

GANESH KHATEI

Penn-TNC Postdoctoral Fellow

University of Pennsylvania, Philadelphia

Email : khatei@sas.upenn.edu/ ganeshkhatei@gmail.com

LinkedIn: [linkedin.com/in/ganesh-khatei-a6096310a](https://www.linkedin.com/in/ganesh-khatei-a6096310a)

Google Scholar: <https://scholar.google.com/citations?hl=en&user=lpOjU00AAAAJ>

Education

- **Ph.D. in Geoscience (2022-2026)**
Temple University, PA, USA.
Thesis title: *Wind Erodibility and Particulate Matter Emissions from Saline and Sodic Soils Under Diverse Atmospheric Humidity Conditions.*
- **M.Sc. in Geology (2018),**
Manipal Academy of Higher Education, Manipal, India. (CGPA: 8.96 /10)
Thesis title: *Variations of Major Ions and Dissolved Trace Metals in Several West-Flowing Rivers of Kerala, Southern India.*
- **B.Sc. in Geology, Physics, Chemistry, Mathematics (2016),**
Ravenshaw University, Cuttack, India. (74 %, 1st Class with Distinction)

Publications

- **Khatei, G.,** Rinaldo, T., Van Pelt, R. S., & Ravi, S. (2024). Wind Erodibility and Particulate Matter Emissions of Salt-Affected Soils: The Case of Dry Soils in a Low Humidity Atmosphere. *Journal of Geophysical Research: Atmospheres*, 129(1), e2023JD039576.
<https://doi.org/10.1029/2023JD039576>
- **Khatei, G.,** Rinaldo, T., Van Pelt, R. S., & Ravi, S. (2025). On the differential effects of salinity and sodicity on aeolian erosion dynamics and particulate emissions. *Earth Surface Processes and Landforms*, 50(4), e70040.
<https://doi.org/10.1002/esp.70040>
- Finnegan, M., **Khatei, G.,** Archibald, L., Rinaldo, T., Caplan, J.S., Van Pelt, R.S., Mohanty, S., D'Odorico, P., & Ravi, S. (2026). Biochar reduces road-salt-induced osmotic stress and improves plant water availability in green stormwater infrastructure. **Water Research**, 125598
- Srinivasan, R., Pandit, S. A., Karunakara, N., Salim, D., Kumara, K. S., Kumar, M. R., **Khatei, G.,** & Ramkumar, K. D. (2021). High uranium concentration in groundwater used for drinking in parts of eastern Karnataka, India. *Current Science*, 121(11), 1459–1469.
<https://www.jstor.org/stable/27310843>
- R Srinivasan, S A Pandit, Ganesh Khatei, N. Karunakara, K Sudeep Kumara, et al. Reverse osmosis units in groundwater-based public water supply systems in rural eastern Karnataka, India: an analysis. *Current Science*, 2022, 123 (12), {10.18520/cs/v123/i12/1493-1498}. {hal-04861403}
- **Khatei¹, G.,** Caplan², J.S., Ravi¹, S. (2026). Osmotic-Matric Coupling Reduces Plant Water Availability and Unsaturated Flow in Salt-Impacted Porous Media. **(In Preparation)**

Conference Proceedings

- **Khatei, G.,** Rinaldo, T., Van Pelt, R. S., D'Odorico, P., & Ravi, S. (2023, December). Wind Erodibility and Particulate Matter Emissions of Dry Salt-Affected Soils Under Diverse Atmospheric Humidity Conditions. In AGU Fall Meeting Abstracts (Vol. 2023, No. 2465, pp. A53N-2465).
- **Khatei, G.,** Rinaldo, T., Van Pelt, R. S., D'Odorico, P., & Ravi, S. (2024, December). On the Differential Effects of Salinity and Sodicity on Particulate Emissions from Agricultural Soils. In AGU Fall Meeting Abstracts (Vol. 2024, No. 2677, pp. GH53A-2677).
- Van Pelt, R. S., **Khatei, G.,** Rinaldo, T., D'Odorico, P., & Ravi, S. (2023). Salinity Effects on Soil Surface Erodibility and Dust Emissions. AGU23
- Archibald¹, L., **Khatei¹, G.,** Caplan², J., Van Pelt⁴, S., D'Odorico³, P., and Ravi¹, S.: Compounding Effects of Salinity and Compaction on Hydraulic Properties of Roadside Stormwater Control Measures, EGU General Assembly 2023, Vienna, Austria, 23–28 Apr 2023, EGU23-8262, <https://doi.org/10.5194/egusphere-egu23-8262>, 2023.

