Mandala Pham

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Education

The University of Texas at Austin, Jackson School of Geosciences May 2025
Bachelor of Science in Geophysics, Bachelor of Arts in History *Austin, TX*

- Cumulative GPA: 3.6026
- Major GPA: 3.8404
- Scholarships and Awards:
  - Karl Frederick Hagemeier, Jr. Memorial Endowed Presidential Scholarship (2024-2025)
  - Mr. and Mrs. L. F. McCollum Scholarship in Geology (2023-2024)
  - John C. and Marian B. Maxwell Endowed Undergraduate Scholarship in Geological Sciences (2022-2023)
  - Houston Geological Society Undergraduate Scholarship Nomination (2023)
  - Barton Springs/Edwards Aquifer Conservation District 2021 Kent S. Butler Memorial Groundwater Stewardship Scholarship, Groundwater Essay Contest Winner
- Clubs and Activities:
  - Collaboration for Undoing Racism in Environmental Sciences (CURES) - Founder
  - AustinYAD (2022-2025) - PR Officer (2023-2025)
  - Undergraduate Geological Society (2022-2025)
  - UT Young Historians (2021-2022)
  - Texas Digital Humanities (2021-2022) - Social Media Officer (2022)

Liberal Arts and Science Academy High School May 2021
High School Diploma *Austin, TX*

- Graduated top 10%
- AISD Trustee Award (2018)
- National Merit Scholar Finalist (2020-2021)
- Honors Orchestra officer (2019-2021)

Experience

Undergraduate Research Assistant Aug. 2022 – Present
The University of Texas at Austin *Austin, TX*

- Supervisor: Dr. Ginny Catania
- UTIG Undergraduate Research Fellowship (2022, 2023)
- Glacier Terminus Modeling and Remote Sensing
  - Expanded terminus-driven numerical model project to apply the model towards the rest of Greenland's glaciers with aims to determine and categorize terminus velocity driving factors over periods of seasonal variability
  - Designed and completed a project studying ice melange seasonality in West Greenland utilizing self-taught Python to navigate through the extraction and analysis of remote sensing data from NASA's EarthData granule library
  - Conducting machine learning analysis of glacier termini, training AI to recognize terminus positions
  - Created glacier shape files for AI training to automate terminus delineation in Antarctica and Greenland
  - Used satellite imagery from Landsat 8 to manually trace glacier terminuses in Antarctica across different time periods and weather conditions
  - Compared satellite imagery to find the most accurate representations of glacier termini and fjord boundaries
- Glacier Modeling and Climate Data Analysis
  - Running MMAster modeling for Antarctic and Greenland glaciers, including glacier shape file creation and climate data extraction from NASA satellite databases
  - Conducted GHRSST Level 2P and 3 MODIS Sea Surface Temperature (SST) data extraction from NASA EarthData granules using Harmony API, modeling seasonal SST variability in West Greenland proglacial mélange
  - Studied ice mélange seasonality in West Greenland glaciers, analyzing its relationship to terminus stability, improving models developed in the Ice Research Group (Kevin Shionalyn, Enze Zhang, Mikayla Pascual, Alexandra Stephens)
  - Identified and updated glaciers in the Antarctic Ice Sheet ID file for improved terminus change tracking
- Collaborative Research

* Participating in bi-weekly research meetings discussing scientific literature on ice-sheet dynamics and glaciology

Summer Research Intern May 2024 – Aug. 2024

Carnegie Mellon University *Pittsburgh, PA*

- Supervisor: Dr. David Rounce
- Ran model simulations using PyGEM-EB, an energy balance model developed by PhD student Claire Wilson based on Dr. Rounce's PyGEM framework
- Perturbed input datasets by modifying temperature profiles for Gulkana Glacier to analyze sensitivity to extreme warming events
- Created synthetic heatwaves as model inputs to observe energy balance responses and their impact on glacier mass balance over a melt season
- Compared model outputs to assess how heatwaves affect glacier surface energy fluxes and seasonal melt patterns
- Designed a research poster and presented findings at Carnegie Mellon's CEE Summer Research Program poster session
- Published an abstract to AGU 2024 (Abstract ID: 1602284)

Undergraduate Research Assistant June 2023 – May 2024

The University of Texas at Austin *Austin, TX*

- Supervisor: Dr. Derek Haas
- Assisted grad student Madi Brooks in the chemistry and nuclear radiation lab on the Neutron Activation Analysis (NAA) project, part of the MSRR Material Activation Experiment
- Irradiated shielding materials to induce radioactive decay and observe the radionuclides produced
- Quantified radiation activity to assess the environmental impact of activated materials
- Evaluated whether radiation levels complied with Nuclear Regulatory Commission (NRC) safety standards as outlined in 10 CFR Part 20 – Standards for Protection Against Radiation

