

Nikaan Koupaei-Abyazani

6209 Fredericksburg Lane, Madison WI 53718

Cell: 608-338-4198 | nikaan.koupaei@gmail.com

Education

- **University of Wisconsin-Madison** **2022-present**
 - **PhD** – Atmospheric and Oceanic Sciences
 - **PhD Minor** – Soil Science
- **University of Wisconsin-Madison** **2020-2022**
 - **Master of Science** – Atmospheric and Oceanic Sciences
- **University of Wisconsin-Madison** **2016-2020**
 - **Bachelor of Science** – Physics
 - **Bachelor of Science** – Astronomy
 - **Minor** – Mathematics

Teaching and Mentoring Experience

- **Teaching Assistant** **2020-present**
 - Courses
 - Algebra-based Physics I (online)
 - Algebra-based Physics II (online and in-person)
 - Global Change – Atmospheric Problems of Global Significance (in-person)
 - Led three discussion sections and three lab sections for ~60 students per semester
 - Graded lab work and class attendance
 - Held office hours for three hours per week per semester
 - Held review sessions for exams for eight hours per semester
- **Research Mentor** **2022**
 - Assisted new lab members with Python coding and conducting literature reviews
- **Physics Peer Mentor Tutor** **2018-2020**
 - Engaged students in challenging physics concepts as a group leader
 - Assisted students while working on worksheets, homework, exam problems, etc.
 - Facilitated an active and inclusive learning environment

Computer Skills

- **Python Programming Proficiency**
 - Utilized in physics and astronomy classes in addition to research to analyze data and construct plots
- **Unix Proficiency**
 - Utilized to copy, remove, store, and navigate through data files
- **LaTeX Proficiency**
 - Utilized to write senior thesis and research papers

Projects

- **Dissertation Chapter 3 - Impacts of Anthropogenic Disturbance on Soil Carbon Dioxide Fluxes in Malaysian Peatlands** **2024-present**

Fulbright project involving fieldwork in Malaysian peatlands

 - **Key responsibilities**
 - Gathering peat soil samples and peat soil gas samples from three peatland sites of varying disturbance
 - Measuring water table level

- Measuring peat subsidence
- Analyzing peat soil samples and peat soil gas samples (carbon dioxide, methane, and nitrous oxide) in lab
- **Dissertation Chapter 2 – *Predicting Tropical Peatland Fire Occurrence from Space* 2023-present**
Developing a probabilistic forecast model for tropical peatland burned area
 - **Key responsibilities**
 - Developing a model using remotely sensed moisture indices
 - Working with data from the Global Fire Emissions Database
 - Working with the Moderate Resolution Imaging Spectroradiometer (MODIS) surface reflectance and vegetation index products
- **Dissertation Chapter 1 – *Monitoring Tropical Peatland Water Table Levels from Space* 2022-present**
Using remote sensing data (Landsat) to model temporal variability of tropical peatland water table depth
 - **Key responsibilities**
 - Writing Python script for model from scratch
 - Working with Landsat 8 surface reflectance products
 - Plotting maps
- **Master's Thesis - *The Influence of Interannual Carbon Variability on Long-Term Sequestration in Proximate Northern Forests and Wetlands* 2020-present**
Utilization of various flux data from data repositories to compare year to year carbon uptake variability and relevant drivers between nearby forests and wetlands
 - **Key responsibilities**
 - Data analysis via the Pandas package (Python)
 - Constructing plots via Matplotlib (Python)
 - Writing relevant equations via *LaTeX*
- ***Wetland Porewater Sampling in Northern Wisconsin* 2021**
Utilized filters to obtain porewater samples at two wetland sites in northern Wisconsin
- ***Hydrogen Emission in the Earth's Upper Atmosphere* 2018-2020**
Investigation of solar cycle influence on hydrogen Balmer-alpha emissions in the upper atmosphere
 - **Key responsibilities**
 - Interpreting data from the Wisconsin H-Alpha Mapper
 - Using spectral fitting code to fit model Gaussians to data
 - Performing data calibration using the North American Nebula
- ***Manufacturing of Sterile Injectables* 2016-2018**
Biotechnology internship with BioTechnique LLC
 - **Key responsibilities**
 - Performed certification, work orders, and preventative maintenance
 - Provided technical writing and documentation support to facilities, maintenance, and calibration
 - Conducted batch record reviews and final product inspections
 - Maintained compliance in areas of document control and supplier control

- Supported quality investigations of manufacturing deviations, system issues, and CAPA (Corrective and Preventive Action)