- Finnegan¹, **M., Khatei**¹, G., Rinaldo², T., Caplan³, J., Van Pelt⁴, R. S., D'Odorico², P., & Ravi¹, S. (2024, December). On the Effect of Biochar Application on the Hydraulic Properties of Salt-affected Green Stormwater Infrastructure. In AGU Fall Meeting Abstracts (Vol. 2024, No. 1097, pp. H43P-1097).
- Burke¹, **M., Khatei**¹, G., Van Pelt², R. S., & Ravi¹, S. (2025, December). Salinity- Induced Shifts in Soil Water Retention and Plant Water Availability in Arid Agricultural Soils. In AGU Fall Meeting Abstracts (Vol. 2025, No. 1073, pp. H41I-1287).
- Field, L., Ravi, S., Burke, M., & **Khatei, G.** (2026, January). Interactive Effects of Soil Salinity and Texture on Soil Water Retention and Plant-Available Water in Dryland Agroecosystems. 61st Annual Meeting of the Geological Society of America (GSA) Northeastern Section. <https://doi.org/10.1130/abs/2026NE-13431>
- Salim, D., **Khatei, G.**, Rajesh Kumar, M., & Nayak, S.K. (2021). Uranium-rich groundwater in some parts of India: Geological context. In Towards a Sustainable Water Future: A Future Earth Conference (Bangalore, India, 24–27 September 2019)

Work Experience

University of Pennsylvania (August 2026 – Present)

Penn–TNC Sustainability & Conservation Science Postdoctoral Fellow Department of Earth and Environmental Science

- Lead interdisciplinary research on green stormwater infrastructure, urban hydrology, contaminant transport, and sustainable water management.
- Develop and evaluate nature-based solutions to enhance urban water quality, ecosystem resilience, and climate adaptation.
- Design and conduct laboratory and field experiments integrating environmental geochemistry, soil physics, and hydrological processes.
- Apply advanced analytical, statistical, and modeling approaches to investigate contaminant fate, soil–water interactions, and hydraulic performance.

Temple University, Philadelphia (2022-2026)

Graduate Research Assistant

- Designed and conducted **USDA-ARS wind-tunnel experiments** on saline and sodic soils to quantify threshold friction velocity, saltation flux, PM₁₀/PM_{2.5} emissions, and humidity-dependent erodibility in collaboration with Prof. Paolo D'Odorico, University of California, Berkeley, and R. Scott Van Pelt, ARS, USDA
- Performed **ICP-MS, ICP-OES, and Ion Chromatography** analyses to quantify major ions, trace elements, and salinity–sodicity chemistry of experimental soil systems.
- Conducted **SEM and XRD** analysis to characterize mineralogical changes, clay microstructure, pore collapse, and salt crystallization features across treatments.
- Generated matric potential data using **HYPROP tensiometers and modeled soil–water retention** with van Genuchten, dual-VG, and bimodal functions.
- Integrated physical, chemical, and mineralogical datasets to investigate soil structure evolution, osmotic–matric stress partitioning, and dust emission mechanisms.
- **Mentored** the following excellent undergraduate students in experimental design, sample processing, data analysis, and preparation of figures for presentations.
 - **1) Maxwell Finnegan (NSF PhD student at UCLA, BS ES 2024, CARAS Scholar)**
 - **2) Lucy Archibald (Now at EPA, BS Geology, 2024, GEOREPS Scholar)**
 - **3) Maya Bruke (Senior year, BS ES)**

Graduate Teaching Assistant (2023- 2026), developed lab modules, graded the assignments, and guided students in field, coding, analytical, and quantitative methods for the following courses.

