The University of Texas at San Antonio

UTSA Earth and Planetary Sciences

College of Sciences

NEWSLETTER 2024-2025

Message from the Department Chair

Saugata Datta
Professor and Chair, Department of Earth and Planetary Sciences

As the Chair of the Earth and Planetary Sciences Department, I finished my 4th year and I'm happy to present the annual newsletter for 2024/2025. This is a year where I could not be happier to see how our students and faculties have continued their success in many areas of acquiring scholarships and grants, finishing their degrees and walking out proud as a GeoRoadRunner, and faculties getting promoted. I'm also happy to report that our undergraduate population has seen a substantial increase in the last year. I also hereby celebrate the multiple awards and achievements that our faculties have obtained that have brought the department as one of the most research-intensive within UTSA.

Secondly, I'm so proud of our own Alan Whittington who was elected as a Fellow of the American Association for the Advancement of Science, in recognition of his contributions to Earth science and volcanology.

This coming year is also special for us because San Antonio is hosting the Geological Society of America Connects meeting where several of our faculties are in the local organizing committee, including the field trip coordinators. I am also extremely excited to announce that we have a new member joining our faculty line as a planetary systems modeler, Dr. Elizabeth Bailey, whose introduction you will read below. We also hosted the Geological Society of America sponsored Birdsall Dreiss Lecture this year, given by Professor Bayani Cardenas from UT Austin.

The EPS Fall 2024 social where the whole department gets together for a potluck!

Message from the Department Chair

I want to add that Professor Judy Haschenburger, after serving the department for 20 years, has announced her retirement. Judy has been recognized for her outstanding contributions as a leader in geosciences, especially in the research area of sediment transport, working in Texas and beyond. Her key research legacy is a better understanding of how riverbeds evolve as part of the sediment transport process. Judy's undergraduate courses in River Science and Geomorphology have drawn keen interests through the years while her impact on graduate students is wide reaching through the two core courses in the Master's in Geosciences, Current Topics and Research Design, that she designed and taught to better prepare students for graduate study.

She led two major educational initiates funded by the National Science Foundation, Geosciences Pathways and GeoEngage, over 8 years that provided about 100 students authentic experiential experiences while investigating how these experiences help attract and retain students in the geosciences and facilitate their transition into the workforce. We will be very sorry to see Dr. Haschenburger depart from the department, but we wish her all of the happiness in her forthcoming time.

Together, we have created a vibrant, dynamic, and supportive community within the department that is truly exceptional. As we look ahead, I am excited about the opportunities and challenges that await us. I have no doubt that we will continue to excel and make significant strides in geosciences. Thank you all for your unwavering commitment and for making our department a place of excellence. Let's continue to support each other and celebrate our achievements, big and small.

Welcome New Faculty: Dr. Elizabeth Bailey

I am a planetary scientist driven to explore how planets form and change. How did the Solar System originate? What processes drive evolution of the orbits, surfaces, atmospheres, and interiors of worlds? What chemical and physical factors made Earth habitable—and how has life, in turn, altered planetary chemistry? And how can we apply these concepts to determine the existence of life on other planets? My work has explored the dynamics of bodies on eccentric orbits in the outer reaches of the Solar System, the formation of giant exoplanets, and the puzzling heatflow contrast between Uranus and Neptune, which I've addressed with new models of their internal evolution. Lately, I've turned my focus back to Earth, studying how organic molecules decay in fossil-rich limestones, and what that tells us about ancient geochemical cycles. I'm also excited by what primitive meteorites can reveal about the chemical conditions present when our planet first formed. Planetary science lets me explore these topics with a multifactorial approach that blends theory, lab work, and field work.

Faculty Highlights

Dr. Alan Whittington

- In March 2025 Alan was elected as a Fellow of the American Associate for the Advancement of Science, in recognition of his contributions to Earth science and volcanology.

Dr. Kaushik Mitra

- American Chemical Society Petroleum Research Fund PI: Kaushik Mitra

Dr. Alberto Mestas-Nunez

- Pandora 5-year NASA Award - An Air Quality Monitoring Station to Expand NASA's Pandora Network to South Texas

Dr. Hongjie Xie

Dr. Xie, as a Fulbright-NSF Arctic Distinguished Scholar, spent his Faculty Development Leave (DFL) for the Fall 2024 semester, at the University of Iceland, Reykjavik, the capital city of Iceland. His Fulbright project titled "Icelandic snow cover changes and impacts under the warming climate" was timely and impactful. The objective of the project was to quantify the snow cover and pattern changes at both watershed and seasonal scales and to identify driving forces for such changes. Dr. Xie and his collaborators have made important progresses in less than one year in two areas:

Dr. Xie (with his Fulbright fellows) at the Cryo2ice Symposium in Reykjavik, Sept 2024

Area 1: processed (entirely based on the Google Earth Engine cloud) daily MODIS snow cover products from Terra/Aqua satellites to 8-day snow cover products and analyzed the snow cover changes at both watershed and seasonal scales (2002-2024).

Area 2: processed and analyzed the snow depth and mass balance for the Hofsjökull glacier, based on ICESat-2, DEMs, and in-situ measurements.

During the stay in Iceland, Dr. Xie explored the astonishing Icelandic landscapes, waterfalls, canyons, glaciers, volcanos, and active geothermal springs and volcanic eruptions. These incredible information and knowledge are opening a new era of research and collaborations and will be incorporated into future lectures and talking points in classrooms.

Dr Xie (and his Fulbright Fellows) at Fulbright breakout session at the Arctic Circle Assembly, Oct 2024

Dr. Xie attending the Snæfellsjökull glacier field trip, Nov 2024

Research Grants and Awards

- Collaborative Research: Application to Transboundary Aquifer-The dynamic iron curtain surrounding fluctuating rivers and its impacts on arsenic fate and transport: in NSF Program: Capacity Building to Catalyze Collaborations to Address Climate Change Impacts on Human Health (C2H2), **PI: Saugata Datta**
- EAGER: Measuring 3-phase lava rheology at eruption conditions. NSF EAR 2516309, $261,540 (UTSA). Active from 07/2025-06/2027, **PI: Alan Whittington**
- Modeling Venusian Pancake Domes with Andean Analogs. NASA 80NSSC24K1834 FINESST Fellowship, $150,000 (UTSA). Active from 09-01-2024 to 08-31-2027, **PI: Alan Whittington. FINESST Fellow: Lauren Schwartz**
- NSF, Collaborative Research: In-situ Collaborative Experiment for the Collection of Hail In the Plains (ICECHIP), 2024-2027, $152,803, **PI: Yongli Gao**
- Edwards Aquifer Authority, An Investigation of Trace Element and Isotopic Geochemistry Within the Trinity and Edwards Aquifers, 2024-2025, $40,000 , **PI: Yongli Gao**
- UTSA, Office of Research Support, Investigate the uptake of PFAS in aquatic and riparian plants from perennial and Intermittent streams in South Central Texas, 2024-2026, $25,000, **PI: Yongli Gao**
- American Chemical Society Petroleum Research Fund as Doctoral New Researcher (September 2025 to July 2027); $110,000, **PI: Kaushik Mitra**
- SRA RIG Seed Grant (UTSA), **PI: Kaushik Mitra**
- T2 Seed Grant (UTSA), **PI: Kaushik Mitra**
- The Pandora 5-year NASA Award entitled - An Air Quality Monitoring Station to Expand NASA's Pandora Network to South Texas, **PI: Alberto Mestas-Nunez**

