

# UTSA Earth and Planetary Sciences

## College of Sciences

## Newsletter 2023-2024

### Message from the Department Chair

Let me first start by saying that myself as Chair, I just finished my 2nd year and cannot be happier to see how our students and faculties have been successful this year in many areas of acquiring scholarships, grants, instruments for their laboratories and bringing in new disciplines to be taught in our department and would like to celebrate our collective achievements in this Newsletter. Secondly, I'm so proud of our own Steve Ackley who was honored as an AGU Fellow this year. What a lifetime achievement! I am also so proud of our graduating students who finished their degrees and are walking out proud to be a GeoRoadRunner! Together, we have created a vibrant, dynamic, and supportive community 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 our field. 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.

The rest of my message on page 2 will be concentrating on one faculty member who has spent immense time in this department and is now retiring this May. It is none other than our Lance Lambert.

(see page 2)



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



The EPS Fall 2023 social where the whole department gets together for a potluck!



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# Message from the Department Chair: Leaving a Legacy

**Lance Lambert:** Dr. Lambert is mostly known as a Late Paleozoic conodont specialist with significant contributions to related stratigraphy and carbonate depositional environments. His work in collaboration with Robert Stanton (his M.S. thesis chairman) on *Chaetetes* paleoecology is also widely recognized in the field.



Lance's most widely read research is related to his position on various task groups of the International Commission on Stratigraphy (UNESCO--International Union of Geological Sciences\*). He is the first author among the USA contributors to the Capitanian GSSP paper, where only world-renown specialists are invited to participate as authors. His knowledge of ammonoids and fusulinids is important to the working group deliberations. (\*Visit <https://www.iugs.org/> and click on Flagship Activities) to see the significance of his work.



Dr. Lambert by the Kremlin in Moscow for a meeting of the Carboniferous Subcommittee working groups

He holds membership on the Subcommittee on Carboniferous Stratigraphy [International Commission on Stratigraphy], Corresponding Member (2000-2012); Voting Member (2012-2024) IUGS-SCCS Bashkirian-Moscovian Boundary Task Group, Voting Member (2002-Present) IUGS-SCCS Moscovian-Kasimovian Boundary Task Group, Voting Member (2000-Present) IUGS-SCCS Kasimovian-Gzhelian Boundary Task Group, Voting Member (2000-Present) Subcommittee on Permian Stratigraphy [International Commission on Stratigraphy], Corresponding Member (1991-Present) IUGS-SCPS Guadalupian Working Group, Member or Corresponding Member (1991-2024), which was recently re-organized into two different working groups where he serves on both [Kungurian-Roadian Boundary Working Group (2024) and Roadian-Wordian Boundary Working Group (2024)].

Dr. Lambert feels that his most important accomplishment as department chair was overcoming all the hurdles to get our own field camp started and is very happy to have hired Dr. Matt Cannon for his important contributions to that. He's also quite happy to have hired myself (Thank you Lance) to the Hammond Chair. During the time Dr. Lambert was department chair we had the department's largest student enrollments of both undergraduate and graduate students.



Dr. Lambert at the Grand Canyon on a MORSE field trip led by him

Lance has around 215 total publications (52 reviewed papers and book chapters, 30 field trip guidebooks and articles). His Google Scholar h-index is 24. When he was chair, Academic Analytics had him as the most internationally cited author in the department, and somewhere among the top 10 at UTSA. He has also received various honors, including the W. Storrs Cole Memorial Award (The Cushman Foundation and the Geological Society of America)--2008 Recipient. He chaired 32 graduated M.S. students; 2 undergraduate Honors Theses and served on numerous other student committees (approximately 40).

I just wanted to say, Lance—Thank you! What an illustrious contribution to our the then Department of Geological Sciences and today's Earth and Planetary Sciences.

From the students: Dr. Lambert, it was truly a privilege to have attended your classes as your passion and wisdom have left a mark on us all. As we bid farewell, we're filled with gratitude for the profound impact you've had on our lives and will be missed as we carry your teachings forward on our own paths. We can't thank you enough.



Dr. Lambert working on Bashkirian-Moscovian boundary conodonts in China. The lake is part of the defensive plan outside the walls of Nanjing.



# Welcome New Faculty!

**Mahsa Afra:** Mahsa Afra received her B.Sc. in Mining Engineering (Exploration) in 2009 from Shahroud University of Technology, Iran. For her undergrad thesis, she used Ground Penetrating Radar (GPR) technique to collect, process and interpret data from Bastam region. She has a M.Sc. degree in Geophysics from the University of Tehran (2015), analyzed seismic stress of NW Iran. She also received a M.Sc. Degree in Geology from the University of South Florida (2023). At USF, she worked on subduction zone earthquakes and modeling of surface deformation. In addition, she taught several undergraduate-level classes in geology.



In Fall 2023, she started her work at UTSA as a faculty lecturer, teaching courses in geology, mineralogy, GIS, etc. As an early-career geologist/geophysicist, her main objective in all of the courses has been to equip students with accurate knowledge and transferable analytical skills to critically link the geophysical concepts, and geological view, to real life. Mahsa believes the most enjoyable thing about teaching is watching students get better as they put time and effort into their work, and it necessarily requires an interaction between an instructor and students. She likes to see students learning bit by bit, until they no longer need her.

Ms. Afra is always looking for the opportunities to best develop and improve teaching and learning methods. In May 2024, she is going to attend Lilly Conference, an evidence-based teaching and learning conference, to share, model and reports quality student learning outcomes with faculty and administrators at various stages in their academic careers that come from across the world. Ms. Afra cares about the diversity and inclusion in different ways, and she strongly believes that students benefit more not only from different group of adults working together but also from diversity in assignments and class activities.

## Faculty Highlights

- ❑ **Professor Stephen Ackley** elected as a 2023 Fellow of the American Geophysical Union for “pioneering discoveries in the physics and biology of sea ice, particularly in Antarctica, and extraordinary mentorship to many young scientists”
- ❑ **Dr. Saugata Datta** [received USDA awards nearly \\$500,000 to UTSA researchers for study on how land use affects soil health, January 2024 – UTSA Today](#)
- ❑ **Dr. Alexis Godet** completed field and lab work at the University of Lausanne, Switzerland on faulty development leave in fall 2023.



Stephen Ackley receiving his AGU fellowship award

- During his stay at the University of Lausanne, Dr. Godet worked on three manuscripts – one is published and two will be submitted in the late Spring – early Summer 2024. He also started working on a NSF grant proposal that was submitted in March 2024.
  - Dr. Godet scanned 202 thin sections using a microscope equipped with a motorized stage installed in the Digital Microscopy lab at UNIL. These thin sections will be point counted in early Spring 2024, results will be integrated into a manuscript by Sharpe et al. (in preparation).
  - Finally Drs. Adatte, Bomou (UNIL), and Godet visited and sampled an outcrop in Vercors, to complete previous sampling made by Dr. Godet. The goal is to identify the influence of volcanism based on the mercury concentration in sedimentary rocks. Preliminary results indicate an enrichment in mercury in layers corresponding to a paleoecological crisis in the Vercors, prior to a phase of global marine anoxia. Future plans include the analysis of remaining samples; on top of mercury concentration the total organic content will be measured to discard the control of organic enrichment on mercury enrichments. If preliminary results are confirmed, the research team will start working on a manuscript in the Spring of 2024.
- ❑ **Dr. Hongjie Xie** Fulbright scholar to Iceland <https://www.utsa.edu/today/2024/04/story/fulbright-program-will-take-scholars-overseas.html>

# Student Highlights

- ❑ **MS Student Brian Curry** defended his master's dissertation "Evaluation of Groundwater Quality in the Edwards Aquifer at Northwest San Antonio, Texas, Using Trace Metal and Rare Earth Element Abundances"
- ❑ **PhD Student Brenna Halverson** won first place in the Student Oral Presentations at the Earth Day Symposium



Tom, Natalie, Brenna, and Protik after presenting at the Earth Day Symposium

- ❑ **MS Student Steven Hollan** elected as GSA Geology and Health student representative. (March 2023)
- ❑ **Undergraduate Student Cassidy Lane** accepted into NSF Undergraduate Research Program (May 2023)
- ❑ **Undergraduate Student Lauren Malesky** won first place in the Student Poster Session at the Earth Day Symposium
- ❑ **MS Student Ruben Olivares** defended his master's dissertation "Freshwater Challenges at the Texas-Mexico border-Implications of unmonitored private wells for human health" (April 19, 2024)
- ❑ **MS Student Ruben Olivares** received Geological Society of America research grant (June 2023)
- ❑ **MS Student Ruben Olivares** invited speaker at the 2023 iSTEM Symposium (May 2023)
- ❑ **PhD Student Tom Varner** is the lab's first PhD student to defend his dissertation "Biogeochemical Controls on Arsenic Mobility Within Sediments"