Undergraduate Research Assistant June 2022 – May 2023

The University of Texas at Austin *Austin, TX*

- Supervisor: Dr. Jay Banner
- Conducted field sampling and hydrogeologic surveying in Austin-area watersheds to assess urban impacts and watershed health
- Monitored calcite growth patterns and sampled dripwater in Central Texas caves, analyzing speleothem formation and water chemistry
- Performed strontium isotope chemistry in a clean lab to trace hydrogeochemical processes in karst systems
- Inventoried field records and sampling data from 1994 to present, organizing physical samples, field notebooks, and an Access database for archival purposes
- Photographed and indexed speleothems from local caves to document calcite deposition patterns
- Conducted ICP-MS analysis on dripwater samples, measuring cations, anions, hydrogen isotopes, oxygen isotopes, and alkalinity
- Titrated and aliquoted collected water samples prior to chemical analysis
- Scraped calcite plates deployed over 4-6 week intervals to run strontium isotope analysis, creating an isotopic map of deposition patterns
- Prepared and dried soil samples for geochemical analysis
- Performed acid and non-acid cleaning of lab equipment, including glassware, Teflon containers, syringes, pipettes, and filters
- Created Excel graphs based on past geochemical data for project proposals and presentations
- Participated in fieldwork at Westcave, Inner Space Cavern, Cave Without a Name, and Natural Bridge Caverns, sampling dripwater, monitoring karst hydrology, and studying calcite precipitation
- Sampled major Austin-area streams (Bull Creek, Onion Creek, and Waller Creek) to analyze chemical and microbial water quality, including microbial source tracking
- Studied correlations between dripwater chemistry and prior calcite precipitation (PCP) in Cave Without a Name samples

Creative Development Intern Sept. 2022 – Dec. 2022

The Hideaway Entertainment *Beverly Hills, CA*

- Supervisor: Sedona Rose Saulnier

- Provided detailed script coverage and analysis for four feature screenplays or novels per week, evaluating story structure, character development, and marketability
- Attended weekly intern meetings discussing film industry mechanisms, career development, and market trends
- Conducted weekly research on industry trade articles to stay updated on trends in film production, distribution, and emerging talent
- Maintained an average script coverage time of 2.5 hours per feature, ensuring concise, insightful, and actionable feedback for development executives

Shift Supervisor Aug. 2020 – Aug. 2022

Starbucks *Austin, TX*

- Supervisor: Elise Loomis
- Led and coordinated daily shifts, ensuring smooth operations and team efficiency
- Trained and mentored three new hires, fostering a productive and customer-focused work environment.
- Maintained high customer satisfaction despite staffing shortages, keeping customer connection scores in the high 50s.
- Managed store revenue averaging $10,000 per day, ranking as the top-performing store in the district
- Handled money management and inventory accountability, ensuring financial accuracy and stock efficiency
- Effectively communicated with fellow supervisors to ensure seamless shift transitions
- Filed incident reports and managed high-stress situations calmly and professionally to maintain store safety and service standards

Field Work

San Salvador Island, Bahamas | The University of Texas at Austin Feb. 24, 2024 – Mar. 1, 2024

- Tracked dune to foreshore transitions and upper-shoreface to foreshore transitions with in-situ GPS measurements to track sea level elevation during the last interglacial maximum
- Piloted a drone to photograph various outcrops around the island
- Identified characteristics of various units pertaining to the LIG time-period utilizing geologic reasoning and stratigraphic methods

Yukon-Kuskokwim Delta, Alaska | Woodwell Climate Research Center July 1, 2023 – July 31, 2023

- Conducted intensive field work researching the effect of climate change on tundra ecosystems focusing on mycologic biodiversity in areas affected by wildfires via field surveys and in-lab analyses
- AGU2023 poster and abstract presentation (Abstract ID: 1297586)

Port Aransas, Texas | The University of Texas at Austin May 2, 2023 – May 31, 2023

- Deployed and recorded seismic data via CHIRP and Sparker instruments as well as multibeam and side scan instruments
- Processed data from CHIRP and Sparker seismic surveys to evaluate river channel history
- Cleaned up and visualized multibeam and backscatter data using EIVA program for the first time
- Collected grab samples and vibra-core samples for later lab analysis to determine total organic carbon composition for reconstruction of past extreme weather events in the area

