

Ankit Shekhar

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Education

- 12/2019 – 06/2023 Dr. Sc., Environmental Sciences, ETH Zürich
Thesis: Forest vulnerability to extreme dryness stress
- 07/2017 – 05/2019 M.Tech., Earth System Science and Technology, IIT Kharagpur
- 07/2011 – 05/2015 B.Tech., Agricultural and Food Engineering, IIT Kharagpur

Professional Work Experience

- 05/2023 – Present Assistant Professor Grade - II, IIT Kharagpur
- 10/2023 – 04/2024 Post-doctoral Researcher, ETH Zürich
- 12/2019 – 09/2023 Scientific Assistant, ETH Zürich
- 06/2019 – 11/2019 Research Assistant, Technical University of Munich

Teaching

- Autumn - 2024 AG69035, Agricultural Production Systems Lab

Selected Awards

- 2018 DAAD-IIT Sandwich Masters Scholarship, DAAD Germany
- 2013 Green Initiative Grant (50k INR), IIT Kharagpur

Skills

- Programming* MATLAB, R Software, Python, and FORTRAN
- Software* ArcGIS/QGIS, ERDAS, CAD
- Specific skills* Eddy-Covariance flux measurement, High Performance Computing (HPC)

Supervision

2023	Elisa Jordan, B.Sc. Thesis	University of Münster
2024	Ziyu Guo, M.Sc. Thesis	ETH Zürich

Publications

Journal publications = 30 [published=26, under review = 4] as of June 2024.

Check out my [Google Scholar](#) or [ResearchGate](#) account.

(* Corresponding author, (#) Shared-first author, (†) Main Supervisor

- [1] Scapucci, L., **Shekhar, A.** #, Aranda-Barranco, S., Bolshakova, A., Hörtnagl, L., Gharun, M., and Buchmann, N. (2024). *Compound soil and atmospheric drought events and CO₂ fluxes of a mixed deciduous forest: Occurrence, impact, and temporal contribution of main drivers*. EGU sphere [preprint] [DOI](#)
- [2] **Shekhar, A.** *, Buchmann, N., Humphrey, V., Gharun, M. (2024). *More than three-fold increase in compound soil and air dryness across Europe by the end of 21st century*. Weather and Climate Extremes [DOI](#)
- [3] **Shekhar, A.** *, Hörtnagl, L., Paul-Limoges, E., Etzold, S., Zweifel, R., Buchmann, N., Gharun, M. (2024). *Contrasting impact of extreme soil and atmospheric dryness on the functioning of trees and forests*. Science of the Total Environment [DOI](#)
- [4] Gharun, M., **Shekhar, A.**, Xiao, J., Li, X., and Buchmann, N. (2024). *Effect of the 2022 summer drought across forest types in Europe*. EGU sphere [preprint] [DOI](#)
- [5] Nelson, J. A., Walther, S., Gans, F.,... **Shekhar, A.**,... Jung, M. (2024). *X-BASE: the first terrestrial carbon and water flux products from an extended data-driven scaling framework, FLUXCOM-X*. EGU sphere [preprint] [DOI](#)
- [6] Gharun, M., **Shekhar, A.**, Hörtnagl, L., Krebs, L., Arriga, N., Migliavacca, M., Roland, M., Gielen, B., Montagnani, L., Tomelleri, E., Šigut, L., Peichl, M., Zhao, P., Schmidt, M., Grünwald, T., Korkiakoski, M., Lohila, A., and Buchmann, N. (2024). *Divergent responses of evergreen needle-leaf forests in Europe to the 2020 warm winter*. EGU sphere [preprint] [DOI](#)
- [7] Gou, R., Chi, J., Liu, J., Luo, Y., **Shekhar, A.**, Mo, L., Lin, G. (2024). *Atmospheric water demand constrains net ecosystem production in subtropical mangrove forests*. Journal of Hydrology [DOI](#)
- [8] Gou, R., Buchmann, N., Chi, J., Luo, Y., Mo, L., **Shekhar, A.**, Feigenwinter, I., Hörtnagl, L., Weizhi, L., Xiaowei, C., Yuchen, M., Shanshan, S., Guangxuan, L., Yuechao, C., Jie L., Jiemin G., Haijun, P., Guanghui, L. (2023). *Temporal variations of carbon and water fluxes in a subtropical mangrove forest: insights from a decade-long eddy covariance measurement*. Agricultural and Forest Meteorology [DOI](#)
- [9] Xie, M., Ma, X., Wang, Y., Li, C., Shi, H., Yuan, X., Hellwich, O.,... **Shekhar, A.**, ... Luo, G. (2023). *Monitoring of carbon-water fluxes at Eurasian meteorological stations using random forest and remote sensing*. Scientific Data [DOI](#)
- [10] Zhao, X., Chen, J., Marschall, J., Gałkowski, M., Hachinger, S., Dietrich, F., **Shekhar, A.**, Gensheimer, J., Wenzel, A., Gerbig, C. (2023). *Understanding greenhouse gas (GHG) column con-*