- ❑ **PhD Student Tom Varner** [studies solutions to prevent contaminated water sources –UTSA Today](#)
- ❑ **Undergraduate Students Cassidy Lane, Vanessa Costilla Bermea, Melissa Payares** participated in the Polar STEM Experience from Ocean to Glaciers program, Juneau, Alaska (6/26-7/2, 2023)

## Scholarships

### ❑ Amy Shelton & V.H. McNutt Endowed Presidential Scholarship

- Adriana Ariza Pardo
- Alyssa Correia
- Noah Klitus
- Elena Brancaleon
- Rogelio Rodriguez

### ❑ Southwest Gem and Mineral Society Endowment

- Jazlyn Bercian
- Vanessa Costilla Bermea
- Oluwatosin Fasehun
- Nathan Lampin
- Caleb Landin

### ❑ Dr. James O. Jones Endowed Memorial Scholarship

- Austin Patridge

### ❑ Mrs. Parvathammal Endowed Scholarship

- Vanessa Costilla Bermea



Cassidy, Vanessa, and Melissa with Hongjie Xie in Alaska



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



# New Instruments – LEAP Lab Showcase



## The **Anaerobic Chamber** in the LEAP Lab.

The Coy anaerobic chamber provides a strict anaerobic atmosphere of 0-5 parts per million (ppm) using a palladium catalyst. The vacuum airlock allows sample transfer without changes to the internal atmosphere. This chamber will be used to maintain a Mars-like atmosphere.

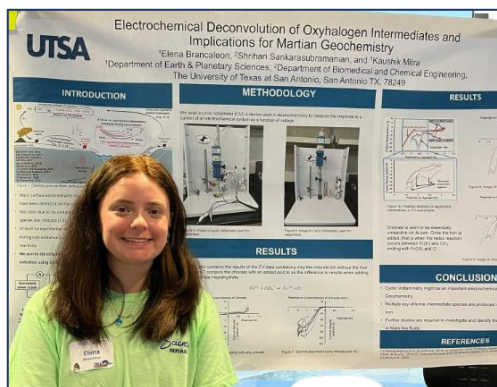


## The **Thermo Scientific TSX High-Performance Refrigerator** in the LEAP Lab.

This fridge is used for advanced temperature control with alarm systems. Positive, forced-air circulation is designed to maintain temperature uniformity to protect important samples.



Zoe preparing samples in the Anaerobic Chamber in the LEAP Lab



Elena presenting her Mars research from the LEAP Lab



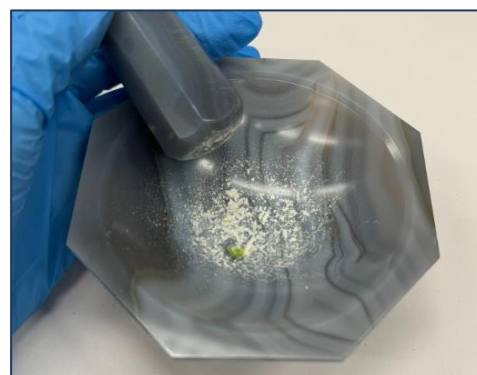
## The **Fisherbrand Isotemp Gravity Oven** in the LEAP Lab.

This oven offers temperature uniformity and stability to keep samples at desired condition with alarm systems. The Temperature range can be set between 50-250°C with a uniformity  $\pm 4^{\circ}\text{C}$ .



## The **Thermo Scientific Lindberg/Blue M Vacuum Oven** in the LEAP Lab.

These ovens work well with a range of applications including drying, curing, outgassing, aging, process control and other applications requiring elevated temperature in reduced atmospheres or vacuum/purge with nonflammable and inert atmospheres.



Olivine being powdered for oxidation experimentation in the LEAP Lab

## Invited Lectures & Outreach

- ❑ **Datta S.**, May 2023, SitS NSF-UKRI: Continuous Monitoring of Phosphates as Nutrients, in the Soil and Groundwater with Graphene-Based Printed Sensor Arrays IoT-enabled agriculture to devise the data-driven agricultural systems of the future. iDASA will focus on the application of secure Cyber-Physical Systems (CPS), IoT-based data analytics, Machine Learning (ML), and cloud/edge computing to unlock the true power of data to model, design, and optimize smart agricultural systems. (cohosted by the CPS-IoT Week 2023). Innovations in Data Analytics for Smart Agriculture (iDASA) Workshop. San Antonio, Texas.
- ❑ **Xie H.**, October 2023, was invited to a workshop and field trip to glaciers in Chile (Oct 9-19, 2023) and gave a talk titled as “Glacier lakes change from remote sensing and other records – Example from the Tibetan Plateau”
- ❑ **Godet A.**, November 2023, Paleoenvironmental forcing on shallow-marine carbonate production during the Early Cretaceous. Nov. 29, 2023, University of Lausanne, Switzerland.
- ❑ **Mitra K.**, November 2023, Martian Minerals: A Viewport to Early Mars. Invited Lecture for the Southwest Gem and Mineral Society at UTSA
- ❑ **Malesky L.**, November 2023, Cataloging Mineral Collections. Invited Lecture for the Southwest Gem and Mineral Society at UTSA
- ❑ **Edwards T. B.**, November 2023, KECK Geology: Advanced Research Experience. Invited Lecture for the Southwest Gem and Mineral Society at UTSA
- ❑ **Pathak P.**, December 2023, Freshwater Challenges at the Texas-Mexico Border - Implications of Unmonitored Private Wells for Human Health. Fall 2023 International Research Symposium in Mathematics and Integrated STEM Education: Water Quality in Global and Local Contexts. San Antonio, Texas.
- ❑ **Pathak P.**, February, 2023 Evaluation of Groundwater Quality in the Edwards Aquifer at Northwest San Antonio, Texas, using Major-Trace Element and Rare Earth Element Abundances. IWRSP - STEM Education Spring 2024. San Antonio, Texas
- ❑ **Gao Y.**, 2023, MySA on “Sinkholes in San Antonio and Central Texas”
- ❑ **Gao Y.**, 2023, KENS5 on “It may take years for Texas rivers, lakes to recover from drought”
- ❑ **Whittington A.**, Ford lecture, Department of Earth and Planetary Sciences, University of Texas at Austin



Kaushik Mitra presenting on Mars for the Southwest Gem and Mineral Society

## New Grants

- ❑ **Brenna Halverson** (PhD student) received a travel grant to attend the Synchrotron Nanotomography Workshop at the Advanced Light Source, Berkeley, California.
- ❑ **Adriana Ariza Pardo** (MS student) was awarded \$2000 to cover all expenses associated with attending the NASA Planetary Photogrammetry Workshop at the University of Arizona in April 2024.
- ❑ **Austin Patridge** (MS student) was awarded \$153,000 by NASA for an NSTGRO Fellowship titled “Apollo Regolith Thermally Constrained Landing Pad Bricks (ARTC-Bricks)”.
- ❑ Addressing the Soil-Microbial Gap: Assessment of Microbial-Based Soil Health Indicators and its Efficacy for Broad Deployment across Grasslands. USDA (2023 – 2026) (PI- Allison Veach, **Co-PI – Saugata Datta**)
- ❑ Formalize partnership between four MSIs and the US Fish and Wildlife Service focused on advancing equity in conservation and natural resources educational programs and professions. Alfred P. Sloan Foundation (2023-2024) (PI- Ambika Mathur, **Co-PI – Saugata Datta**).