Invited Lectures and Outreach

Dr. Saugata Datta

- Trinity University, Earth and Environmental Sciences-Invited Talk – November 18, 2024. San Antonio, Texas, Title: Organic Matter Influenced Partitioning of Solid Phase Arsenic and Iron in Hyporheic Zone Sediments along the Meghna River, Bangladesh
- 9th International Congress on Arsenic in the Environment – October 20-24, 2024. Bhubaneswar, India. Keynote Talk Title: Partitioning of Solid Phase Arsenic and Iron in Hyporheic Zone Sediments along the Meghna River
- Association of American Plant Food Control Officials (AAPFCO) Meeting, August 6, 2024. San Antonio, Texas. Bio-Geochemical Processes Controlling Mobilization of Soil Phosphorus Across Different Land Uses.
- Think Science: Geoscience & Groundwater, Texas Public Radio, San Anotnio.
    - Invited Panel:
        - Benjamin Surpless, Ph.D., Trinity University
        - Brady Ziegler, Ph.D., Trinity University
        - Saugata Datta, Ph.D., UTSA

Yongli, Saugata, Bayani
Birdsall Dreiss Lecture, 2025

Dr. Alex Godet

- Paleoenvironmental forcing on shallow-marine carbonate production during the Early Cretaceous. University of Paris Saclay, France, December 9, 2024.
- Ecological resilience of carbonate platforms during the Early Cretaceous. University of Burgundy, France, December 11, 2024
- Geode Cracking Event for the APPEX Program at UTSA. February 28, 2025

Invited Lectures and Outreach

Dr. Hongjie Xie

Dr. Xie, University of Iceland, 2024

- Xie, H., 2024. An introduction of my remote sensing on cryosphere study and current research in Iceland. University of Iceland Civil and Environmental Engineering graduate seminar series, Oct 24
- Xie, H. 2024. ICESat/ICESat-2 for cryosphere studies. University of Iceland Institute of Earth Science and NordVulk graduate seminar series

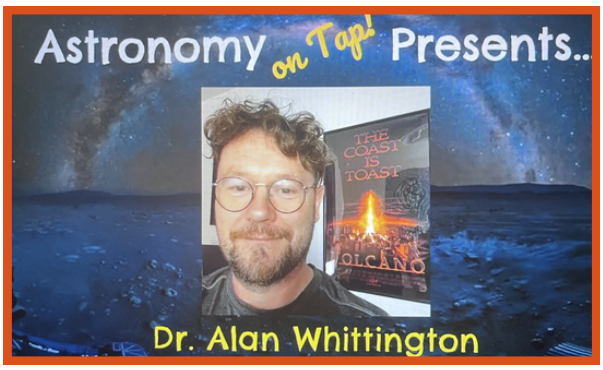
Dr. Kaushik Mitra

- Department of Earth & Environmental Sciences, University of Minnesota, MN 2025
- Department of Earth & Atmospheric Sciences, University of Houston, TX 2025
- Department of Civil & Environmental Engineering, UT San Antonio, TX 2025
- Boone Pickens School of Geology, Oklahoma State University, OK 2024
- STEPS Research Interest Group, UTSA 2024
- Department of Earth Sciences, The State University of New York, Brockport, NY 2024
- Department of Geosciences, Texas Tech University, Lubbock, TX 2024

Dr. Kaushik Mitra
University of Minnesota, 2025

Dr. Alan Whittington

- Texas A&M University, College Station TX, April 11, 2025
- New Mexico State University, Las Cruces NM, Apri 24, 2024
- "Space volcanoes" Astronomy on Tap, Bluestar Brewing, San Antonio TX, April 3, 2025 https://www.youtube.com/watch?v=7MUgQtIUzmo
- Skype a Scientist, 1-hour Skype interview with 5th grade class in Milburn, NJ, June 13, 2024
- Half-day workshop on Geologic Time for K-12 Teachers, June 11, 2024



Dr. Alan Whittington
Astronomy on Tap
San Antonio, April 2025

New Labs/Instruments

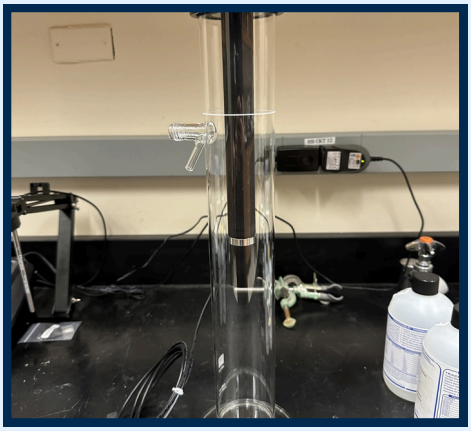
- **A cold room equipped with a two-person anaerobic chamber and a complete Rotating Disc Electrode Electrochemical Set-Up**

The new 4°C walk-in Cold Lab

Shri setting up experiments in the cold lab with an Electrode Electrochemical Set-Up

The new anaerobic chamber in the new cold lab set at 4°C

- **METER Pario – Automated Soil Particle Size Analyzer -** https://metergroup.com/products/pario/
- **METER Saturo – Automated Soil Saturated Hydraulic Conductivity Measurement -** https://metergroup.com/products/saturo/



METER PARIO
particle size distribution measurement device

METER SATURO
automated saturated hydraulic conductivity meter

Thermo Scientific
Lindberg Blue M muffle furnace

Student Highlights

Tom Varner and his son,
Outstanding Dissertation Award

- **Tom Varner** awarded the Outstanding Dissertation Award from the UTSA Graduate School, 2025.
- **Lauren Schwartz** awarded a 3-year NASA FINESST fellowship.
- **Austin Patridge** awarded a 2-year NASA NSTGRO fellowship.
- **Dianna Price**
  - recipient of the George Society scholarship for academic year 2024-25.
  - ongoing field work at Davenport Ranch to document dinosaur tracks and create 3D models in preparation for a field trip for GSA Connect 2025
- **Iyare Oseghae**
  - honorable mention award at 2024 Fall NASA CAMEE showcase and
  - Student Spotlights - ThisIsWhatAScientistLooksLike (https://sciences.utsa.edu/spotlights/student/2025/iyare-oseghae.html)
  - attendee at NASA IPMSI Tropospheric Emissions: Monitoring Pollution (TEMPO) Workshop at Xavier University of Louisiana.
- **Elizabeth Beauchamp** - field work along i10 in early 2025 to gather pictures to create digital models of outcrops
- **GeoEngage** students added recorded videos to explain geological concepts to visitors of a 3D models of the dinosaur tracks outcrop at Government Canyon State Natural Area (https://sciences.utsa.edu/eps/geoengage/projects.html).
- **Christian Sustaya** - attendee at University of Texas System AGEP Conference on April 4, 2025.
- **Cassidy Lane** - UTSA Outstanding Graduate Student University Life Award May 2025

Dianna Price, Davenport Ranch,
March 2025

Cassidy Lane,
Outstanding Graduate Student Award

Scholarships

Wilford L. Stapp Memorial Fund for Undergraduate Research

- Chynna Holmes

Mrs. Parvathammal Endowed Scholarship

- Chynna Holmes
- Kaylie Dana
- Javi Estrada

The South Texas Geological Society (STGS)

- Briar Rose Eslinger
- Alyssa Correia
- Amber Miller

Briar, Alyssa, Amy and Amber, STGS Scholarship Dinner, 2025

The Southwest Gem and Mineral Society presenting their annual scholarship to UTSA at the Fiesta of Gems Mineral show

Briar, Alyssa, Amy, Amber, Alex, John, Scott, Saugata, and Taylor, STGS Scholarship Dinner, 2025

