Babai basin using HEC-RAS and GIS.</u> <i>Journal of the Institute of Engineering</i> , 15(2), 32–44. <i>Under review</i> Khanal, P. , Zeng, Y., Daoud, M. G., Beckers, J., Su, Z. <u>Investigating the impact of multilayer resistance schemes on simulating land surface temperature and turbulent fluxes: evaluation within the STEMMUS-SCOPE model.</u> Preprint on SSRN. Khanal, P. , et al. Deep learning soil moisture and fluxes with multimodal foundation-model embeddings. <i>Conference contributions</i> Khanal, P. , et al. (2026). Bridging the scale gap: daily 10-metre soil moisture, evapotranspiration and carbon fluxes via multimodal deep learning. <i>Workshop on Machine Learning for Land and Hydrology</i> , ECMWF, Reading, UK. Khanal, P. , Hoek van Dijke, A., Zeng, Y., Orth, R. (2023). <u>Near-surface vs. sub-surface soil moisture impacts on vegetation functioning.</u> <i>EGU General Assembly</i> , Vienna, EGU23-7670. Khanal, P. (2019). Flood inundation mapping: an inference on the outbreak of flood-borne diseases. <i>International Conference on Health Engineering in Disaster</i> .
AWARDS	Second place, Hackathon on Machine Learning for Earth System Modelling Aug 2026 – Quantization in foundation models. CESOC, ECMWF, TRA Modelling, FZ Jülich, Cologne.
SCHOLARSHIPS	Deutschlandstipendium, merit scholarship, Technical University of Munich 2021/22 Merit-based scholarship, Institute of Engineering, Tribhuvan University 2014—2018 – Ranked 8th out of 9048 in the IOE entrance examination.
TEACHING	Teaching Assistant, Technical University of Munich 2021—2022 – River Basin Modelling; Integrated Water Resources Management; Rapidly Varying Flow. Assistant Lecturer, Cosmos College of Management and Technology, Nepal Nov 2018—Jan 2021 – Elective: Python and GIS for water resources.
SOFTWARE	WUNDER data viewer, ITC, University of Twente 2026 – Weather and soil moisture loggers, read by farmers at the food forests as drought develops. Source.
SKILLS	<i>Modelling:</i> STEMMUS-SCOPE, land surface models, HEC-RAS, SWAT <i>Programming:</i> Python, PyTorch, R, GIS, Excel/VBA <i>Languages:</i> English (C2), German (A1), Dutch (A2), Hindi, Nepali