# Publications

- ❑ Koo, Y. **Hongjie Xie**, Hazem Mahmoud, Jurdana Masuma Iqrah, **Stephen F. Ackley** Automated detection and tracking of medium-large icebergs from Sentinel-1 imagery using Google Earth Engine ,2023, Remote Sensing of the Environment, <https://doi.org/10.1016/j.rse.2023.113731>
- ❑ Koo, Y. , **Hongjie Xie**, Nathan T. Kurtz, **Stephen F. Ackley**, Wei Wang (2023) Sea ice surface type classification of ICESat-2 ATL07 data by using data-driven machine learning model: Ross Sea, Antarctic as an example Remote Sensing of the Environment, <https://doi.org/10.1016/j.rse.2023.113726>
- ❑ Loose, B., Stammerjohn, S., Sedwick, P., & **Ackley, S.** (2023). Sea ice formation, glacial melt and the solubility pump boundary conditions in the Ross Sea. Journal of Geophysical Research: Oceans, 128, e2022JC019322. <https://doi.org/10.1029/2022JC019322>
- ❑ Macdonald, G, **Stephen F. Ackley**, **Alberto M. Mestas-Núñez**, and Adrià Blanco-Cabanillas Evolution of the dynamics, area, and ice production of the Amundsen Sea Polynya, Antarctica, 2016–2021, (2023) The Cryosphere, 17, 457–476, <https://doi.org/10.5194/tc-17-457-2023>
- ❑ Brogioni, M. et al (**S.F. Ackley**), (2023), Ice Sheet and Sea Ice Ultrawideband Microwave radiometric Airborne eXperiment (ISSIUMAX) in Antarctica: first results from Terra Nova Bay, The Cryosphere, TC, 17, 255–278, <https://doi.org/10.5194/tc-17-255-2023>
- ❑ Iyare, O. #, K. Bhaganagar, **A.M. Mestas-Núñez**, 2024: The Dolan Fire of Central Coastal California: Burn Severity Estimates from Remote Sensing and Associations with Environmental Factors. Remote Sensing, accepted pending minor revisions.
- ❑ **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, SP545-2023-2103.
- ❑ Adams, T., **Price, D.**, Davis, C.I., Lehrmann, **D.J.**, **Sharpe, J.**, **Godet, A.**, **Suarez, M.B.**, Altiner, D., 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.
- ❑ Morlok, A., Sehlke, A., Stojic, A.N., **Whittington, A.**, Weber, I., Reitze, M.P., Hiesinger, H., and Helbert, J., 2024. Synthetic analogs for lava flows on the surface of Mercury: A Mid-Infrared study. Icarus, <https://doi.org/10.1016/j.icarus.2024.116078>
- ❑ **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. Journal of Petrology, egae010, <https://doi.org/10.1093/petrology/egae010>
- ❑ **Varner, Thomas S.**, Saha, Saptarshi., Bhuiyan, Mesbah U., Kulkarni, Harshad V., Knappett, Mukhopadhyay, Ananya., Peter, S.K., **Datta, Saugata.** (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](https://doi.org/10.1007/978-981-97-1227-4_16)
- ❑ **Varner, Thomas S.**, Kumari, Deeksha., Giri, Anand., Knappett, Peter, S.K., **Datta, Saugata.**, **Kulkarni, Harshad 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/10.1007/978-981-97-1227-4\\_15](https://doi.org/10.1007/978-981-97-1227-4_15)
- ❑ **Thomas S. Varner, Harshad V. Kulkarni**, Kyung Kwak, M. Bayani Cardenas, Peter S.K. Knappett, **Saugata Datta**. Diverse sedimentary organic matter within the river-aquifer interface drives arsenic mobility along the Meghna River Corridor in Bangladesh. Applied Geochemistry, Volume 161, 2024, 105883, ISSN 0883-2927. <https://doi.org/10.1016/j.apgeochem.2023.105883>
- ❑ Katrina Jewell, Kimberly D. Myers, Mehtaz Lipsi, Saddam Hossain, **Saugata Datta**, M. Bayani Cardenas, Jacqueline Aitkenhead-Peterson, **Tom Varner**, Kyungwon Kwak, Anne Raymond, Syed Humayun Akhter, Kazi M. Ahmed, Peter S.K. Knappett. Redox trapping of arsenic in hyporheic zones modified by silicate weathering beneath floodplains, Applied Geochemistry, Volume 159, 2023, 105831, ISSN 0883-2927. <https://doi.org/10.1016/j.apgeochem.2023.105831>
- ❑ Liao, X.; Li, Y.; Miranda-Avilés, R.; et al. Assessments of Pollution Status and Human Health Risk of Potentially Toxic Elements in Primary Crops and Agricultural Soils in Guanajuato, Mexico. Water Air Soil Pollut 234, 670 (2023). <https://doi.org/10.1007/s11270-023-06667-0>
- ❑ R.E. Buskirk, P.S.K. Knappett, M.B. Cardenas, **S. Datta**, W.S. Borowski, Itza Mendoza-Sanchez. A Low-Cost Programmable Reversing Flow Column Apparatus for Investigating Mixing Zones Between Disparate Natural Waters. Groundwater, 2023 Sep 30. Online ahead of print. <https://doi.org/10.1111/gwat.13359>



# Publications

- ❑ **Varner, T.S.; Kulkarni, H.V.; Bhuiyan, M.U.; Cardenas, M.B.; Knappett, P.S.K.; Datta, S.** Mineralogical Associations of Sedimentary Arsenic within a Contaminated Aquifer Determined through Thermal Treatment and Spectroscopy. *Minerals*, 2023, 13, 889. <https://doi.org/10.3390/min13070889>
- ❑ Erik M. Patton, Claudia Adam, David R. Steward, **Saugata Datta**. Effect of low-permeability layers on vadose well recharge rates, *Groundwater for Sustainable Development*, 2023, 100938, ISSN 2352-801X. <https://doi.org/10.1016/j.gsd.2023.100938>
- ❑ Knight, A. L., **Mitra, K.**, & 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), e2023JE007931. <https://doi.org/10.22541/essoar.168626419.98647929/v1>
- ❑ **Mitra, K.**, Catalano, J. G., Bahl, Y., & Hurowitz, J. A. (2023). Iron sulfide weathering by oxyhalogen species: Implications for iron sulfate and (oxyhydr) oxides formation on Mars. *Earth and Planetary Science Letters*, 624, 118464. <https://doi.org/10.1016/j.epsl.2023.118464>
- ❑ 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>
- ❑ Wang, W., Tian, H., Yang, G., Liu, B., Pan, Y., Ding, G., Xu, X., Dan, Y., Cui, M., and **Gao, Y.**, 2023, Dynamic variation of groundwater level and its influencing factors in typical oasis irrigated areas in Northwest China. *Open Geosciences*, 15(1), 20220493. <https://doi.org/10.1515/geo-2022-0493>
- ❑ Xia, X., and **Gao, Y.**, 2023, Determining Reaction Paths by Evaluating Kinetic Isotopic Effects with Density Functional Theory: Example of Methane Thermogenesis. *Journal of Chemical Information and Modeling*, <https://doi.org/10.1021/acs.jcim.3c00531>
- ❑ Chen, L., Tan, L., Zhao, M., Sinha, A., Wang, T., and **Gao, Y.**, 2023, Karst carbon sink processes and effects: A review. *Quaternary International*, <https://doi.org/10.1016/j.quaint.2023.02.009>
- ❑ **Iqrah, J.M.**, Wang, W., **Xie H.**, Prasad, S. (2024). A Parallel Workflow for Polar Sea-Ice Classification using Auto-labeling of Sentinel-2 Imagery. *arXiv preprint*, <https://doi.org/10.48550/arXiv.2403.13135>
- ❑ **Koo, Y., Xie, H.**, Kurtz, N.T., **Ackley, S.F.**, Wang, W. (2023). Sea ice surface type classification of ICESat-2 ATL07 data by using data-driven machine learning model: Ross Sea, Antarctic as an example. *Remote Sensing of Environment*, 296, 113726, <https://doi.org/10.1016/j.rse.2023.113726>
- ❑ **Koo, Y., Xie, H., Mahmoud, H., Iqrah, J.M., Ackley, S.F.** (2023). Automated detection and tracking of medium-large icebergs from Sentinel-1 imagery using Google Earth Engine. *Remote Sensing of Environment*, 296, 113731, <https://doi.org/10.1016/j.rse.2023.113731>