Degrees/Certificates Awarded

Summer 2024 PhD Degrees Awarded:

- Brenna Halverson

Summer 2024 Master Degrees Awarded:

- Adriana Ariza Pardo
- Alexander Tribley
- Eliana Carmona
- Deashia Williams

Fall 2024 Master Degrees Awarded:

- Henrietta Krellenstein, MS Geoinformatics
- Shelby Ivy, MS Geoinformatics
- Natalie Torres, MS Geosciences

Fall 2024 Undergraduate Degrees Awarded:

- Jaida Veiga, BA-Geoscience
- Caleb Lanin, BS-Geoscience
- Lauren Malesky, BS-Geoscience
- Wyatt Jennings, BS-Geoscience
- Nathan Lampin, BS-Geoscience
- Melissa Payares, BS-Geoscience

Spring 2025 Master Degrees (Eligible to Graduate):

- Hunter Patterson, MS Geosciences
- Skylar Oconnell, MS Geoinformatics

Alan and Adriana., Summer graduation 2024

Wyatt J., Lauren M., Caleb L., and Melissa P.,
Fall graduation 2024

Summer 2024 Professional Certificate in Geographical Information Science:

- Shelby Ivy
- Deashia Williams

Spring 2025 Professional Certificate in Geographical Information Science (Eligible):

- Hunter Patterson

Saugata and Hunter
Spring graduation 2025

Saugata, Alan, and Matt
Fall graduation 2024

Caleb, Lauren, Melissa, Matt and Wyatt
Fall graduation 2024

CONGRATULATIONS!

Publications

- **Pousali Pathak**, **Ruben Olivares, Thomas S. Varner,** Harshad V. Kulkarni**,** Guadalupe Carmona, Cynthia Lima, Steven Hollan, **Saugata Datta**. Hydrogeochemical assessment of groundwater in transboundary aquifers along the US-Mexico border and drinking water quality implications for Texas colonias. Groundwater for Sustainable Development. https://doi.org/10.1016/j.gsd.2024.101377.
- Kwak, Kyungwon; **Varner, Thomas**; Nguyen, William; Kulkarni, Harshad; Buskirk, Reid; Huang, Yibin; Saeed, Abu; Hosain, Alamgir; Aitkenhead-Peterson, Jacqueline; Ahmed, Kazi Matin; Akhter, Syed; Cardenas, M. Bayani; **Datta, Saugata**; Knappett, Peter. Hotspots of Dissolved Arsenic Generated from Buried Silt Layers along Fluctuating Rivers. Environmental Science & Technology. https://doi.org/10.1021/acs.est.4c02330.
- Kyungwon Kwak, **Thomas S. Varner**, Saptarshi Saha, Mesbah Uddin Bhuiyan, Harshad V. Kulkarni, Ananya Mukhopadhyay, **Saugata Datta**, Peter S. K. Knappett. Impact of Surficial Lithology on Arsenic Mobility in Riverbanks of Tidally Fluctuating Rivers: The Hooghly River, West Bengal, India. Journal of Hydrology, Volume 641, September 2024, 131773. https://doi.org/10.1016/j.jhydrol.2024.131773.
- **Varner, T.S**., Saha, S., Bhuiyan, M.U., Kulkarni, H.V., Knappett, P.S.K., Mukhopadhyay, A., **Datta, S**. (2024) Advances in River Corridor Research and Applications. Chapter 16: Distribution of Arsenic and Iron in Hyporheic Zone Sediments along the Hooghly River. ISBN: 978-981-97-1226-7. https://doi.org/10.1007/978-981-97-1227-4_16.
- **Varner, T.S**., Kumari, D., Giri, A., Knappett, P.S.K., **Datta, S**., Kulkarni, H.V. (2024) Advances in River Corridor Research and Applications. Chapter 15: Occurrence of Sedimentary Iron and Arsenic along the Beas River and Implications for Arsenic Enrichment in the Sutlej-Indus River Basin, India. ISBN: 978-981-97-1226-7. https://doi.org/10.1007/978-981-97-1227-
- **Halverson, B.A.**, and **Whittington, A.** 2025. From flow to furnace: Low viscosity of three-phase lavas measured at Kīlauea 2018 eruption conditions. *Geology*, 53, 135-139, https://doi.org/10.1130/G52679.1.
- Gallo, R., Shea, T., **Whittington, A.**, **Emerson, A.**, Boro, J., and Mourey, A., 2024. Conditions for formation and preservation of andesite-hosted mafic enclaves during the 2018 Lower East Rift Zone eruption of Kīlauea. *Journal of Volcanology and Geothermal Research*, 455, 108205, https://doi.org/10.1016/j.jvolgeores.2024.
- Herbst, T., **Whittington, A.**, Pistone, M., Schiffbauer, J., and Selly, T., 2024. Release the crackin': The influence of brittle behavior on gas retention in crystal-rich magma. *Bulletin of Volcanology*, 86, 58, https://doi.org/10.1007/s00445-024-01747-3.

Publications

- Adams, T., **Price, D**., Davis, C.I., Lehrmann, D.J., **Sharpe, J., Godet, A**., Suarez, M.B. & Altiner, D. (2024). "Conservation of Early Cretaceous dinosaur tracks in Comal County, Texas: photogrammetry and detailed documentation of a potential at-risk fossil locality." New Mexico Museum of Natural History Bulletin **95**: 43-55.
- Adams, T.L., **Price, D., Godet, A.**, Neuman, J., Davis, C., Lehrmann, A.A. & Lehrmann, D.J. (2025). "Revisiting Bird's swimming sauropod: new insights on Manus-dominated Dinosaur Tracks from the Mayan Dude Ranch in Bandera, Texas." Historical Biology: 1-15.
- **Godet, A.**, Adatte, T., Arnaud-Vanneau, A., Bonvallet, L., De Kaenel, E. & Mojon, P.-O. (2024). "Rise and demise of the Urgonian platform in Switzerland." Geological Society, London, Special Publications **545** (*1*): SP545-2023-2103.
- **Godet, A**., Byerly, J., Bourdon, M. & Suarez, M. (2024). "Quantifying paleoecological impact of the OAE1a on shallow marine ecosystems from southeastern France." Sedimentary Geology **473**: 106757.
- Joshi, M., **Alberto M. Mestas-Nunez, Stephen F. Ackley**, Stefanie Arndt , Grant J. Macdonald and Christian Haas 2024 , Seasonal and Interannual Variations in Sea Ice Thickness in the Weddell Sea, Antarctica (2019–2022) Using ICESat-2 Remote Sens., 16, 3909. https://doi.org/10.3390/rs16203909
- Koo, Y., **Xie, H**., Meier, W.N., **Ackley, S**., Kurtz, N.T., 2025, Detection of multi-year ex-fast ice in the Weddell Sea, Antarctica, using ICESt-2 satellite altimeter data, Remote Sensing of Environment 325.
- Koo, Y., **Xie, H., & Ackley, S. F.** (2024). Thermodynamic and dynamic variations in sea ice thickness of the Ross Sea, Antarctica, driven by atmospheric circulation. Journal of Geophysical Research: Oceans, 129, e2023JC020622. https://doi.org/10.1029/2023JC020622
- **Iqrah, J.M.,** Y. Koo**, W. Wang, H. Xie, S. Prasad**, 2025. *Scalable higher resolution polar sea ice classification and freeboard calculation from ICESat-2 ATL03 data* (pp. 1016-1025). 2025 IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC 2025)
- **Iqrah, J.M., W. Wang, H. Xie**, S. Prasad, 2024. *A Parallel Workflow for Polar Sea-Ice Classification using Auto-labeling of Sentinel-2 Imagery* (pp. 1016-1025). IEEE: 2024 IEEE International Parallel and Distributed Processing Symposium Workshops.
- **Xie, H**., T. Liang, X. Wang, Q. Zhang, X. Huang, and X. Xiao, 2024. Remote sensing mapping and modeling of snow cover parameters and applications. Book Chapter 12 (40 pages) of *Remote Sensing Handbook*, Vol. V, edited by P.S. Thenkabail, Taylor & Francis Group Press (2nd edition), ISBN148221710: 259-284.