Publications

- Desai, A.R., Murphy, B., Wiesner, S., Thom, J., Butterworth, N.J., **Koupaei-Abyazani, N.**, Muttaqin, A., Paleri, S., Talib, A., Turner, J., Mineau, J., Merrelli, A., Stoy, P.C., Davis, K.J., 2022. Drivers of decadal carbon fluxes across temperate ecosystems. *J. Geophys. Res. - Biogeosciences*, 127, e2022JG007014, doi:[10.1029/2022JG007014](https://doi.org/10.1029/2022JG007014).
- Golub, M., **Koupaei-Abyazani, N.**, Vesala, T., Mammarella, I., Ojala, A., Bohrer, G., Weyenmeyer, G.A., Blanken, P.D., Eugster, W., Koebisch, F., Chen, J., Czajkowski, K., Deshmukh, C.S., Guérin, F., Heiskanen, J., Humphreys, E., Jonsson, A., Karlsson, J., Kling, G., Lee, X., Liu, H., Lohila, A., Lundin, E., Morin, T., Podgrasek, E., Provenzale, M., Rutgersson, A., Sachs, T., Sahlée, E., Serça, D., Shao, C., Spence, C., Strachan, I.B., Xiao, W., Desai, A.R., 2023. Diel, seasonal, and Inter-annual variation in carbon dioxide effluxes from lakes and reservoirs. *Environmental Research Letters*, doi:[10.1088/1748-9326/acb834](https://doi.org/10.1088/1748-9326/acb834).
- Kurek, M. R., Wickland, K. P., Nichols, N. A., McKenna, A. M., Anderson, S. M., Dornblaser, M. M., **Koupaei-Abyazani, N.**, Poulin, B.A., Bansal, S., Fellman, J.B., Druschel, G.K., Bernhardt, E.S., Spencer, R.G.M. (2024). Linking dissolved organic matter composition to landscape properties in wetlands across the United States of America. *Global Biogeochemical Cycles*, 38, e2023GB007917. doi: [10.1029/2023GB007917](https://doi.org/10.1029/2023GB007917)
- **Koupaei-Abyazani, N.**, Burdun, I., Desai, A.R., Hergoualc'h, K., Hirano, T., Melling, L., Swails, E., Tang, A.C.I., Wong, K., 2024. Tropical peatland water table estimations from space. *J. Geophys Res: Biogeosciences*, 129, e2024JG008116. <https://doi.org/10.1029/2024JG008116>.
- **Acknowledgements**
 - Nossal, S.M., *et al.* "Geocoronal Hydrogen Emission Variation Over Two Solar Cycles." *Journal of Geophysical Research: Space Physics*, 2019, doi:[10.1029/2019JA026903](https://doi.org/10.1029/2019JA026903).

Awards, Recognition, and Certificates

- Fulbright U.S. Student Researcher 2023
- AsiaFlux Conference Scholarship Award 2022
- University of Wisconsin-Madison Conference Presentation Award 2022
- Land Carbon Cycle Modelling Certificate 2022
 - Achieved through completion of training course on new advances in land carbon cycle modelling offered by Northern Arizona University
- University of Wisconsin-Madison Department of Atmospheric and Oceanic Sciences Travel Grant Award 2021
- University of Wisconsin-Madison Dean's List 2018

Volunteer and Outreach Experience

- University of Wisconsin- Madison Department of Atmospheric and Oceanic Sciences Social Committee Chair 2022
- Wisconsin Science on the Square 2022
 - Held station where research was presented to public as part of the Wisconsin Science Festival

- *Wisconsin Idea Stem Fellow* 2022
 - Program enabling the writing of a comic book describing our research to a general audience (in development)
 - Comic book is being made along with two other researchers (Susanne Wiesner and Sreenath Paleri)
- *Tutor Development Conference* 2020
 - Presented a PowerPoint presentation on student learning to tutors and tutoring faculty from a wide range of disciplines
- *University of Wisconsin-Madison Wonders of Physics* 2020
- *University of Wisconsin-Madison Physics Fair* 2018
 - Interacted with many adults and children, increasing curiosity and passion for Physics and other STEM fields
- *University of Wisconsin-Madison Space Place* 2018
 - Handed out programs, explained exhibits, and socialized with faculty involved at the 50th anniversary celebration of NASA's Orbital Astronomical Observatory
- *Henry Vilas Zoo* 2013-2015
 - Worked at information booth and interacted with many adults and children

Presentations

- *University of Malaysia Sarawak (2024)*
- *International Conference on Tropical Sciences in Malaysia (2024)*
- *Living Labs for Wetland Forest Research in Malaysia (2024)*
- *Led a tutorial on Remote Sensing and how to access Remote Sensing data for the Sarawak Tropical Peat Research Institute in Malaysia (2024)*
- *Presented a Presentation named "Basics of Soil Science" to the Sarawak Tropical Peat Research Institute in Malaysia (2024)*
- *2024 Asia Oceania Geosciences Society Meeting (Two Oral Presentations)*
- *2022 American Geophysical Union Fall Meeting (Poster Presentation)*
- *2022 AsiaFlux Conference (Poster Presentation)*
- *2022 Ameriflux Annual Meeting (Poster and Oral Presentation)*
- *UW-Madison Day at the Capitol (2022)*
 - *Presented research poster to state legislators at the Wisconsin State Capitol*
- *UW-Madison Atmospheric and Oceanic Sciences Department Seminar (2022)*
- *2022 UW-Madison Atmospheric and Oceanic Sciences Poster Reception (Poster Presentation)*
- *2021 Ameriflux Annual Meeting (Poster Presentation)*
- *2021 Graduate Climate Conference (Poster Presentation)*
- *2021 American Geophysical Union Fall Meeting (Poster Presentation)*
- *2020 University of Wisconsin-Madison Undergraduate Research Symposium (Poster Presentation)*

Languages

- *English Fluency*
- *Farsi (Persian) Fluency*
 - Learned through growing up in an Iranian household
- *Minimal French*

Personal Activities

- *UW-Madison Atmospheric and Oceanic Sciences Graduate Student Association Social Chair* 2022
- *University of Wisconsin-Madison Korean-American Student Association Board Member* 2022-2024
 - Planned and led a variety of events that promoted better understanding of Korean American culture, heritage, and tradition

- *University of Wisconsin-Madison Chinese-American Student Association Member* 2022
- *University of Wisconsin-Madison Japanese Student Association Member* 2022