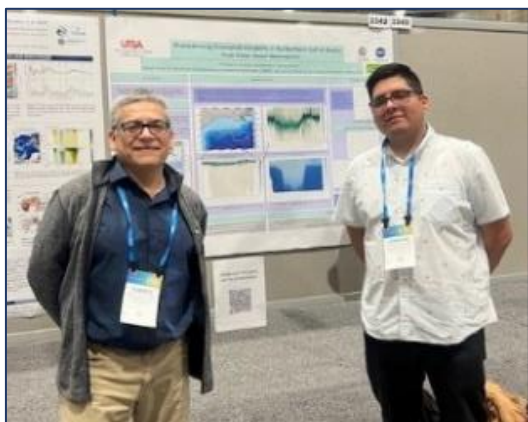
# Conference Sessions Convened

- ❑ 2023: Geological Society of America GSA Connects: Alan Whittington, convenor and chair of session D15 “Recent Advances in Mineralogy and Petrology” (co-convenor: Liz Widom)
- ❑ (session) Kulkarni, H. V., Varner, T., Dee, K., Ziegler, B., Malina, N., Ojeda, A., Alauddin, M., Finkelman, R., Johannesson, K., Datta, S. (2023) Characteristics, Reactivity and Role of Natural Organic Matter (NOM) in Elemental Cycling in the Environment. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18. <https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/54806>
- ❑ (session) Bhattacharya, P., Alam, M. A., Richards, L., Mukherjee, A., Datta, S., Tapia, J., Ahmed, K. M., Ijumulana, J., Maity, J. P., Kulkarni, H. V. (2023) Arsenic, Fluoride, and Other Geogenic Contaminants in Groundwater: Advances in Application of Data Science, Machine Learning for Risk Assessment and Monitoring for Sustainable Mitigation of Associated Health Hazards. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18. <https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/54677>
- ❑ (poster session) Bhattacharya, P., Alam, M. A., Richards, L., Mukherjee, A., Datta, S., Tapia, J., Ahmed, K. M., Ijumulana, J., Maity, J. P., Kulkarni, H. V. (2023) Arsenic, Fluoride, and Other Geogenic Contaminants in Groundwater: Advances in Application of Data Science, Machine Learning for Risk Assessment and Monitoring for Sustainable Mitigation of Associated Health Hazards. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18. <https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/55586>
- ❑ (poster session) Astrobiology: Secondary Mineral Deposits and Biosignatures. Kulkarni, H. V., Ford, J., Datta, S., Blank, J. G. (2023) Geochemical Analyses and Modeling to Understand Secondary Mineral Formation in Volcanic (Lava Tube) Caves. 4th International Planetary Caves Conference. Lanzarote, Spain. May 4-7.



# Conference Presentations

- ❑ **Joshi, M., Ackley, S. F., Mestas-Nunez, A. M.,** Arndt S., Macdonald, G. J., & Haas C. (2023, June). Seasonal and inter-annual variations in sea ice thickness in the Weddell Sea, Antarctica (2019-2022) using ICESat-2. IGS Symposium on Sea Ice 2023 [oral, Bremerhaven, Germany]
- ❑ **Joshi, M., Ackley, S. F., Mestas-Nunez, A. M.,** Arndt, S., Macdonald, G. J., & Haas, C. (2023, Dec). Estimating sea ice thickness and snow depth in the Weddell Sea using ICESat-2 data and field measurements. AGU 23 Fall Meeting, San Francisco CA [oral].
- ❑ T Edward Nordstrand, **Y Gao, SF Ackley** (2023) Comparison of Hailstone Growth Trajectories to Calculated Residence Times AGU 23 Fall Meeting, San Francisco CA
- ❑ V Cousens, B Loose, Y Nakayama, LC Biddle et al (**S.F. Ackley**) (2024) Noble Gases Reveal the Influence of Ice and Coastal Biology on the Aerobic Budget for Antarctic Bottom Water. 2024 AGU-ASLO Ocean Sciences Meeting, New Orleans LA
- ❑ T Maksym, SE Stammerjohn, M Cappola, CF Moffat, O Schofield, **S.F. Ackley** (2024) The Ocean's Role in Driving Antarctic Sea-Ice Changes, a Data/Model Investigation' 2024 AGU-ASLO Ocean Sciences Meeting, New Orleans LA
- ❑ C. Sustayta , **A.M. Mestas-Nuñez**, Characterizing Chlorophyll Variability in the Northern Gulf of Mexico from Glider-Based Observations, 2024 AGU Ocean Sciences Meeting New Orleans, LA, February, 18-23. (2024)
- ❑ **A.M. Mestas-Nuñez**, N. Debbage, D.I. Pineda, K. Bhaganagar, I. Oseghae, A.U. Raysoni, An Air Quality Monitoring Station to Expand NASA's Pandora Network to South Texas, 2023 AGU Fall Meeting San Francisco, CA and Online Everywhere, December, 11-15. (2023)



Alberto Mestas-Nuñez presenting at AGU 2023

- ❑ **M. Joshi, S.F. Ackley, A.M. Mestas-Nuñez**, S. Arndt, G.J. Macdonald and C. Haas, Estimating sea ice thickness and snow depth in the Weddell Sea using ICESat-2 data and field measurements, 2023 AGU Fall Meeting San Francisco, CA and Online Everywhere, December, 11-15. (2023)
- ❑ **M. Joshi, S.F. Ackley, A.M. Mestas-Nuñez**, Variations in sea ice thickness over Weddell Sea for 2019-2022 using ICESat-2, in: Biogeochemical Exchange Processes at the Sea-Ice Interfaces (BEPSII) Sea-Ice School 2022, 14 – 23 May 2022 Cambridge Bay, Canada, L. Li and C. Gao (eds.). SOLAS Event Report 31, August 2023, SOLAS International Project Office, 6-7. (2023)
- ❑ **M. Joshi, S.F. Ackley, A.M. Mestas-Nuñez**, S. Arndt, G. Macdonald, C. Haas, Seasonal and inter-annual variations in sea-ice thickness in the Weddell Sea, Antarctica (2019-2022) using ICESat-2, International Symposium on Sea Ice Across Temporal and Spatial Scales, Bremerhaven, Germany, June, 4–9. (2023)
- ❑ J. Williams, **S.F. Ackley, A.M. Mestas-Nuñez**, G. Macdonald, Flooded ice floe detection in the Southern Ocean with Sentinel 1 SAR, Gordon Research Conference (GRC), Polar Marine Science, Ventura, CA, March, 5-10. (2023)
- ❑ **Ariza Pardo, A.,** Sehlke, A., and **Whittington, A.,** 2023. Rheology and Thermal Properties of Analog Martian Lavas. 1st Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX.
- ❑ **Ariza Pardo, A.,** Sehlke, A., and **Whittington, A.,** 2023. Near-equilibrium rheology experiments on Martian analog lava. AAS Division of Planetary Sciences (DPS), San Antonio TX
- ❑ Bartlett, A., **Schwartz, L., and Whittington, A.,** 2023. Effect of forced convection on heat loss in basaltic vs rhyolitic lava flows. GSA Connects, Pittsburgh PA
- ❑ **Cly, C.,** Speck, A., Ponce, A., **Whittington, A.,** Sargent, B., Nuth, J., Hernandez Robles, A., **Bartels, E.,** 2023. Thermal and structural analysis of gibbsite derived alumina oxides (alumina). AAS 242, Albuquerque NM.
- ❑ Jensen, T., **Cly, C., Whittington, A.,** Speck, A., Sargent, B., Nuth, J., Ponce, A., 2023. Observing Transitions of Aluminum Oxides Relating to Star Dust. AAS Division of Planetary Sciences (DPS), San Antonio TX
- ❑ **Patridge, A., Morrison, A., and Whittington A.,** 2023. Thermal, chemical, and rheological analysis of Lunar Highland Simulants. 1st Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX.
- ❑ **Patridge, A., Morrison, A.,** Parsapoor, A., and **Whittington A.,** 2023. Thermal, chemical, and rheological analysis of Lunar Highland Simulants. AAS Division of Planetary Sciences (DPS), San Antonio TX
- ❑ **Schwartz, L., and Whittington, A.,** 2023. Integrated Lab Analog and Numerical Modeling Study of Venusian Pancake Domes. 1st Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX.
- ❑ **Schwartz, L., Bartlett, A., and Whittington, A.,** 2023. Relating Thermal Inertia of Basaltic Lava Flows To Their Texture. AAS Division of Planetary Sciences (DPS), San Antonio TX