Publications

- Tian, Y., Guang, K., Li, J., Zhu, S., Tian, L., Li, Y., **Gao, Y.**, Rao, Z., 2024, Cave monitoring in the Monsoon Region of China and its paleoclimatic implications. Journal of Cave & Karst Studies, 86(3/4). http://dx.doi.org/10.4311/2022ES0110.
- Avidani, Y., Angert, A., Davidson, C., Xia, X., **Gao, Y.**, and Amrani, A., 2024, Sulfur isotopic fractionation during hydrolysis of carbonyl sulfide: Marine Chemistry, v. 267, 104458, https://doi.org/10.1016/j.marchem.2024.104458.
- Xia, X., and **Gao, Y.**, 2024, Compound-specific, intra-molecular, and clumped 13C fractionations in the thermal generation and decomposition of ethane and propane: A DFT and kinetic investigation. Geochimica et Cosmochimica Acta, v. 375, p. 50-63, https://doi.org/10.1016/j.gca.2024.05.001.
- Dan, Y., Tian, H., Farid, M. A., Yang, G., Li, X., Li, P., **Gao, Y.**, He, X., Li, F., Liu, B., and others, 2024, Evolution characteristics of meteorological and hydrological drought in an arid oasis of Northwest China. Water, v. 16, p. 2088, https://doi.org/10.3390/w16152088.
- Pan, Y., Tian, H., Farid, M. A., He, X., Heng, T., Hermansen, C., Wollesen de Jonge, L., Li, F., **Gao, Y.**, Tian, L., and Yang, G., 2024, Metaheuristic optimization of water resources: A case study of the Manas River irrigation district. Journal of Hydrology, v. 639, 131640, https://doi.org/10.1016/j.jhydrol.2024.131640.
- Tang, H., Tan, L., **Gao, Y.**, Zang, J., Ma, L., Li., Y., Edwards, R.L., Cheng, H., Sinha, A., Wang, X., Cheng, X., Garcia, A., and Alexander, E.C., Jr., 2024, Mid-Holocene hydroclimatic change and hurricane activity in Central America recorded by an Isla de Mona Stalagmite. Marine Geology, https://doi.org/10.1016/j.margeo.2024.107289.
- **Mitra, K., Malesky, L.A**., Thorpe, M.T., and Stevanovic, A. Siderite and Ferric Oxyhydroxide Imply Interlinked Carbon, Iron & Halogen Cycles on Mars. Accepted in PNAS.
- **Mitra, K**., Bahl, Y., Hernandez-Robles, A., Stevanovic, A., **Westover, G**. & Hurowitz, J.A., 2024, Magnetite survivability and non-stoichiometric magnetite formation in presence of oxyhalogen brines on Mars. Geophysical Research Letters. 51(19), pp. e2024GL111114. doi.org/10.1029/2024GL111114.
- Knight, A.L., **Mitra, K**., and Catalano, J.G., 2024, Transformation of precursor iron (III) minerals in diagenetic fluids: Potential origin of gray hematite at Vera Rubin Ridge. Journal of Geophysical Research: Planets. 129(4), pp. e2023JE007931, doi.org/10.1029/2023JE007931.
- Sharma, P. and **Mitra, K**. 2024. Hexavalent Chromium Contamination in Groundwater: Erin Brockovich Promulgating Awareness since 2000. Groundwater, 62(6), pp. 832-833. doi.org/10.1111/gwat.13440.

Conference Sessions Convened

- **Saugata Datta**, 9th International Arsenic Congress, 2024, Bhubaneswar, KIIT, India. Co-Chair Datta, S. Parallel Sessions 1 and 29: Theme 1: Arsenic in natural environment
- **Alan Whittington**, Geological Society of America GSA Connects: convenor and chair of session T131 "Petrology and Volcanology of Earth and Other Planets", 2024 (co-convenors: Amanda Clarke, Jade Star Lackey, Claire McLeod, and Liz Widom)

Conference Presentations

- **T.S. Varner,** H.V. Kulkarni, M. B. Cardenas, P.S.K. Knappett, **S. Datta**. (2024). Partitioning of sedimentary arsenic in intertidal zone of Meghna River in Bangladesh. American Geophysical Union 2024, Washington, D.C.
- **P. Banerjee**, A. Veach, **S. Datta**. (2024). The Effect of Land Use on the Chemistry and Composition of the Rhizosphere across Climatic Transect in Kansas and Its Subsequent Effect on the Soil Phosphorus Mobilization. 2024 ASA, CSSA, SSSA International Annual Meeting, San Antonio, Texas.
- **T.S. Varner**, K. Kwak, H. Kulkarni, W. Nguyen, M. B. Cardenas, P. S. K. Knappett, and **S. Datta.** (2024). Partitioning of solid phase arsenic and iron in hyporheic zone sediments along the Meghna River. 9th international Congress and exhibition on Arsenic in the Environment. Bhubaneswar, India. 2024.
- R. Dhiman, **T.S. Varner,** P.S.K. Knappett, **S. Datta**, H.V. Kulkarni. (2024) Anaerobic and aerobic incubation of the Beas River sediments to understand arsenic mobility in the Sutlej-Indus River basin in the northwestern India. 9th international Congress and exhibition on Arsenic in the Environment. Bhubaneswar, India. 2024.
- **A.V. Aguilar, S. Datta, A. Godet,** H.V. Kulkarni, E.B. Rampe, Y. Li. (2024) Temperature controls for mobilization of arsenic and fluoride within a geothermally influenced aquifer, Mexico. 9th international Congress and exhibition on Arsenic in the Environment. Bhubaneswar, India. 2024.
- K. Kwak, **T.S. Varner**, S. Saha, M.U. Bhuiyan, H.V. Kulkarni, A. Mukhopadhyay, **S. Datta**, P.S. K. Knappett. (2024) Impact of Surficial Lithology on Formation of Natural Reactive Barrier (NRB) in Riverbanks of Tidally Fluctuating Rivers: The Hooghly River, West Bengal, India. 9th international Congress and exhibition on Arsenic in the Environment. Bhubaneswar, India. 2024.

