CSUN COLLEGE OF SCIENCE AND MATHEMATICS

2019 Newsletter

Geology Uplifted

CSUN Department of Geological Sciences to host 2020 GSA Cordilleran Meeting May 12—14 in Pasadena, CA

The CSUN Dept. Of Geological Sciences will be hosting the 2020 Geological Society of America Cordilleran Section Meeting May 12-14 at the Westin, Pasadena. The organizing committee includes faculty members Yule, Cecil, Heermance, Schwartz, and Marsaglia, as well as former CSUN faculty member Elizabeth Nagy (now at Pasadena City College).

Pasadena City Hall. Photo from: Pasadena Convention & Visitors Bureau

There will be 7 field trips, four short courses, and over 25 technical sessions. Trips will visit both onshore (Central CA Coast, San Gabriel Mountains, Coyote Mountains) and offshore locations (Santa Catalina and Santa Cruz Islands). Short courses will study magmatic structures, thermal infrared spectral imagery, use of data, math, and societal relevance in teaching, and applied forensic geochemistry. The technical sessions are too numerous to mention fully but topics include geoscience education, paleontology, hydrogeology, stratigraphy, petrology, tectonics and earthquake science.

A number of sessions are being organized by CSUN faculty, students, and alumni. One session on "The Changing Face of Paleontology" will honor the career and contributions of CSUN Professor Emeritus Richard L. Squires. The meeting will also feature an honorees banquet and joint CSUN-PCC-Caltech reception.

THE GEOLOGICAL SOCIETY OF AMERICA®

CORDILLERAN SECTION

We hope to attract geologists from around the country to this exciting event. Please visit the Cordilleran meeting website for the latest information (www.geosociety.org/cd-mtg). We hope to see you there.

DoD Grant Awarded to CSUN DoGS

The department of Geological Sciences was awarded a $600,000 equipment grant in August, 2019, from the Department of Defense which will be used to create a GeoAnalytical Center and purchase two mass spectrometers, an ion chromatograph, ground penetrating radar, and a high-performance computing node. Grant PI's were Hauswirth, Ganguli, Cotton, Evans, Schwartz, Cecil, and Lozos.

"The GeoAnalytical Center can revolutionize the research capabilities of the Department of Geological Sciences by integrating analytical, geophysical and computational science," said Dr. Elizabeth King, program manager, environmental chemistry, Army Research Office. "Enhancing the breadth and depth of these sciences in a center of this scale enables researchers to be at the cutting-edge in topics relevant to the Army, including, environmental chemistry, forensics and the modeling of soil and water resources."

The award is the result of a merit competition administered by the Army Research Office under policy and guidance of the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)), to increase the capabilities of HBCU/MIs to perform defense research. The Army Research Office is an element of the U.S. Army Combat Capabilities Development Command's Army Research Laboratory. Congratulations!

Letter from the Chair

Dear CSUN Geology family, including alumni, friends, students, and faculty. I hope that 2019 was a wonderful year for all of you. I am excited to present all of you this uplifting newsletter, which hopefully will become an annual tradition. Herein, we will provide you an update on our department activity over the past year, and look forward to connecting with each of you in 2020.

Our department experienced many changes in 2019. Dr. Kathie Marsaglia completed her three-year term as Department Chair in August, and I thank her for her service. She immediately left for a two-month research cruise in the Gulf of California that drilled into the (young) ocean floor. Our department graduated 20 BS students and 2 MS students, and we anticipate an even larger group of graduates in 2020. Our faculty currently hold 7 large grants from the National Science Foundation, NASA, and the Department of Defense (see details in Faculty blurbs) with other grants pending, and our department now houses 8 lab facilities, including a SEM, 3 mass spectrometers, and 11 fume-hoods.

I took over as chair in August, and am nearing the end of my first semester. I'm thrilled to have been given the support of the department to lead us into the next decade, and have a number of goals for the coming years, including:

1. Increase the number of majors in our program, which may include development of a BA degree
2. Support undergraduate and graduate students through career and research opportunities, scholarships, and pedagogical modifications
3. Continued support of faculty research, through technical, administrative, and teaching load modifications
4. Maintain a collaborative departmental environment that incorporates lab and fieldwork to produce well-prepared graduates for our future.