# Conference Presentations

- ❑ **Whittington, A.**, 2023. The Heat and Mass Transfer & Experimental Rheology (HAMsTER) Lab at the University of Texas at San Antonio. Exteraterrestrial Materials Analysis Group (ExMag), Houston TX [virtual poster]
- ❑ **Whittington, A.**, 2023. Planetary HAMsTERs: the UTSA Heat and Mass Transfer & Experimental Rheology lab. 1st Texas Area Planetary Sciences (TAPS) meeting, San Antonio TX [poster & lightning talk]
- ❑ **Whittington, A., Emerson, A., Halverson, B., Hammer, J., and Lira, J.**, 2023. Crystal Math: Using calorimetry to determine crystallinity on lavas from the Kilauea 2018 Lower East Rift Zone. GSA Connects, Pittsburgh PA [oral]
- ❑ **Whittington, A., Halverson, B., Hammer, J., Emerson, A., and Lira, J.**, 2023. The calorimeter sees all: Testing methods to determine crystallinity of partially amorphous samples using Differential Scanning Calorimetry (DSC). AAS Division of Planetary Sciences (DPS), San Antonio TX [poster & lightning talk]
- ❑ **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
- ❑ **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
- ❑ **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.
- ❑ **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.
- ❑ **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
- ❑ **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, 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]
- ❑ **Olivares, R. Jr., Pathak, P., Kulkarni, H. V., Datta, S.** (2024) Freshwater Challenges at the Texas-Mexico Border - Implications of Unmonitored Private Wells for Human Health. GeoGulf Conference. San Antonio, Texas. April 10-12.
- ❑ **Banerjee, P.** (2024) Influence of Land Use on Soil Geochemistry and Bacterial Abundance, and their Subsequent Effects on Soil Phosphate Mobilization Across a Climatic Transect in Kansas. UTSA Graduate School Research Showcase. San Antonio, Texas. April 2.
- ❑ **Olivares R. Jr.** (2024) Freshwater Challenges Near the Texas-Mexico Border - Implications of Unmonitored Private Wells for Human Health. UTSA Advancement Council Meeting. San Antonio, Texas. January 22.
- ❑ **Banerjee, P., Veach, A., Kulkarni, H. V., Nagaraja, T., Das, S. R., Datta, S.** (2023) Influence of Land Use on Geochemistry and Microbial Population and Their Subsequent Effects on Soil Phosphate Mobilization Across a Climatic Transect in Kansas. AGU Fall Meeting. San Francisco, California. December 11-15.
- ❑ **Veach, A., Alloosh, H., Datta, S., Sparks, C.** (2023) Soil Health and Lawncare Choices: How Xeriscaping in a Drought-Prone Region Impacts Soil Physicochemical Properties and the Microbiome. AGU Fall Meeting. San Francisco, California. December 11-15.
- ❑ **Kwak, K., Varner, T., Saha, S., Bhuiyan, M. U., Mukhopadhyay, A., Datta, S., Knappett, P.** (2023) The Impact of Surficial Lithology and Physicochemical Processes on Formation of Natural Reactive Barrier (NRB) along the Riverbank of Hooghly River, India. AGU Fall Meeting. San Francisco, California. December 11-15.
- ❑ **Hollan, S., Heathman, I., Kulkarni, H. V., Medley, J., Hathaway, J., Phillips-Lander, C. M., Northup, D. E., Datta, S.** (2023) Volcanic (Lava Tube) Caves Water Chemistry Influenced by High Magnitude Wildfires on Surface. Goldschmidt Conference. Lyon, France. July 9-14.
- ❑ **Varner, T. S., Kulkarni, H. V., Cardenas, M. B., Knappett, P. S. K., Datta, S.** (2023) Variation in Sedimentary Organic Matter Properties along the Meghna River-Aquifer Interface and its Implications on As Mobility. Goldschmidt Conference. Lyon, France. July 9-14.
- ❑ **Varner, T., Saha, S., Kulkarni, H. V., Roy, S., Kwak, W., Mukhopadhyay, A., Cardenas, M. B., Knappett, P. S. K., Datta, S.** (2023) Geomorphic Controls on Arsenic Mobility and Enrichment in the Hooghly Riverbanks, West Bengal, India. RCRM. Virtual. June 15-17.

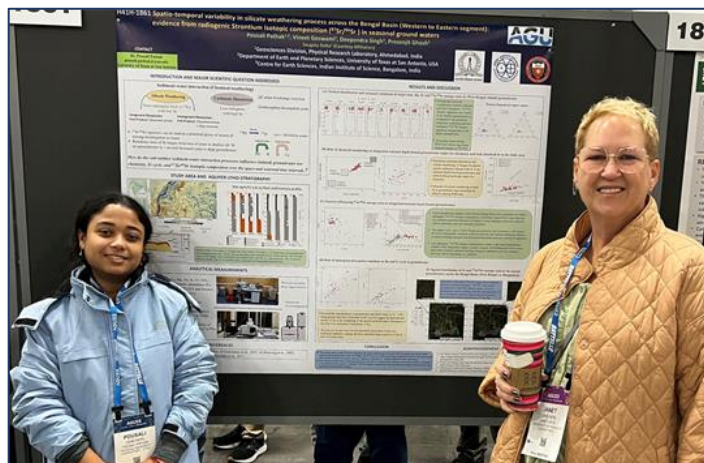


Tom Varner presenting at GSA 2023

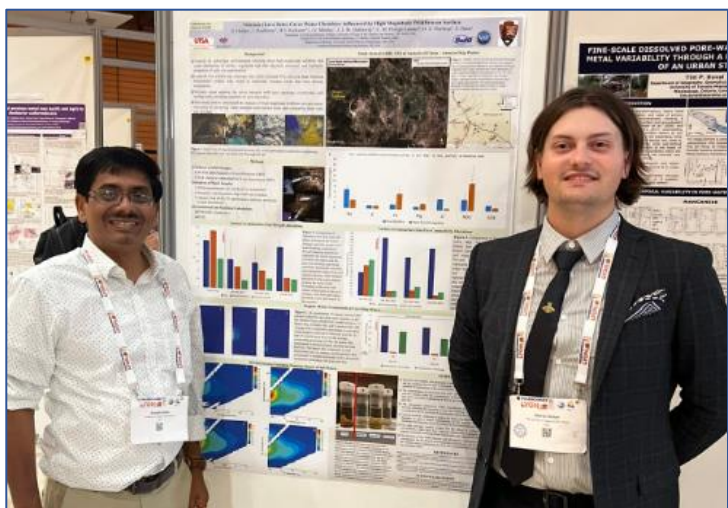


# Conference Presentations

- ❑ **Varner, T. S.,** Kumari, D., Giri, A., Knappett, P. S., Cardenas, M. B., **Datta, S., Kulkarni, H. V.** (2023) Occurrence of Elevated Sedimentary Iron and Arsenic along the Beas River and Implications for Arsenic Enrichment in the Sutlej-Indus River Basin in the North-Western India. RCRM. Virtual. June 15-17.
- ❑ **Pathak, P.,** Goswami, V., Singh, D., Ghosh, P. (2023) Spatio-temporal variability in silicate weathering process across the Bengal Basin (Western to Eastern segment): evidence from radiogenic Strontium isotopic composition ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) in seasonal groundwaters. AGU Fall Meeting. San Francisco, California. December 11-15.
- ❑ **Pathak, P.,** Goswami, V., Singh, D. Mohapatra, K., Tripathy, G. R. (2023) Assessing the Impact of Weathering, Lithology, and Fluvial Transport on Molybdenum and its Isotopic Composition ( $\delta^{98}\text{Mo}$ ) in Indian River of Tropical Climate. UTSA Postdoctoral Research Symposium. San Antonio, Texas. September 22.
- ❑ (Poster Session: Cave and Pit Crater Science and Exploration) **Phillips-Lander, C. M., Lakrou, C., Kulkarni, H. V., Datta, S.** (2023) Quantifying Background Microbial Biosignatures in Lava Tubes: Implications for Future Planetary Cave Exploration. 4th International Planetary Caves Conference. Lanzarote, Spain. May 4-7.
- ❑ (Poster Session: Cave and Pit Crater Science and Exploration) **Hollan, S., Heathman, I., Kulkarni, H. V., Medley, J. J., Hathaway, J. J. M., Phillips-Lander, C. M., Northup, D. E., Datta, S.** (2023) Impacts of High Magnitude Wildfire on Volcanic (Lava Tube) Cave Water Chemistry. 4th International Planetary Caves Conference. Lanzarote, Spain. May 4-7.
- ❑ (Poster Session: Astrobiology: Secondary Mineral Deposits and Biosignatures) **Kulkarni, H. V., Ford, J., Datta, S., Blank, J. G.** (2023) Geochemical Analyses and Modeling to Understand Secondary Mineral Formation in Volcanic (Lava Tube) Caves. 4th International Planetary Caves Conference. Lanzarote, Spain. May 4-7.