Conference Presentations

- A. E. Steinbrecher, F. E. D. Flores, **P. Pathak, S. Datta**, A. M. Veach. (2024) Determination of Seasonal Variation in Chemical and Microbial Effluent Signatures in the San Antonio River Basin. Ecological Society of America, Long Beach, CA., USA. August 2024.
- S. Hollan, I. Heathman, H.V. Kulkarni, J.J. Medley, J.J.M. Hathaway, C.M. Phillips-Lander, D.E. Northrup, **S. Datta.** (2024). Effects of high magnitude wildfires on volcanic (lava tube) cave water chemistry. Goldschmidt, Chicago, Ill., USA. August 2024.
- **T.S. Varner,** K. Kwak, H. Kulkarni, W. Nguyen, M. B. Cardenas, P. S. K. Knappett, and **S. Datta**. (2024). Sedimentary organic matter and iron mineralogy control solid-phase arsenic behavior in the hyporheic zone of the Meghna River, Bangladesh. Goldschmidt, Chicago, Ill., USA. August 2024.
- **Austin E.C**., Yu X., Vega R., Husić A., Foustoukos D.I., Miller K.E., Alexander C.M.O'D., **Whittington A.**, Glein C., Truong N., 2025. Characterizing the mechanical properties of IOM: implications for planet formation and icy-body thermal evolution. LPSC 56, The Woodlands TX.
- Husić A., Yu X., **Austin E.C**., Blase R.C., Patrick E.L., Pasterski M.J., **Whittington A**., Trainer M., 2025. Multifaceted characterization of Titan haze samples produced using a new experimental setup. LPSC 56, The Woodlands TX .
- **Patridge A**. M., **Whittington A**., Edmunson J., 2025. The glass content of highland regolith simulants measured via the high-temperature DSC configurational entropy method. LPSC 56, The Woodlands TX, abstract #1364.
- **Schwartz L., Whittington A**., Bartlett A., 2025. Effect of wind speed and physical properties on the convective cooling of volcanic rocks LPSC 56, The Woodlands TX.
- **Whittington A., Halverson B. A., Landolfi J**., 2025. Experimental rheological measurement of vesicular basaltic lava, with implications for planetary volcanism. LPSC 56, The Woodlands TX, abstract #1609 [poster].
- **Ariza Pardo, A**., Sehlke, A., and **Whittington, A**., 2024. Fast and Furious: Picritic Lavas on Mars Require High Flux, High Temperature Emplacement at Slow Cooling to Form Widespread Lava Flows. LPSC 55, The Woodlands TX.
- **Ariza Pardo, A**., Sehlke, A., and **Whittington, A**., 2024. Thermal properties of picritic martian analog lavas change due to crystal fraction variation during cooling and emplacement process. Tenth International Conference on Mars, Pasadena CA.
- **Ariza Pardo, A., Whittington, A**., and Sehlke, A., 2024. Modelando emplazamiento de flujos de lava análogos de Marte. Technical Week of Geology, Geological Engineering and Geosciences in Colombia (virtual).

Conference Presentations

- **Cly, C., Speck, A.**, **Whittington, A.**, Ponce, A., Sargent, B., Nuth, J., 2024. Laboratory Study of Aluminum Bearing Minerals for Astrophysical Applications. AAS 243, New Orleans LA.
- **Cly, C., Ponce, A., Speck, A., Whittington, A.**, Sargent, B., Nuth, J., 2024. Thermal Evolution of Alumina through Dehydroxylation of Aluminum Hydroxide. Microscopy and Microanalysis 2024, Cleveland OH.
- **Halverson, B.A.**, **Emerson, A.**, Hammer, J., **Lira, J.**, and **Whittington, A.**, 2024. Estimates of crystallinity utilizing Differential Scanning Calorimetry: Application to the Kilauea 2018 Lower East Rift Zone eruption. AGU Fall meeting, Washington DC.
- **Husić A., Yu X., Austin E.C.**, Blase R.C., Patrick E.L., **Whittington, A.**, 2024. Characterization of Tholins Produced by a New Experimental Set Up. LPSC 55, The Woodlands TX.
- **Husić A., Yu X., Austin E.C**, Blase R.C., Patrick E.L., **Whittington, A.**, 2024. Multi-faceted characterization of titan tholin sample physical properties. 2nd Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX.
- **Husić A., Yu X., Austin E.C.**, Blase R.C., Patrick E.L., **Whittington, A.**, 2024. Multi-faceted characterization of titan tholin sample physical properties. AGU Fall meeting, Washington DC.
- **Jensen, T., Whittington, A., Ponce, A., Cly, C.**, Sargent, B., Nuth, J., Speck, A., 2024. Observing Transitions of Aluminum Oxides Relating to Star Dust. AAS 243, New Orleans LA.
- **Miller, K.E.**, Hanna, R., Phillips-Lander, C., **Whittington, A.**, Domanik, K., and Bartels, K., 2024. Searching for an association between carbonate grains and pore space in the Murchison meteorite. AGU Fall meeting, Washington DC.
- **Patridge A.M., Whittington A., Morrison A.**#, Rickman D., Gruener J.E., 2024. Thermophysical Characterization of NUW-LHT-5M Lunar Highland Simulant. LPSC 55, The Woodlands TX.
- **Patridge, A.M.**, Gruener, J., Clark, J., Casbeer, P., **Whittington, A.**, and **Parsapoor, A.**#, 2024. Quantifying the glass content of lunar simulants through DSC and XRD. 2nd Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX.
- **Schwartz, L., Whittington, A.**, and Michelfelder, G., 2024. Integrated Lab Analog and Numerical Modeling Study of Venusian Pancake Domes: Constraints on Their Crystallinity, Composition, and Effusion Rate. LPSC 55, The Woodlands TX.
- **Whittington, A.**, and Michelfelder, G., 2024. Post-Emplacement Vesiculation of Lava Flows and Implications for Quantifying Lava Properties Through Remote Sensing. LPSC 55, The Woodlands TX [oral].

Conference Presentations

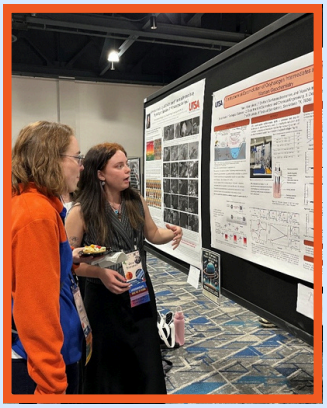
- **Speck, A.K., Whittington, A.G., Cly, C**., Montez, R., **Jensen, T., Brancaleon, E., Crespo, R., Rivera, I.**, Sargent, S., Nuth, J.A. III, and **Ponce Pedraza, A**., 2024. Laboratory studies of alumina with applications to planet formation. AGU Fall meeting, Washington DC.
- **Bartlett, A., Schwartz, L., and Whittington, A**., 2024. Effect of Forced Convection on Heat Loss in Basaltic vs. Rhyolitic Lava Flows. LPSC 55, The Woodlands TX.
- **Whittington, A., Schwartz, L**., and Michelfelder, G., 2024. Post-emplacement vesiculation of lava flows leads to erroneous physical properties estimated by remote sensing. 2nd Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX [oral].
- **Whittington, A., Schwartz, L**., and Michelfelder, G., 2024. Post-emplacement vesiculation in monogenetic basaltic lava flows: implications for reconstructing emplacement history. 1st International Monogenetic Conference, San Pedro de Atacama, Chile [oral].
- **Xie, H.**, Koo, Y., & **Ackley, S. F**., 2024. The shift of sea ice dynamics in the Ross Sea caused by atmospheric forcings, SCAR Open Science Conference, Pucon, Chile (August 19-23).
- **Xie, H.**, Koo, Y., & **Ackley, S. F**., 2024. The shift of sea ice dynamics in the Ross Sea caused by atmospheric forcings, Cryo2Ice Symposium (ESA-NASA), Reykjavik, Iceland (Sept 23-27).
- **Xie, H**, 2024. An introduction to my Fulbright research project. Arctic Circle Assembly, Reykjavik, Iceland (October 17-19).
- **Xie, H**., 2024. Preliminary results of the Icelandic snow cover change under the warming climate. IGS Nordic Branch annual conference, Hellissandur, Iceland (Oct 30 – Nov 1).
- **Gao, Y.**, & Xia, X., 2024, Consumption of Serpentinization-Derived Hydrogen by Organic Matter in Sedimentary Basins, AGU Fall Meet. Suppl., NS016, https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1603333.
- Covington, M., Shobe, C., Luhmann, A.J., Abolins, M., Noble, M., Oleson, E., **Gao, Y**., and Ye, M., 2024, Exploring the controls of karstification by analyzing karst surface drainage across the United States (Invited): Geological Society of America Abstracts with Programs, v. 56, no. 5, https://doi.org/10.1130/abs/2024AM-405803.
- Xia, X. & **Gao, Y.**, 2024, Consumption of serpentinization-derived hydrogen by kerogen degradation in Maverick Basin, The International Meeting for Applied Geoscience & Energy https://imageevent.aapg.org/portals/26/abstracts/2024/4076034.pdf.
- **K. Mitra**, 2025. Oxychlorine Cycle on Mars: A Review of Formation & Destruction Processes. In LPSC (Vol. 56). Abstract# 1711.