Our department has developed a number of new courses in the past couple years to accommodate the CSU-wide General Education Curriculum requirements (EO 1100). To summarize these changes, all CSUN graduates are now required to take a 300-level Science course. Based on our anticipated increased demand, our faculty (listed in parentheses) have developed 3 new courses:

- GEOL 325 The World of Dinosaurs (Marsaglia & Pavia)
- GEOL 327 Geoforensics (Cotton)
- GEOL 344 California Geology (Lozos and Yule)

The department held our 37th annual Fall Field Frolic at Sycamore Cove Beach and the Hanna Family Ranch in Hidden Valley, CA. A total of 61 people joined in on the festivities: 33 alumni and their families/friends, 7 faculty, plus five faculty children and one spouse, 13 current graduate students, and two loyal friends of the department (Marilyn and Syrus). This trip marked the largest gathering of the DoGS family for quite some time. Next year's frolic will take place in the Long Valley Caldera and Owens Valley from August 13-16. Please save the date and stay tuned for details.

My own teaching and research continue in earnest. I taught the first half of summer field camp in June, and continue to teach sedimentology and stratigraphy (GEOL 341/L) in the spring. My current research focuses on the Eocene stratigraphy of the Mojave Desert, the glacial history of California, and the Miocene and Pliocene stratigraphy of western China, and I'm working with 3 excellent graduate students on these problems.

I could not do my job without our fantastic staff (Mari, Perla, Terry, John, Zhan, and Catherine). Thank you all for your hard work. To our alumni, I look forward to hearing from you over the coming year. Please feel free to email or stop by CSUN if you have a chance. I hope you all have a wonderful new year, and see you in the next decade.

Sincerely,

Dick

Fall Field Frolic 2019 activity at Point Mugu. Students are sitting next to the Miocene Topanga Formation. Dr. Heermance (brown shorts) is taking a closer look at the strata.

Faculty Updates

Dr. Robinson Cecil

Dr. Cecil's work uses geochronology, isotope geochemistry and field observation to address regional tectonic problems in the North American Cordillera. A new research direction has brought her to parts of the northern Mojave, which record a complicated Cenozoic history of exhumation, extension and basin development. Recent MS students have been working to understand these basins and their relationships to flat subduction, Garlock Fault initiation and uplift of the Sierra Nevada. Dr. Cecil kept busy this summer co-leading a research institute with Dr. Schwartz as part of their new, NSF-funded instrumentation grant. She is also enjoying her roles as GSA's Cordilleran section chair-elect and technical program chair of the Pasadena 2020 meeting.

Dr. Jen Cotton

Dr. Cotton is a stable isotope geochemist who is interested in reconstructing climate and environmental change on a variety of time scales, historical to geological. She has recently been using small mammals as recorders of environmental change caused by urbanization and deforestation on the West Coast over the past 100 years. In this work, she has identified signals of aridification in the Pacific Northwest, and vegetation change in the high elevation meadows of Southern California. She has also been working to reconstruct Cenozoic vegetation change in the Pampas of Argentina to investigate if the spread of C4 grasses was driven by the intensification of the South American monsoon and ultimately influenced by Andean uplift.

Dr. Matthew d'Alessio

Dr. d'Alessio works with teachers around California to help them teach science effectively. In 2016, he was the chief writer of the State Board of Education's framework for California's new science standards. The new standards emphasize Earth science from kindergarten through high school with a focus on environmental problems facing our state. This shift has created a need for teachers at all levels to learn more Earth science. Our science education team at CSUN has led the statewide effort to support existing teachers and rethink how we educate future teachers. Dr. d'Alessio has led workshops for more than 1,200 (~10%) of the state's high school science teachers, and resources developed at CSUN have reached thousands more.

Dr. Eileen Evans

Dr. Evans uses GPS and other satellite observations to image the gradual accumulation of tectonic strain along faults, and the release of that strain as earthquakes. Her research focuses on mathematical and computational methods to model these observations and better understand earthquake hazard and active plate tectonics. Recently Dr. Evans has been involved in research for expanding current GPS observation networks to the sea floor to better understand plate boundaries that occur offshore, such as the Cascadia subduction zone in the Pacific Northwest, and their related hazards, such as earthquakes and tsunamis. Using geodesy, she and her current students are investigating strain partitioning in the Pacific Northwest and interrogating the maximum depth of future earthquakes along the San Andreas fault.