Pousali Pathak with Janet Vote at AGU23 in San Francisco, California



Saugata Datta with Steven Hollan at Goldschmidt 2023 in Lyon, France

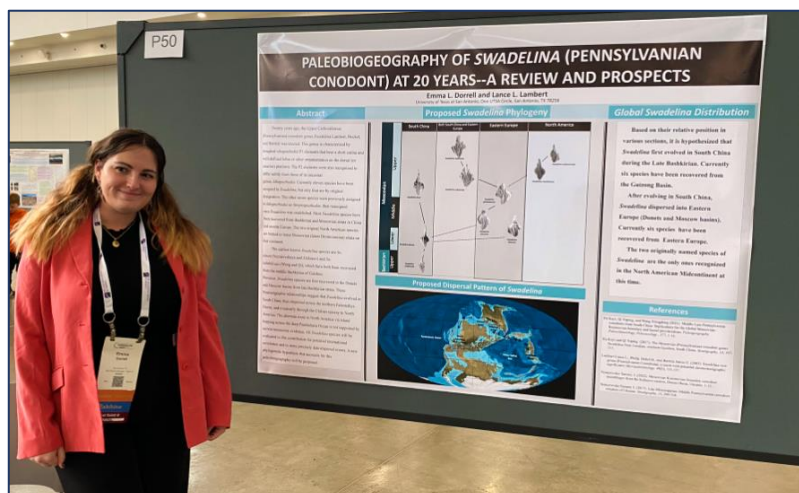
- ❑ **Nordstrand, T., Gao, Y., & Ackley, S.,** 2023, Comparison of Hailstone Growth Trajectories to Calculated Residence Times, AGU Fall Meet. Suppl., A33R-2775, <https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1449516>
- ❑ Afzal A., Ong, C., **Gao, Y., & Fu, Q.,** 2023, QUANTIFYING PFAS IN THE EDWARDS AQUIFER IN SOUTH CENTRAL TEXAS, Geological Society of America Abstracts with Programs. Vol. 55, No. 6, <https://doi.org/10.1130/abs/2023AM-394753>
- ❑ **Nordstrand, T., Gao, Y., & Ackley, S.,** 2023, Hailstone Trajectory Characterized by Stable Isotopes, 14th International Precipitation Conference, Emerging directions in precipitation science and applications: going beyond. National Weather Center, Norman, University of Oklahoma
- ❑ Maksym, T., Stammerjohn, S.E., Cappola, M., Moffat, C.F., Schofield, O., Dinniman, M.S., Zappa, C.J., **Ackley, S.F., Xie, H.,** 2024. The Ocean's Role in Driving Antarctic Sea-Ice Changes, a Data/Model Investigation'. In 2024 Ocean Sciences Meeting Feb 22. AGU.
- ❑ **Koo, Y., Xie, H.,** Rahnemounfar, M., 2023. Prediction of sea ice dynamics using physics-informed convolutional neural network. AGU23. Dec 14.
- ❑ Miao, X., **Xie, H.,** Yang, C.P., 2023. Developing a Cloud Computing Module for Mining Geophysical Properties of Sea Ice from High Spatial Resolution Imagery. AGU23. Dec 11.
- ❑ **Xie, H., and Koo, Y.,** 2023. Thermodynamic and dynamic ice growth in Ross Sea captured by ICESat-2 data, SCAR INSTANT Conference, Sept 10-15, Trieste, Italy.

# Geological Society of America Presentations

- ❑ **Whittington, A., Emerson, A., Halverson, B.,** Hammer, J., and Lira, J., 2023. Crystal Math: Using calorimetry to determine crystallinity on lavas from the Kilauea 2018 Lower East Rift Zone. GSA Connects, Pittsburgh PA
- ❑ (poster session) **Bhattacharya, P., Alam, M. A., Richards, L., Mukherjee, A., Datta, S.,** Tapia, J., Ahmed, K. M., Ijumulana, J., Maity, J. P., **Kulkarni, H. V.** (2023) Arsenic, Fluoride, and Other Geogenic Contaminants in Groundwater: Advances in Application of Data Science, Machine Learning for Risk Assessment and Monitoring for Sustainable Mitigation of Associated Health Hazards. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/54677>
- ❑ (session) **Kulkarni, H. V., Varner, T.,** Dee, K., Ziegler, B., Malina, N., Ojeda, A., Alauddin, M., Finkelman, R., Johannesson, K., **Datta, S.** (2023) Characteristics, Reactivity and Role of Natural Organic Matter (NOM) in Elemental Cycling in the Environment. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18. <https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/54806>
- ❑ (session) **Bhattacharya, P., Alam, M. A., Richards, L., Mukherjee, A., Datta, S.,** Tapia, J., Ahmed, K. M., Ijumulana, J., Maity, J. P., **Kulkarni, H. V.** (2023) Arsenic, Fluoride, and Other Geogenic Contaminants in Groundwater: Advances in Application of Data Science, Machine Learning for Risk Assessment and Monitoring for Sustainable Mitigation of Associated Health Hazards. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Session/55586>
- ❑ **Buskirk, R., Knapett, P. S. K., Nguyen, W., Cardenas, M. B., Datta, S.** (2023) The Role of Dissolved Tidal Mixing and Dissolved Organic Carbon on Fe-Oxide Permeable Natural Reactive Barrier Formation Along the Meghna River, Bangladesh. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18. <https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/394588>
- ❑ **Datta, S., Kulkarni, H. V., Varner, T.** (2023) Overview of Sedimentary and Dissolved Organic Matter Distribution within Arsenic Contaminated Alluvial Aquifers in the Ganga-Meghna-Brahmaputra Basin Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/392016>
- ❑ **Curry, B., Tribley, A., Kulkarni, H. V., Datta, S.** (2023) Evaluation of Groundwater Quality in the Edwards Aquifer at North-West San Antonio, Texas, Using Trace Metal and Rare Earth Element Abundances. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/395028>



Alan Whittington presenting on Crystal Math at GSA 2023



Emma presenting her poster on Conodonts at GSA 2023

- ❑ **Dorrell, E., Lambert, L.** (2023) Paleobiogeography of Swadelina (Pennsylvanian Conodont) at 20 years--A Review and Prospects. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/394452>



# Geological Society of America Presentations



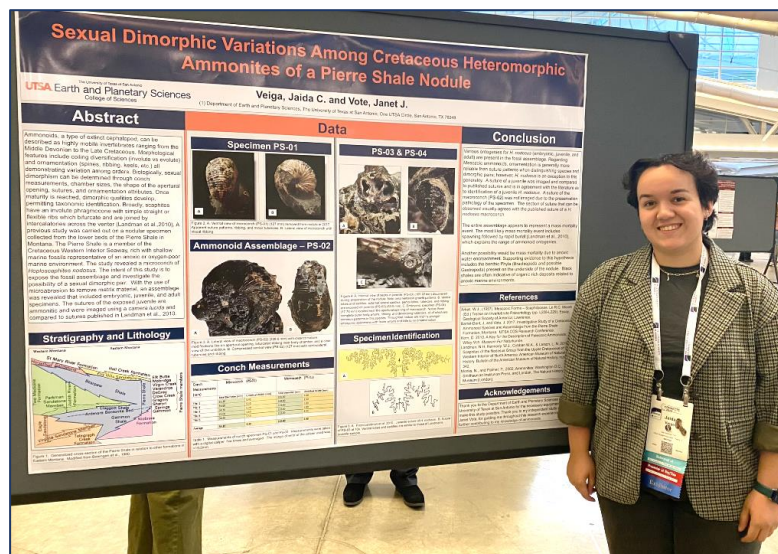
Steven presenting on Natural Organic Matter in Volcanic Caves at GSA 2023

- ❑ **Tribley, A., Kulkarni, H. V., Pathak, P., Flores, M. E., Curry, B., Datta, S.** (2023) Controls on Edwards Aquifer Groundwater Chemistry in South-Central Texas through Surface Soil Characterization. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/395582>
- ❑ **Hollan, S., Heathman, I., Kulkarni, H. V., Medley, J. J., Hathaway, J. J. M., Phillips-Lander, C., Northup, D., Datta, S.** (2023) Characterization of Natural Organic Matter (NOM) within Volcanic (Lava Tube) Caves in a Post-Fire Regime. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/395387>
- ❑ **Varner, T., Kulkarni, H. V., Kwak, K., Cardenas, M. B., Knappett, P. S. K., Datta, S.** (2023) Influence of Sedimentary Organic Matter on Arsenic Mobility along the River-Aquifer Interface: Insights from the Meghna River, Bangladesh and the Hooghly River, India. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/393452>