Conference Presentations

- **K. Mitra, Malesky, L.**, Thorp, M.T., and Stevanovic, A. 2025. Siderite Alteration to Ferric Oxyhydroxides By Oxyhalogen Brines: Implications For Interlinked Carbon, Iron, & Halogen Cycles On Mars. In LPSC (Vol. 56). Abstract# 1727.
- Das, E., Bahl, Y., **Mitra, K.**, and Glotch, T.D., 2025, Geochemical Modeling of Martian Chloride Brines. In LPSC (Vol. 55), Abstract# 1899.
- **Malesky, L., Brancaleon, E.**, and **K. Mitra**. 2025. Investigating the Relative Effectiveness Of Proposed Manganese Oxidants In Martian Fluids: Comparative Analysis Of Oxygen, Oxyhalogens, And Nitrate. In *LPSC* (Vol. 56). Abstract# 2115.
- **Zoesch-Wiegel, Z., Brancaleon, E., Schoenenberger, A., Malesky, L., and K. Mitra**. 2025. Hydrothermal Alteration Of Ferrous Silicate Minerals By Oxyhalogens: Implications For Olivine Diagenesis On Mars. In LPSC (Vol. 56). Abstract# 2714.
- **Brancaleon, E.**, Sankarasubramanian, S., and **K. Mitra**. 2025. Electrochemical Deconvolution Of Oxyhalogen Intermediates And Applications For Martian Geochemistry. In LPSC (Vol. 56). Abstract# 2513.

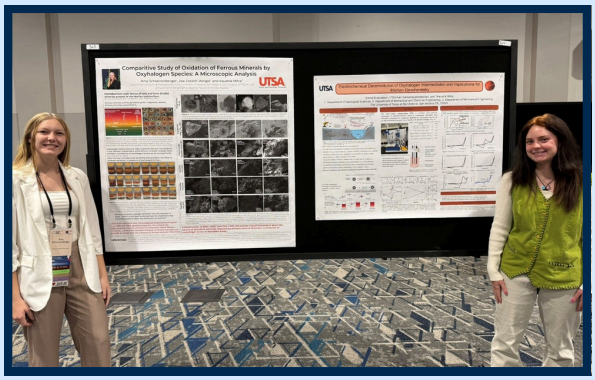
Lauren Malesky meeting authors Patrick Gasda and Nina Lanza, LPSC 2025

Zoe Zoesch-Weigel presenting her poster on hydrothermal alteration on Mars, LPSC 2025



Elena Brancaleon presenting her poster on electrochemistry, LPSC 2025

- **Schoenenberger, A., Zoesch-Wiegel, Z., and K. Mitra**. 2025. Comparative study of oxidation of ferrous minerals by oxyhalogen species: a microscopic analysis. In LPSC (Vol. 56). Abstract# 2157.



Amy S. and Elena B. with their posters, LPSC 2025

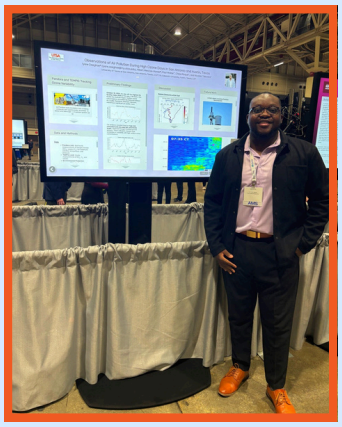
Conference Presentations

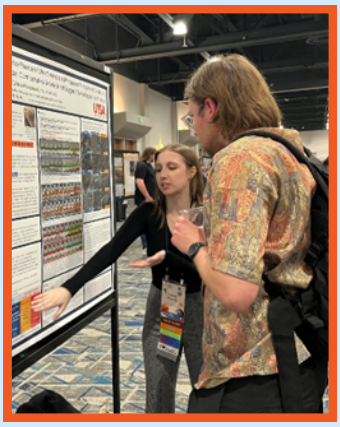
- **Mitra, K**., Tinker, C., Ghosh, A., Ramachandran, A. V., Bouchard, M. C., and Kumar, K. 2024, The design of the Multi-Planet Surface Simulator (MPS2): An experimental facility for the continuous monitoring of physical and chemical processes on planetary bodies. In Texas Area Planetary Science Conference (Vol. 2), San Antonio, TX. Abstract# TAPS2024-14.
- **Brancaleon, E**., Sankarasubramanian, S., and **K. Mitra**. 2024. Deconvoluting oxychlorine chemistry on Mars: an electrochemical approach. In Texas Area Planetary Science Conference (Vol. 2), San Antonio, TX. Abstract# TAPS2024-29.
- **Westover, G., Malesky, L., Schoenenberger, A., and K. Mitra**. 2024. Iron carbonate weathering by oxyhalogen species: Implications for siderite stability on Mars. In Texas Area Planetary Science Conference (Vol. 2), San Antonio, TX. Abstract# TAPS2024-27.
- **Zoesch-Wiegel, Z., Westover, G., Schoenenberger, A., Malesky, L., and K. Mitra**. 2024. Hydrothermal Alteration of Ferrous Silicate Minerals by Oxyhalogens: Implications for Olivine Diagenesis on Mars. In Texas Area Planetary Science Conference (Vol. 2), San Antonio, TX. Abstract# TAPS2024-25.
- **Schoenenberger, A**., Bahl, Y., Rivera-Banuchi, V.B., J. A. Hurowitz, Andrei Hernandez-Robles, Ana Stevanovic, and **K. Mitra**. 2024. Aqueous alteration of ferrous trioctahedral smectites by oxyhalogen brines: Implications for Mars. In Texas Area Planetary Science Conference (Vol. 2), San Antonio, TX. Abstract# TAPS2024-13.
- **Brancaleon, E**., Sankarasubramanian, S., and **K. Mitra**. 2024. Deconvoluting oxychlorine chemistry on Mars: an electrochemical approach. In Earth & Planetary Sciences Annual Research Exhibition (Vol. 3), San Antonio, TX.
- **Schoenenberger, and K. Mitra**. 2024. The Oxidation of Fe(II) Phyllosilicates by Oxyhalogen Species in Mars-Relevant Fluids. In Earth & Planetary Sciences Annual Research Exhibition (Vol. 3), San Antonio, TX.
- **Malesky, L., Westover, G., Schoenenberger, A., and K. Mitra**. 2024. Iron Carbonate Weathering by Oxyhalogen Species: Implications for Siderite Stability on Mars. In Earth & Planetary Sciences Annual Research Exhibition (Vol. 3), San Antonio, TX.
- **Westover, G., Schoenenberger, A., and K. Mitra**. 2024. Oxidative Weathering of Simple Phyllosilicates by Chlorate and Bromate: Implications for Greenalite Oxidation on Mars. In Earth & Planetary Sciences Annual Research Exhibition (Vol. 3), San Antonio, TX.
- Das, E., **Mitra, K**., and Glotch, T.D., 2024, Geochemical Modeling of Martian Chloride Deposit Source Brines. 2024. In Tenth International Conference on Mars, LPI Contribution# 3007.