Dr. Priya Ganguli

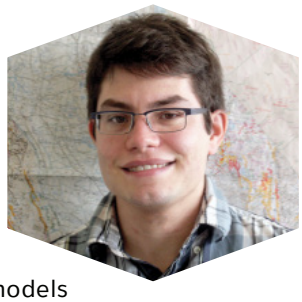
Dr. Ganguli had a busy semester setting up new DoGS Water Science Lab! She studies the transport and fate of contaminants in aquatic environments, with a focus on the element mercury. Dr. Ganguli and her students are working on four CA-based field projects: 1) quantifying the flux of mercury from the abandoned New Idria Mine, which was the second largest mercury producer in N. America; 2) evaluating mercury bioavailability in Castaic Lake, CA, which has a mercury fish consumption advisory; 3) assessing wildfire impacts in the Malibu Creek watershed following the 2018 Woolsey Fire; and 4) studying contaminant cycling in Malibu Lagoon and the land-to-sea transport of those contaminants. Excitingly, the Ganguli and Hauswirth research groups have combined expertise and are collaborating extensively on these projects.

Dr. Scott Hauswirth

Dr. Hauswirth's research focuses on a variety of water and environmental issues. An ongoing project addresses the effects of the 2018 Woolsey Fire on the water quality in the Malibu Creek Watershed. Sampling during the Winter/Spring 2019 identified concerning levels of several carcinogenic contaminants (polycyclic aromatic hydrocarbons; PAHs). Continued monitoring through the 2019-2020 rainy season will assess the potential for longer-term impacts to water quality. Another study set to begin in January 2020 will investigate oil seeps in the Newhall, CA area as potential sources of contaminants to the Santa Clara River. Lastly, Dr. Hauswirth is investigating the use of non-Newtonian fluids, both for remediation of groundwater contamination and as a tool for characterizing the pore space of soils.

Faculty Updates (continued)

Dr. Julian Lozos



Dr. Lozos uses computer modeling to study the physics of earthquake rupture. He is interested in how fault complexity affects earthquake behavior, and in how faults interact. He addresses these questions both in general parameter studies, and through models of historic, recent, and hypothetical future earthquakes in California. In early 2019, he was focused on determining how a change in dip on a strike-slip fault affects where an earthquake stops, and on modeling scenario earthquakes on northern California's Hayward Fault. However, the Ridgecrest earthquakes in July exemplified many things that Dr. Lozos is particularly interested in, and he has been focused on modeling those earthquakes since the week after they happened.

Dr. Kathleen Marsaglia

Dr. Marsaglia was honored by AAPG with a 2019 Grover E. Murray Distinguished Educator Award; her nominators included alumni Tony Reid (citationist) and Aaron Hebeler. She just returned from a 2-month voyage to the Guaymas Basin on International Ocean Discovery Program (IODP) Expedition 385 and is now a member of the U.S. Advisory Committee to IODP. In 2017-2019 she co-edited SEPM Special Publication (110) on the CA Borderland and authored/co-authored 13 other publications, all with students, on Californian, Italian, New Zealand, South American, and Pacific topics. She and her current students continue research in these areas and beyond, including planned studies of Mars (Iceland/Hawaii) and Monterey Formation (Guaymas) analogues.

Dr. Elena Miranda

Dr. Miranda is a structural geologist who uses microstructural and electron backscatter diffraction (EBSD) analyses to investigate fault and shear zone rheology during tectonic deformation. Dr. Miranda and her students are currently working in Fiordland, New Zealand, to study how strain localization was achieved and sustained within the deep root of an ancient Cordilleran-style arc during a cycle of magmatism and transpression. She is also working on a project in the Eastern Peninsular Ranges Mylonite Zone in California where she and her students are placing geologic constraints on the rheology of deep-crustal shear zones for direct incorporation into the Southern California Earthquake Center's (SCEC) 'Community Rheology Model'.

