The University of Texas at San Antonio
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!

Visit Our Website! https://www.utsa.edu/sciences/earth-planetary-sciences/
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.

He holds membership on the Subcommission 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) Subcommission 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.

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.
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.
  - 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
- 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"

Dr. James O. Jones Endowed Memorial Scholarship

Amy Shelton & V.H. McNutt Endowed Presidential Scholarship
- Adriana Ariza Pardo
- Alyssa Correia
- Noah Kiltus
- 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

Scholarships

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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)

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

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

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 **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.

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 ±4°C.

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 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.

Zoe preparing samples in the Anaerobic Chamber in the LEAP Lab

Elena presenting her Mars research from the LEAP Lab

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.


- **Malesky L.**, November 2023, Cataloging Mineral Collections. Invited Lecture for the Southwest Gem and Mineral Society at UTSA


- **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

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

Publications


- 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](https://doi.org/10.1016/j.gsd.2023.100938)


- 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](https://doi.org/10.1021/acs.jcim.3c00531)


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)


Conference Presentations


- **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, 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


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]
- **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
Conference Presentations


- **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


Geological Society of America Presentations


Geological Society of America Presentations


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


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Jaida presenting her poster on variations in ammonites at GSA 2023

Degrees Awarded

Summer 2023 Bachelor of Science
- Elizabeth Bartels
- Mason Garza
- Wesley Arrison
- 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

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

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

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

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

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

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

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

A selfie from first Friday at the Chicken N Pickle!
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

Protik Banerjee at AGU23 in San Francisco, California

Steven Hollan and Ruben Olivares Jr. presenting at GSA 2023

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

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

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

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

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

Volcanology class at the KT boundary in Raton, New Mexico

Volcanology class at the Zuni-Bandera volcanic field

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

Volcanology class at Pena Blanca
“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
Dr. Xie hiking on a glacier in Chile

Kealaula 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).
Support our Students!

If you would like to make a donation to support our Department of Earth and Planetary Sciences students, faculty and research, please follow this link to the UTSA giving site.

Website: https://www.utsa.edu/sciences/earth-planetary-sciences/

Instagram: https://www.instagram.com/earthplanetarysciences_utsa/?igshid=YmMyMTA2M2Y

LinkedIn: https://www.linkedin.com/groups/8562033/


SGE: https://rowdylink.utsa.edu/organization/sigmagammaepsilon

AEG: https://rowdylink.utsa.edu/organization/aeg_utsa