Conference Presentations

- **Iyare Oseghae**, presenter at American Meteorological society 2025 Annual Conference in New Orleans, LA

Iyare Oseghae American Meteorological Society, Annual Conference , LA, 2025





Lauren Malesky presenting her poster on manganese oxidation on Mars at LPSC 2025

Geological Society of America Presentations

- R. Dhiman, **T.S. Varner**, P.S.K. Knappett, **S. Datta**, H.V. Kulkarni. (2024). Understanding the arsenic mobility in the Sutlej-Indus River Basin using laboratory-based incubation experiments of the Beas River sediments. GSA Connects 2024, Anaheim, California.
- **T.S. Varner.** (2024). Arsenic and iron association in sediment comprising the hyporheic zone of the Meghna River in Bangladesh. GSA Connects 2024, Anaheim, California.
- **A. Tribley**, B. Curry, **P. Pathak**, H.V. Kulkarni, M. E. Flores, **S. Datta**. (2024). Seasonal variations in geochemical characters of surface soils controlling the Edwards Aquifer groundwater chemistry in South-Central Texas. GSA Connects 2024, Anaheim, California.
- **Halverson, B.**, and **Whittington, A.**, 2024. Low viscosity of crystal- and bubble-bearing lava measured at Kilauea 2018 eruption conditions. GSA Connects, Anaheim CA [oral].
- Montgomery, E. H., **Haschenburger, J.K., Vote, J.**, Smyth, Dustin D., **Godet, A., Afra, M.**, and Van Dijk, Simon (2024). Engaging undergraduate students in geoscience service-learning projects. GSA Connects, Anaheim, CA, 22-25 September.

Alex Tribely GSA, 2024

Faculty Activities

Dr. Alan Whittington

- In Spring 2025, Alan taught the undergraduate Petrology class, which included a field trip to the 1.1 Ga Grenville orogeny, exposed in the Llano uplift.
- In Fall 2024, Alan taught the Ethics class for new students in the Environmental Science and Engineering PhD program, and greatly enjoyed discussions of predatory journals and conferences, scientific fraud, and how not to commit it. He also taught Planetary Geology, to a mix of students from the Departments of Earth & Planetary Sciences, and Physics & Astronomy.
- In 2023-2024 Alan was Chair of the Mineralogy, Geochemistry, Petrology and Volcanology Division of the Geological Society of America.
- In September he attended the GSA Connects meeting in Anaheim, CA.
- In November he attended the International Monogenetic Conference in San Pedro de Atacama, Chile, and enjoyed field trips to Laguna del Maule (an active caldera system with similarities to Yellowstone) and a drive to over 5400m on Sairecabur, a currently inactive volcano on the Bolivian border.

Dr. Alex Godet

- Conducted field work (2 weeks in late November – early. December 2024) in Oman with two graduate students: Jacob Hinojosa, M.S. in Geosciences, and Justin Sharpe, Ph.D. in Environmental Sciences and Engineering.
- Chair the Faculty Senate of UTSA.
- Two seminars at the University of Paris Saclay (December 9) and the University of Burgundy (December 11), in France.

Dr. John (Matt) Cannon

- Co-Chair of Field Trip Coordination for Geological Society of America Connects 2025.

Source: GSA Connects 2025

Department Activities

UTSA Day, Spring 2025

Yongli, Janet and Alex, Science Semana, Spring 2025

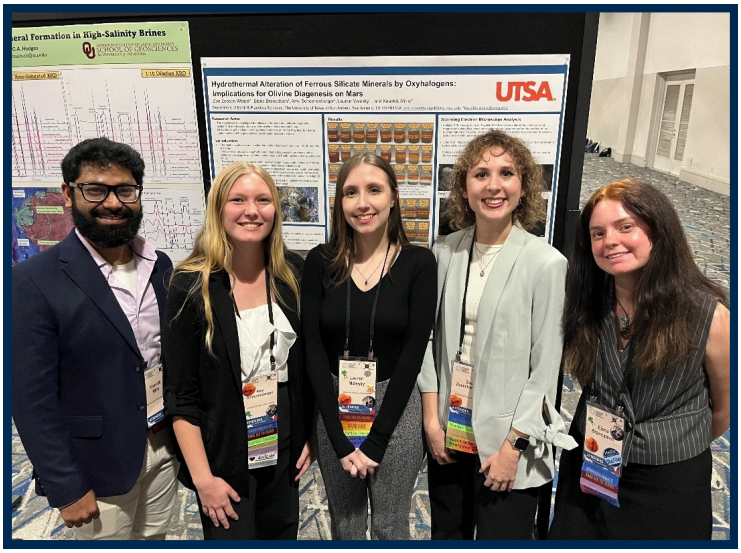
UTSA Day, Spring 2025

Kaushik Mitra, Amy S., Lauren M., Zoe Z., and Elena B. getting dinner while at LPSC 2025

Ashley, Outreach event, March 2025

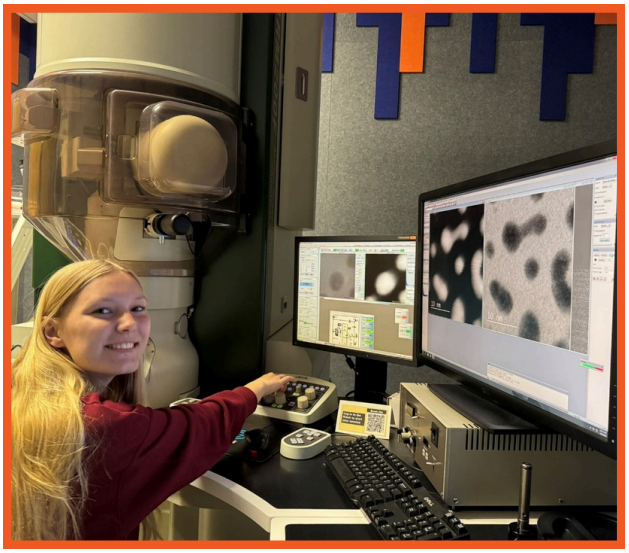
Alex, Ashley, and Justin, at First Friday, 2025

Geo Moments



Kaushik Mitra, Amy S., Lauren M., Zoe Z., and Elena B. presenting posters at LPSC 2025 in Houston, TX

Alan in front of Laguna Lejia, Atacama Desert, Chile, November 2024. Volcanoes from L to R are: Lascar, Aguas Calientes, Cerro Pili.