- centrations in Munich using Weather Research and Forecasting (WRF) model. Atmospheric Chemistry and Physics [DOI](#)
- [11] **Shekhar, A.** *, Hörtnagl, L., Buchmann, N., Gharun, M. (2023). *Long-term changes in forest response to extreme atmospheric dryness*. Global Change Biology [DOI](#)
- [12] Haesen, S., Lembrechts, J. J., De Frenne, P., Lenoir, J., Aalto, J., Ashcroft, M. B., ... **Shekhar, A.**, ..., Van Meerbeek, K. (2023). *ForestClim—Bioclimatic variables for microclimate temperatures of European forests*. Global Change Biology. [DOI](#)
- [13] Dietrich, F., Chen, J., **Shekhar, A.**, Lober, S., Krämer, K., Leggett, G., ... Röckmann, T. (2023). *Climate Impact Comparison of Electric and Gas-Powered End-User Appliances*. Earth's Future. [DOI](#)
- [14] Lal, P., **Shekhar, A.** *, Gharun, M., Das, N. N. (2023). *Spatiotemporal evolution of global long-term patterns of soil moisture*. Science of The Total Environment [DOI](#)
- [15] **Shekhar, A.** *, Buchmann, N., Gharun, M. (2022). *How well do recently reconstructed solar-induced fluorescence datasets model gross productivity?* Remote Sensing of Environment [DOI](#)
- [16] **Shekhar, A.** *, Shapiro, C. A. (2022). *Prospective crop yield and income return based on a retrospective analysis of a long-term rainfed agriculture experiment in Nebraska*. Agricultural Systems [DOI](#)
- [17] Lembrechts, J. J., Hoogen, J., Aalto, J., Ashcroft, M. B., De Frenne, P., Kemppinen, J., ... **Shekhar, A.**, ... Hik, D. S. (2022). *Global maps of soil temperature*. Global Change Biology [DOI](#)
- [18] Haesen, S., Lembrechts, J. J., De Frenne, P., Lenoir, J., Aalto, J., Ashcroft, M. B., ... **Shekhar, A.**, ..., Van Meerbeek, K. (2021). *ForestTemp—Sub-canopy microclimate temperatures of European forests*. Global Change Biology [DOI](#)
- [19] Balamurugan, V., Chen, J., Qu, Z., Bi, X., Gensheimer, J., **Shekhar, A.**, ... Keutsch, F. N. (2021). *Tropospheric NO₂ and O₃ Response to COVID-19 Lockdown Restrictions at the National and Urban Scales in Germany*. Journal of Geophysical Research: Atmospheres [DOI](#)
- [20] Zhou, H., Shao, J., Liu, H., Du, Z., Zhou, L., Liu, R., ..., **Shekhar, A.**, ..., Zhou, X. (2021). *Relative importance of climatic variables, soil properties and plant traits to spatial variability in net CO₂ exchange across global forests and grasslands*. Agricultural and Forest Meteorology [DOI](#)
- [21] Gensheimer, J., Chen, J., Turner, A. J., **Shekhar, A.**, Wenzel, A., Keutsch, F. N. (2021). *What Are the Different Measures of Mobility Telling Us About Surface Transportation CO₂ Emissions During the COVID-19 Pandemic?* Journal of Geophysical Research: Atmospheres [DOI](#)
- [22] Lal, P., **Shekhar, A.** *, Kumar, A. (2021). *Quantifying Temperature and Precipitation Change Caused by Land Cover Change: A Case Study of India Using the WRF Model*. Frontiers in Environmental Science [DOI](#)
- [23] Kawyitri, N., **Shekhar, A.** * (2021). *Assessing vulnerability and capacity of Bhubaneswar as a smart-city: An empirical case study of Fani Cyclone impact on the city*. International Journal of Disaster Risk Reduction [DOI](#)
- [24] **Shekhar, A.** *, Chen, J., Bhattacharjee, S., Buras, A., Castro, A. O., Zang, C. S., Rammig, A. (2020). *Capturing the impact of the 2018 European drought and heat across different vegetation*

- types using OCO-2 solar-induced fluorescence. Remote Sensing [DOI](#)
- [25] Forstmaier, A., **Shekhar, A.**, Chen, J. (2020). *Mapping of Eucalyptus in Natura 2000 Areas Using Sentinel 2 Imagery and Artificial Neural Network*. Remote Sensing [DOI](#)
- [26] **Shekhar, A.** *, Chen, J., Paetzold, J. C., Dietrich, F., Zhao, X., Bhattacharjee, S., Ruisinger, V., Wofsy, S. C. (2020). *Anthropogenic CO₂ emissions assessment of Nile Delta using XCO₂ and SIF data from OCO-2 satellite*. Environmental Research Letters [DOI](#)
- [27] Castro, A. O., Chen, J., Zang, C. S., **Shekhar, A.**, Jimenez, J. C., Bhattacharjee, S., Kindu, M., Morales, V. H., Rammig, A. (2020). *OCO-2 Solar-Induced Chlorophyll Fluorescence Variability across Ecoregions of the Amazon Basin and the Extreme Drought Effects of El Niño (2015–2016)*. Remote Sensing [DOI](#)
- [28] Jha, M. K., **Shekhar, A.** *, Jenifer, M. A. (2020). *Assessing groundwater quality for drinking water supply using hybrid fuzzy-GIS-based water quality index*. Water Research [DOI](#)
- [29] **Shekhar, A.** *, Shapiro, C. A. (2019). *What do meteorological indices tell us about a long-term tillage study?* Soil and Tillage Research [DOI](#)
- [30] Wable, P. S., Jha, M. K., **Shekhar, A.** (2019). *Comparison of Drought Indices in a Semi-Arid River Basin of India*. Water Resources Management [DOI](#)

Professional Activities

- Reviewer for journals - *Remote Sensing of Environment, Biogeosciences, Environmental Research Letters*