Dr. Joshua Schwartz

This has been an exciting year for igneous petrology and geochronology research at CSUN! Work on continental arcs continues to focus on deep-crustal processes in New Zealand and California. The lab was recently funded by the National Science Foundation to study 'MASH' (Melting, Assimilation, Storage, and Homogenization) processes in the lower crust of ancient New Zealand. The group was also funded this year to work on the interplay between magmatism and ductile deformation in Eastern Peninsular Ranges Mylonite Zone in California (Southern California Earthquake Center) with Dr. Miranda and CSUN students Adam Brackman (BS '20) and Jennifer Bautista (BS '19). Former graduate student, Luisa Buritica (MS '18) published her thesis work in Lithosphere, and current graduate students Kendra Carty (MS '19), Erin Wales (MS '20), Gillian Greenberg (MS '20) and Brandon Page (MS'21) are making excellent progress using the new, NSF-funded laser ablation system in Chaparral Hall.

Dr. Dayanthie Weeraratne

Dr. Dayanthie Weeraratne is both a seismologist and a geophysical fluid dynamicist. Her seismology group is currently analyzing an amphibious seismic array which combines data collected from terrestrial seismometers with ocean bottom seismometers deployed offshore the southern California continental margin. They are investigating the potential existence of remnant lithospheric fragments beneath the continental margin due to subduction of the East Pacific Rise spreading center ~30 Ma. The fluid dynamics group is currently studying core formation of the Earth and planetary interiors. New results recently published in Nature Communications (Fleck et al., 2018) suggest low density silicate magma and volatiles may be entrained into the core during planetary differentiation and can explain the core density deficit today. Storage and later release of silicates, O, and H may oxidize and hydrate the Earth's mantle and atmosphere.

Dr. Doug Yule

Dr. Yule has retired from the Department, entering the Faculty Early Retirement Program (FERP) in August 2018, but in the Spring semester and Summer session he still enjoys teaching geology majors during in Introductory Field Mapping, Summer Field Geology, and Advanced Structural Geology courses. In the Fall, he travels and works on numerous "shelved" projects (on the paleoseismology and slip rates of faults in California and the Himalaya) in hopes of completing manuscripts with former students and colleagues. In 2020, he hopes to see alumni at the GSA Cordilleran Pasadena meeting in May and/or the Fall Field Frolic in August.

Alumni Focus

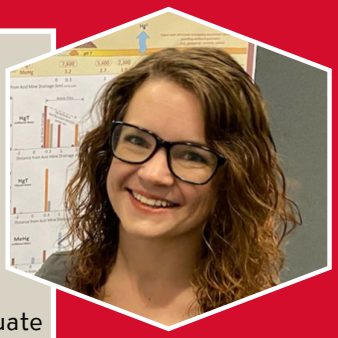
Hannah Shamloo (BS '15)

Hannah returned to CSUN in the fall ('19) to give an outstanding colloquium talk on her work at Yellowstone volcano. Hannah is currently a PhD student in Experimental Petrology at Arizona State University and plans to graduate in spring 2020. Her talk entitled "Reading chemical fingerprints in zoned minerals to determine the timescales and mechanisms of supereruption initiation: Yellowstone Caldera" was well received and sparked a lot of interest among students and faculty. During her visit to CSUN, Hannah also met with current undergraduate students in the ROCs (Research Opportunities for CSUN students) and discussed her experiences transitioning from CSUN to a PhD program. We wish Hannah the best of luck with her academic job search and look forward to hearing about her research again soon!

Annelisa Moe (MS '17)

Annelisa completed her thesis, titled "Magnetostratigraphic and Stable Isotopic Analysis of Playa-Lacustrine Deposits in the Qaidam Basin, China: Implications for Climate-Environmental Chanes and Orbital Forcing Mechanisms During the Plio-Quaternary Transition" in May, 2017. Upon graduation, she took a job with the Regional Water Quality Control Board in Los Angeles in both the underground storage tank program and the surface water ambient monitoring program. She currently works for healthebay.org where she helps to keep L.A. water clean and safe by advocating for comprehensive and science-based water quality regulation and enforcement. She was recently featured on the Ecojustice Radio Podcast and KPCC. In her free time she enjoys caving, canyoneering and scuba diving.