Volunteer Work

Teacher Aide Volunteer/Lion Dance Aug. 2022 – Present

Summitt Elementary School *Austin, TX*

- Recipient of the ASIA Foundation Scholarship (2021, 2022, 2023, 2024, 2025)
- Accumulated 100+ volunteer hours assisting in classroom management and fostering analytical growth in students
- Promoted Vietnamese culture through community showcases, lion dance performances, and fundraising events
- Active Lion Dancer with Summitt Elementary Youth Group since 12/2019, performing at cultural celebrations

Volunteer Feb. 2021 – Dec. 2023

Horse Empowered Learning Program (H.E.L.P.) of Austin *Austin, TX*

- Supported equine-assisted therapy programs by maintaining farm operations, including barn cleaning, feeding horses, and organizing tack rooms
- Installed fencing and cleared land plots to prepare for incoming horse herds
- Groomed and tacked horses for lessons and shows, ensuring proper care and presentation
- Managed records for volunteer events, including Gold Stirrup and Pistons at the Park
- Represented H.E.L.P. at fundraising events, running information tables to educate the public about equine-assisted therapy

Conferences

American Geophysical Union Conference (AGU)	12/2023 and 12/2024 *[In-Person]*
West Antarctic Ice Sheet Workshop (WAIS)	9/2023 and 11/2024 *[In-Person]*
GAGE/SAGE Community Science Workshop	3/26/2023 - 3/29/2023 *[In-Person]*
IICWG-DA-11 Workshop	3/21/2023 - 3/23/2023 *[Virtual]*
FOGGS Workshop	3/22/2023 - 3/24/2023 *[Virtual]*
Workshop on Remote Sensing of Cryosphere	3/23/2023 - 3/25/2023 *[Virtual]*

Publications and Abstracts

Pham, Mandala. Mushroom Diversity and Counts as a Function of Fire History in Arctic Peatlands. In: AGU; 2023 Dec 11-15; San Francisco. Massachusetts (MA): Woodwell Climate Research Institute; 2023. Abstract nr 1297586.

Pham, Mandala. Energy Balance Modeling of Alaskan Glacier's Albedo Response to Heatwaves. In: AGU; 2024 Dec 9-13; Washington D.C. Pennsylvania (PA): Carnegie Mellon University; 2024. Abstract nr 1602284.

Technical Skills

Geologic Skills: Seismic Survey Interpretation, Sediment Grain Size Analysis, Topographic Map Analysis, Cross Sections Sketching, Stratigraphic Column Creation, Field Sketching, and Mapping
Computer Languages: Python, MatLab, Java, RStudio, HTML
Program Proficiency: Jupyter Notebook, VS Code, Anaconda, GitHub, ArcGIS, QGIS, Google Earth Pro, Microsoft Office 365, Google Suite, Website Design (Wixsites, Weebly), AutoCAD, SolidWorks, EIVA, InterSpec
Languages: English (Native Speaker Prof.), Vietnamese (Native Speaker Prof.), Japanese (Professional Working Prof.), Spanish (Limited Working Prof.)

Other Skills

Writing:

- Lead literary editor of school's award-winning literary magazine, *The Composer* (2021)
- Wrote, edited, and published a short environmental magazine for high school (2017)
- Volunteer for Smithsonian Digital Volunteers: Transcription Center (2020-2022)

Environmental Science:

- Water quality sample collection and analysis
- Graphing qualitative data for cations, anions, bacteria, conductivity, TDS, and pH
- Field notebook entries detailing:
  - Land surveys and natural observations
  - Native plant and animal species
  - Hydrology, elevation profiling, and map sketching
- Austin Watershed Research:
  - Walter E. Long Lake woody plant survey for City of Austin (2019)
  - Bull Creek Watershed Quality Project with Dr. Jay Banner at UT Austin (2022)
  - Waller Creek Plot Project with UT Austin (2022)
- **Science of Environmental Justice** course at UT Austin:
  - Portfolio project on socioeconomic trends and gas station locations
  - Field experience with marginalized communities facing environmental injustices (e.g., East Austin's Holly Street)
  - Work on archiving PODER Austin past campaigns and uploading to website

Piano:

- ABRSM Grade 8 Piano w/ Distinction (2017)
- Piano State UIL Winner (2018, 2019)
- Piano Festival - Superior Rating (2017, 2018, 2019)