- ❑ **Kulkarni, H. V., Varner, T., Kumari, D., Giri, A., Knappett, P. S. K., Datta, S.** (2023) Investigating Geochemical Processes in Sediments of Himalayan Tributaries to Arsenic-Contaminated Floodplain Aquifers. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/394419>
- ❑ **Olivares, R., Kulkarni, H. V., Datta, S.** (2023) Freshwater Challenges near the Texas-Mexico Border – Implications of Unmonitored Private Wells for Human Health. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/395422>
- ❑ **Pathak, P., Goswami, V., Mohapatra, K., Singh, D., Rout, R., Tripathy, G. R.** (2023) Molybdenum and  $\delta^{98}\text{Mo}$  in Two Tropical Rivers of Western India: Assessing the Impact of Chemical Weathering, Groundwater Discharge, Groundwater Discharge, Particle-Water Interactions, and Redox Transformations on Stable Mo Isotopes. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/392950>



Saugata Datta presenting on geochemical processes in contaminated aquifers at GSA 2023



Jaيدا presenting her poster on variations in ammonites at GSA 2023

- ❑ **Veiga, J., Vote, J.** (2023) Sexual Dimorphic Variations among Cretaceous Heteromorphic Ammonites of a Pierre Shale Nodule. Geological Society of America Connects. Pittsburgh, Pennsylvania. October 15-18.  
<https://gsa.confex.com/gsa/2023AM/meetingapp.cgi/Paper/395860>



15-18 October  
Pittsburgh, Pennsylvania, USA

# Degrees Awarded

## Summer 2023 Bachelor of Science

- Elizabeth Bartels
- Mason Garza
- Wesley Arrizon
- Korei Patterson
- Mohammad Mashal
- Zachary Lofton
- Phoenix Velasquez
- Lawrence Estrada

## Summer 2023 Masters Level Degree

- Ashley Emerson – MS Geosciences, The Rheology and Thermal History of Kilauea's 2018 Fissure 17 eruption

## Fall 2023 Bachelor of Science

- Sophia Buck
- Tiffany Barker-Edwards
- Ronny Saunders
- Austin Patridge

## Fall 2023 Masters Level Degree

- Justin Sharpe – MS Geosciences
- Jason Besanceney – MS Geosciences
- Chinenye Agbim – MS Geosciences
- Brianna Bocook – MS Geosciences
- Alberto Solis – MS Geoinformatics
- Ilana Casarez - MS Geoinformatics
- Bradley Bush - MS Geoinformatics
- Kyle Rhymes - MS Geoinformatics
- Jeffrey Zivkovic - MS Geoinformatics



## Spring 2024 Bachelor of Science

- Gavin Westover
- Cassidy Lane

## Spring 2024 Masters Level Degree

- Brian Curry - MS in Geosciences
- Maryam Jahangiri Gohar – MS in Geosciences
- Ruben Olivares - MS in Geosciences
- Maria Rodriguez Rodriguez – MS in Geosciences
- Matthew Ozuna – MS in Geoinformatics

## Spring 2024 PhD in Environmental Sciences and Engineering

- Thomas Varner



Alex Godet, Matt Cannon, Cassidy, Jaida, Tosin, Nathan, and Gavin at the Spring 2024 graduation



Dr. Saugata Datta, Dr. Ambika Mathur, and Dr. Tom Varner at Tom's PhD Ceremony



Ruben, Brian, Saugata Datta, Alex, and Steven at the Spring 2024 graduation

# Certificates Awarded

## Fall 2023

- Bradley Bush, Professional Certificate in Geographical Sciences

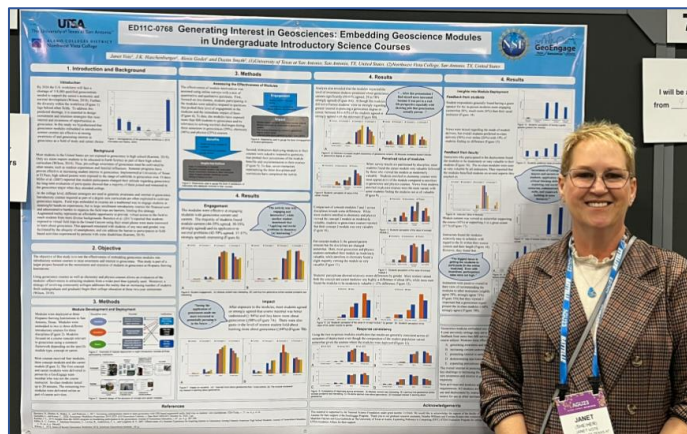
# CONGRATULATIONS!



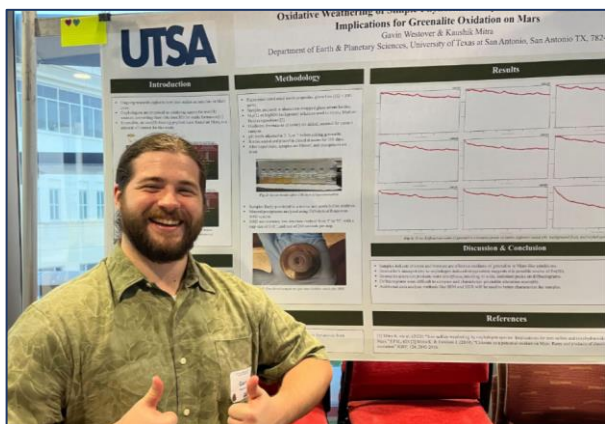
# Department's Activities



Everyone at the booth at GSA 2023 in Pittsburgh



Janet Vote presenting her research poster on geoscience instruction at AGU23



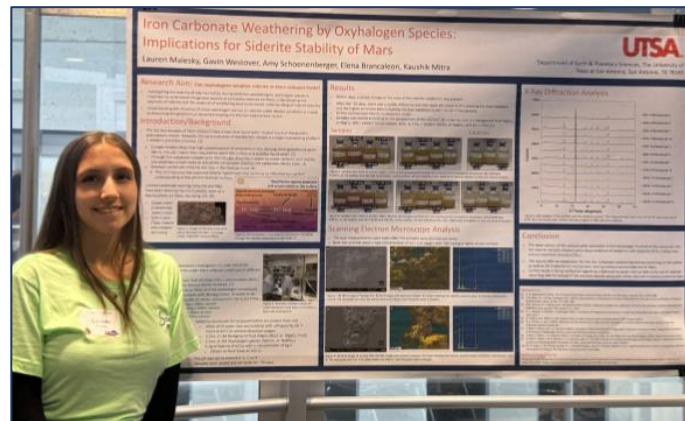
Gavin presenting his research poster on Greenalite on Mars at the Earth Day Symposium



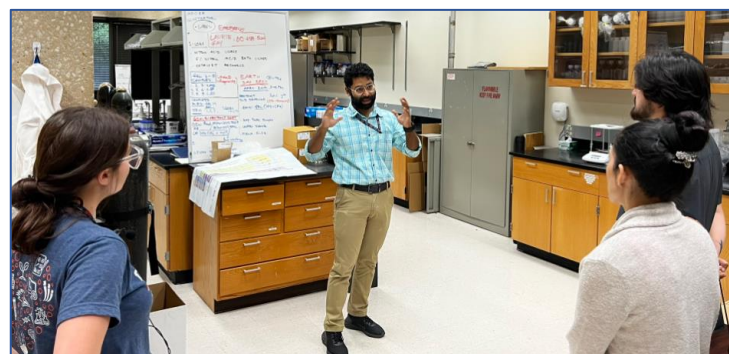
A selfie from first Friday at the Chicken N Pickle!