- *Process Geomorphology (EES 2097), Fall 2024, 2025*
- *Introduction to Geochemistry (EES 2061), Fall 2023, 2024, 2025*
- *Geology of the National Parks (EES 0854), Fall 2023, 2024*
- *Sustainable Environments (EES 0842), Fall 2025*
- *Sedimentary Environments (EES 50940, 53082), Spring, 2026*

Indian Institute of Science (IISc), Bengaluru, India

Senior Research Fellow,
Junior Research Fellow,

November 2020 – July 2022
May 2019 - October 2020

Responsibilities

- Conducted **ICP-MS/ICP-OES trace-element geochemistry of U- and F-rich aquifers in semi-arid terrains.**
- Investigated precipitation–dissolution reactions, carbonate equilibria, and controls on contaminant mobility.
- Developed groundwater flow and reactive-transport models for aquifer vulnerability assessments.
- Prepared geochemical visualizations, water-quality classifications, and GIS maps.
- Characterized the mineralogy of the aquifer rocks by detailed petrological and mineralogical studies, including electron microprobe analysis of U minerals.

- Processed the Indian River water and sediment samples that were collected from 13 major rivers of Kerala and carried from India. As part of my internship, I learnt to measure macronutrients using a **UV-visible spectrophotometer** and measured trace metals using **ICP-MS**. Learnt the critical skills to work in ultra-clean laboratories.

Awards and Achievements

- **Penn-TNC Sustainability & Conservation Science Postdoctoral Fellowship | 2026**
University of Pennsylvania & The Nature Conservancy
- **GATE (Graduate Aptitude Test in Engineering, Department of Higher Education, Government of India)**
Qualified - 2019, 2020 in Geology and Geophysics.
- **DST- INSPIRE Scholar (2013-2018), Department of Science and Technology, Government of India**
Selection: Top 1 % in class X11 Board, top 10K in JEE/NEET/KVPY across India (2013)
A total of 10000 scholars every year across India
- **DST -INSPIRE FELLOWSHIP for PhD (2019) (Department of Science and Technology, Government of India)**
A total of 1000 Fellowships every year across India
- **Got MTech admission in Earth Science in 2019 at the Indian Institute of Science (IISc)**
- **DST (Department of Science and Technology) Travel Grant – 2017 for South Africa**
- Qualified for the Bhabha Atomic Research Centre in India (OCES/DGFS 2018) examination.

Training, Workshop, and Seminar

- Served as **Theme lead and Rapporteur** for the theme “Groundwater” in the **International Water Future Conference** organized by Divecha Centre for Climate Change, Indian Institute of Science, and Sustainable Water Future Programme (September 24- 27, 2019)
- Participated in the **101st DAE BRNS. IANCAS National Workshop on “Radiochemistry & Applications of Radioisotopes”** between 17th Feb 2020 and 23rd Feb 2020. Won 2nd Prize in quiz among 200 candidates.
- Participated in a field training module, “Specialized Thematic Mapping”, diamond exploration processing unit in Kimberlite belts, conducted by the Geological Survey of India (GSI) at Wajrakarur, Andhra Pradesh, from Feb 6- 15, 2017

Skills

- **Instrumentation:** ICP-MS • ICP-OES • Ion Chromatography • SEM • XRD • Laser Particle Size Analyzer • HYPROP • Microwave Digestion • LED Fluorimeter, BET • Wind Tunnel
- **Programming & GIS:** Python • ArcGIS • Google Earth Engine
- **Modelling:** Soil-Water Retention Modelling • Geochemical Modelling • Reactive Transport
- **Field & Lab Skills:** Soil sampling • Water sampling • Mineralogical analysis • Structural mapping
- **Software:** MS Office • Google Workspace • Origin • MATLAB (beginner), Adobe Illustrator, Gemini Pro, GPT 5.2, Claudia
- **Languages:** English (Fluent) • Hindi (Native) • Odia (Native) • Kannada (Limited)