Amy Schonenberger doing Transmission Electron Microscopy (TEM) at KAMC at UTSA

Lauren Malesky with her display on Martian minerals at the 63rd Fiesta of Gems Mineral show

Melissa P. and Lauren M. receiving their graduation regalia from the Student Success Center 4-Year Plan Banquet

Jaida Veiga mapping the coast of Fife, Scotland

Geo Moments

Jaida V. and Lauren M. mapping at Stonehaven in Scotland

Iyare Oseghae services Pandora88, a NASA spectrometer measuring air quality over downtown San Antonio

Ph.D. candidate Ivana Torres-Ewart (University of Missouri-Kansas City) aligns herself with columnar jointing in melilite olivine nephelinite at the Vulcan Quarry, Knippa TX

Visit to the HAMsTER lab by Dr Alison Graettinger (University of Missouri-Kansas City) and Ph.D. candidate Ivana Torres-Ewart (UMKC). PhD candidate Brenna Halverson (UTSA) is drinking tea

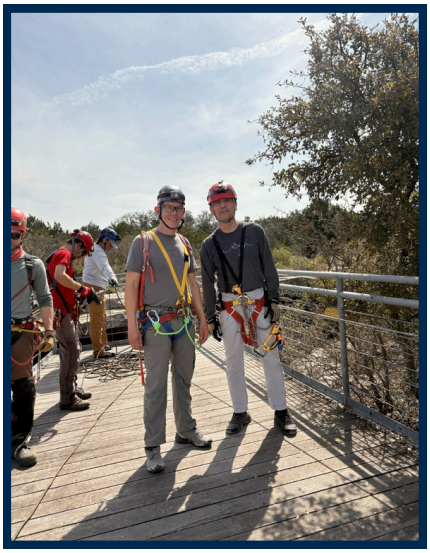
Lauren Malesky with her invited display on mineral art in Tucson, AZ

Alan Whittington at over 5400m on Volcán Sairecabur, Chile

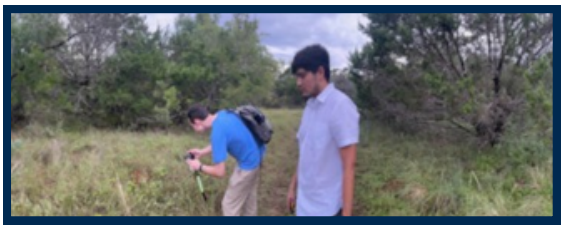
UTSA Day, Spring

Mahsa and Yongli
Science Semana, Spring

Geo Moments

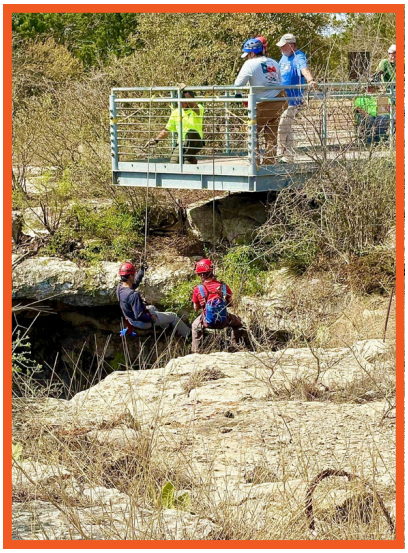


Matt and Yongli get ready to rappel down to the Devil's Sinkhole



Alec Graves (ESE PhD student) and Sergio Romero (electrical engineering undergraduate student) collect soil sample

Matt is rappelling down to the sinkhole assisted by crews from Bexar Grotto and the Texas Parks and Wildlife Department



Yongli is rappelling down to the sinkhole assisted by crews from Bexar Grotto and the Texas Parks and Wildlife Department

Kelsey Perez, Yongli, Matt, and Jose Gamez after being out of the sinkhole. Kelsey and Jose are UTSA students who volunteered to assist on the surface for safety and help the rigging crew to haul cavers out of the sinkhole

Field Camp, 2024

Mahsa, The Engaging Pedagogy Conference, Texas Luthern University

Field Camp, 2024

Geo Moments

Field Camp, 2024

Peter and Tosin, Field Camp, 2024

Field Camp, 2024

Peter and Wyatt, Field Camp, 2024

Yongli, Devil's Sinkhole Research Trip

Devil's Sinkhole Research Trip

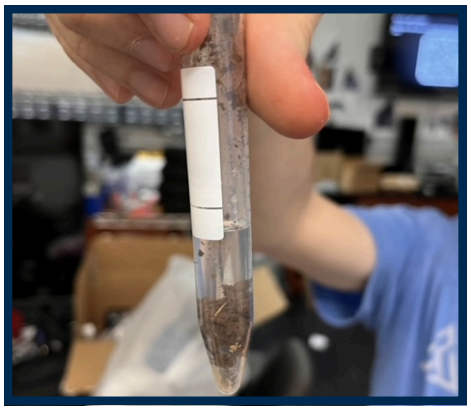
Geo Moments

Alex, Justin and Jacob, Oman

GeoEngage students scouting the dinosaur tracks outcrop at Government Canyon State Natural Area.

Keimani, Rick, Dana, Tanner at Government Canyon State Natural Area for GeoEngage, Fall 2024

left to right: Sergio Romero (Electrical Engineering undergraduate student), Alec Graves (ESE PhD student), and John Lawless (Management of Technology MS student) looking at soil dilutions under a digital microscope to detect fungi



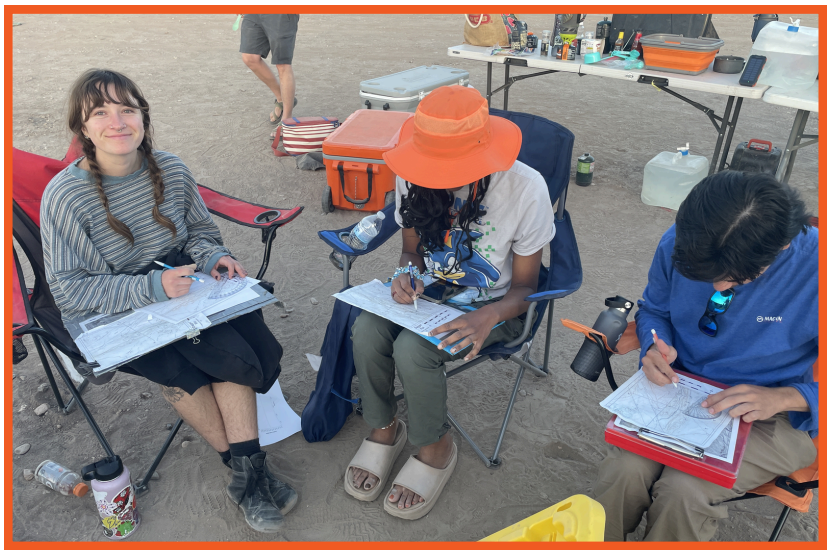
A soil dilution before suspension in a 15ml centrifuge tube

left to right Ben Hemenger (Artificial Intelligence undergraduate), Sergio Romero EE undergraduate) and Alec Graves (PhD student), and Alejandro Perez (below, Mechanical Engineering undergraduate) measure soil properties including compaction depth near a parking lot.

Geo Moments : Big Bend

Structure and sedimentology,
Big Bang National Park

Structure and sedimentology,
Big Bend National Park



Sierra, working on their maps back at camp in Big Bend

working on their maps back at camp in
Big Bend

Matt and Alex, in front on stacked channels,
Big Bend

Kelsey, Gavin and James working on their
maps back at camp in Big Bend

Geo Moments : Petrology

UTSA Petrology field trip at the summit of Enchanted Rock

Students looking at an aplite on their way up to the summit of Enchanted Rock

Stopping at “The Slab” on the the Llano River

Courtney, Amber and Amy, 2025

Alex, Elena, Javi, Zoe, and others at Inks Lake

UTSA Petrology field trip at Inks Lake State Park

Social Links

I'd like to thank our Mahsa Afra and our undergraduate student, Javi Estrada, for making this newsletter possible. I hope you enjoy reading about our student and faculties' achievements and their fun times.
– Saugata Datta

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