Lauren S. talking to high school students at the UTSA Day booth



Lauren M. presenting her research poster on Siderite on Mars at the Earth Day Symposium



Kaushik Mitra giving a tour of his LEAP Lab on UTSA Day



Matt Cannon and Gavin at UTSA Day talking to potential future students



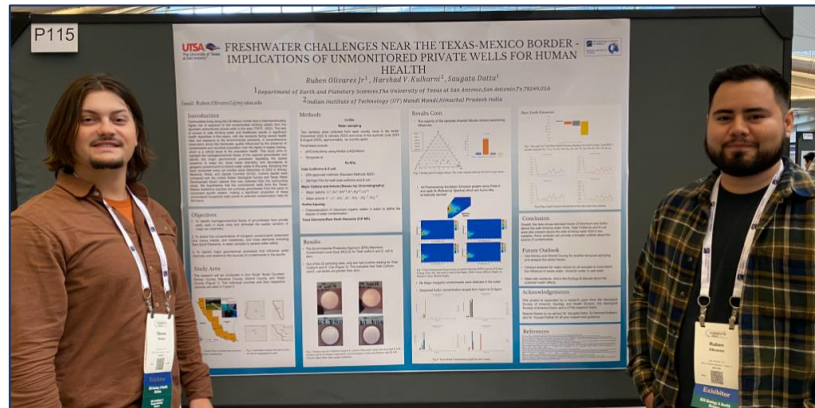
# Department's Activities



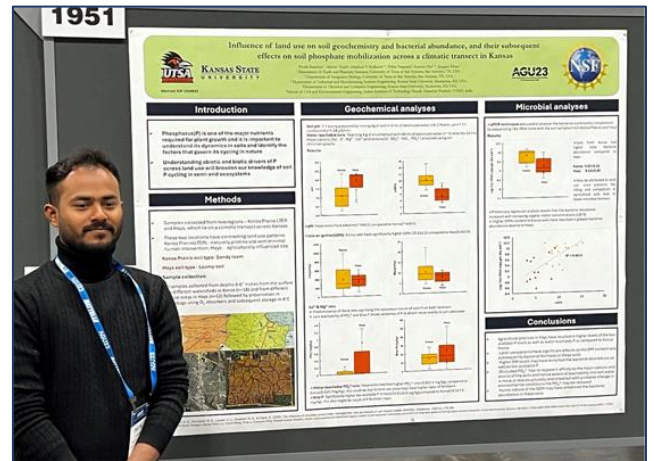
Connor Tinker and Kaushik Mitra presenting their design of a Multi-Planet Surface Simulator



Alberto Mestas-Nuñez at AGU 2024 presenting on his glider observations



Steven Hollan and Ruben Olivares Jr. presenting at GSA 2023

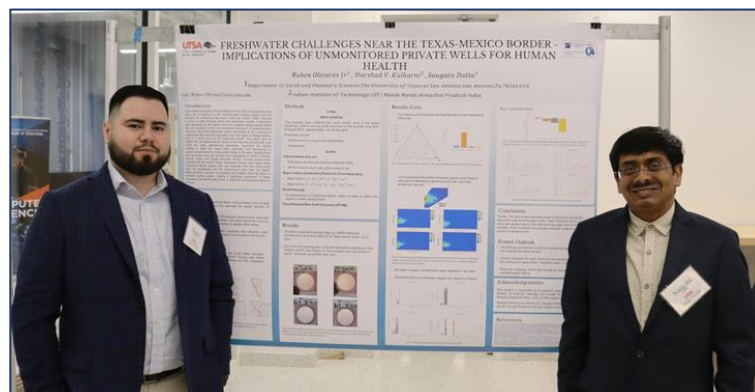
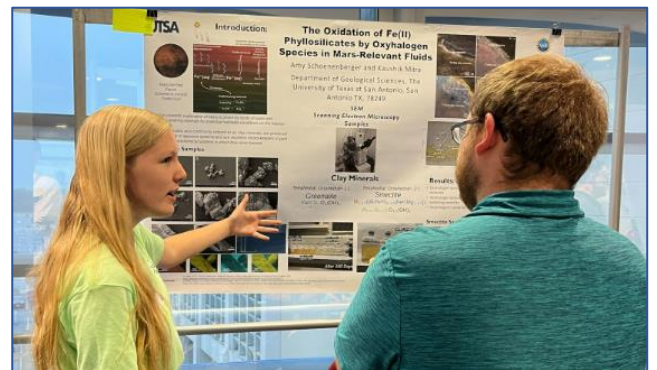


Protik Banerjee at AGU23 in San Francisco, California



Saugata Datta, Jaida, and Lauren at the UTSA booth at GSA 2023

Amy presenting her research poster on phyllosilicates on Mars at the Earth Day Symposium



Ruben Olivares Jr. and Saugata Datta presenting at the UTSA Advancement Council Meeting



# Geo Moments



Petrology field trip looking at migmatitic gneisses at Inks Lake State Park, March 2024.



The Field Investigations trip to Mason Co. where students are finishing their maps back at camp



Petrology field trip at the summit of Enchanted Rock, March 2024.



Field Investigations class at La Cantera looking at a vein of calcite crystals



Jazlyn collecting a sample of the Taylor Group at Cibolo Creek for Sed-Strat Class



Field Investigations class at Cibolo Creek about to get some strike and dip data



# Geo Moments – Volcanology



Ross holding a “very heavy” pumice stone at Valles Caldera



Volcanology class at the Pueblo Loop Trail in Pena Blanca, New Mexico



Volcanology class at the KT boundary in Raton, New Mexico



Volcanology class at the Zuni-Bandera volcanic field



Volcanology class at Jemez Springs, New Mexico with a map of the mountain behind them



Volcanology class at Pena Blanca



Alan Whittington taking a selfie with Brenna, Ronny, Austin, Ross, James, Alex, and Adriana in Glenwood, New Mexico



# Geo Moments – Big Bend



The girls working on their maps back at camp in Big Bend



Structural Geology class at Big Bend National Park



Matt Cannon taking a new approach to teaching at Ernst Tinaja



Students climbing to the top of Persimmon Gap



Matt Cannon teaching Lauren how to get an axial plane at Ernst Tinaja



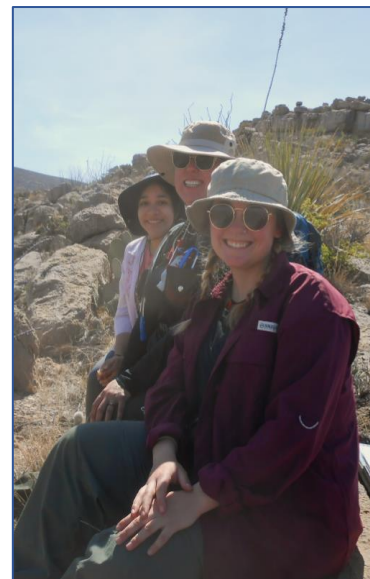
Structural Geology class at a site with flame structures



Milky Way in BBNP



Lauren turning into an anticline



Vanessa, Melissa, and Cassidy sitting down for lunch on top of a mountain at Dagger Flat

"Attending the Big Bend field camp allowed me to put classroom skills and techniques into practice during a real-world scenario. This experience prepared me for what to expect in my future endeavors!" –Jaida Veiga



# Geo Moments



Keaula and Cassidy tasting the ice in Alaska.



Gavin working on X-Ray Diffraction (XRD) scanning



Yongli Gao went to the Great Artesian Basin (GAB) to investigate the age and hydrochemistry of geothermal water in the GAB, Australia. From left to right: Dr. Yongli Gao (UTSA), Dr. Andrew Love (Flinders University), Daniel Wohling (Innovative Groundwater Solutions).



Dr. Mestas (PI) and Iyare Oseghae (PhD student in ESE) attended the “NASA Increasing Participation of Minority Serving Institutions (IPMSI) in NASA Earth Science Surface-Based Measurements Networks, Cohort 2023 Meeting” at NASA GSFC, Greenbelt, Maryland, in September 28–29, 2023. The meeting brought together research teams from across the nation that were funded to set up instruments that make surface atmospheric measurements used to calibrate NASA satellites. Funded by this NASA program, Mestas and

Oseghae are part of an UTSA’s team (with Drs. Pineda, Debbage, and Bhaganagar) that is working on the installation of a Pandora spectrometer in UTSA’s Downtown Campus to measure air quality downtown San Antonio.



The karst research group led by Dr. Yongli Gao collaborated with the Edwards Aquifer Authority (EAA) to map karst features using drones along Cibolo Creek, Kendall County. From left to right: Brent Doty (EAA), Stephen Hernandez (UTSA), Jessica Quintanilla (EAA).



Dr. Xie hiking on a glacier in Chile





# Social Links

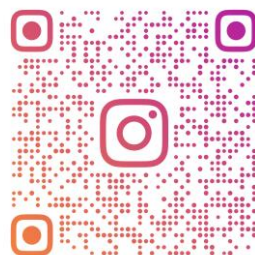


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