Student Spotlights



Rachel Hohn

2nd Year MS Student, Research Advisor: Dr. Priya Ganguli

Rachel is a 2nd year MS student and a vibrant member of the DoGS community. She is researching the impacts of historic mining in CA and recently represented our department during Geo Congressional Visit Day in Washington DC to discuss science policy related to mine site remediation. She has presented her work at 4 professional conferences and received numerous internal and external research awards, totaling >$9000! Additionally, Ms. Hohn revitalized the CSUN chapter of the Assoc. of Women Geosciences (AWG). Impressively, Ms. Hohn accomplished this while working as an environmental consultant and a full-time graduate student.

Christian Hoover

Senior BS Student, Research Advisor: Dr. Scott Hauswirth

Christian is a senior undergraduate whose exceptional work catapulted him to the role of lead student on a watershed study to assess impacts from the 2018 Woolsey Fire. He mastered complex analytical techniques to extract polycyclic aromatic hydrocarbons (PAHs) from water and soil samples, and now teaches that technique to both undergraduate and graduate students. He also conducts regular sampling events to characterize water quality during baseflow conditions and storm events, and presented his findings at he American Geophysical Union Annual Conference. Christian has received numerous awards, including the prestigious Coast Geological Society Gene Fritsche Scholarship!

Emeritus/Retired Faculty Updates

Dr. Vicki Pedone

I moved to Salem, Oregon two weeks after completely retiring from the department in May 2017. Fall and spring are gorgeous here; and rain, glorious rain in all seasons! I spend my time volunteering with the on-profit oranization Salem Harvest, where I pick every kind of fruit, vegetable, and nut grown in the Willamette Valley to provide fresh food to local food banks and homeless shelters. At home, I have a big flower and shrub garden, which the local deer love as much as I do. My wine cellar is getting out of control with too many local wineries tempting me through their doors. I still am working at a snail's pace on some geology projects in the Great Salt Lake area. I enjoy sharing my new home with visitors, especially the many CSUN friends who make the journey north. Life is good!

Dr. Larry Collins

I have written a book titled: "A Christian Geologist Explains Why the Earth Cannot Be 6,000 Years Old – Let's Heal the Divide in the Church." The book is ~220 pages long and is currently in review for publication by Kregel Publications. I recently wrote a manuscript about the origin of myrmekite that occurs in the Sherman Granite in the Laramie Range in Wyoming-Colorado. My articles on myrmekite and in opposition to young-Earth creationism receive 10 to 70 web-hits per week. I am well, but I am no longer capable of doing field work, having difficulty walking because of a hip replacement, 7 years ago, that did not work out as well as I had hoped. I regularly attend the monthly departmental seminar talks in Live Oak Hall.

Dr. Dick Squires

I retired from the department in 2014, and since that time have published 15 papers in peer-reviewed journals about Late Cretaceous and Tertiary mollusks on the west coast of the US. Two of these papers were co-authored (respectively) by CSUN alumni Mary S. Stecheson (MS 2004) and Lindsey T. Groves (MS 1991). An additional paper with L Groves (senior author) is nearly ready for submittal.

I was awarded the Award of Honor from the Western Society of Malacologists in 2017, the Annual Gilbert Harris Award or Excellence in Systematic Paleontology from the The Paleontological Research Insititution (Ithaca, New York) in 2014, and a special session on The changing face of Paleontology will be held at the 2020 GSA Cordilleran Section Annual meeting in Pasadena. My former students (Linda Ritterbush and Mary McGann) are the organizers.

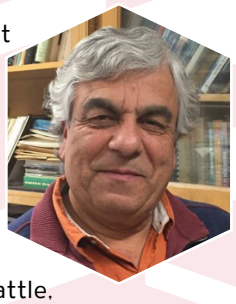
I created an educational blog in the summer of 2014. I now have 200 blog postings dealing with paleontology and geology topics. To date, there have been 86,000 hits. My most popular posting (in three parts) is on the Geology/Paleontology of Mt. Everest.

On a personal note, Janet and I are proud grandparents of Kaylin Marie, born in April 2015, and Leah Rose, who will be born in Jan. 2020.

Dr. George Dunne

George is "still alive and kicking" with wife Natasha (CSUN Geology BS, 1999) in the Rocky Mtns foothills (Arvada). My last contribution to a published work appeared in Chapter 12, a multi-author extravaganza in the GSA Dickinson Volume (Special Paper 540) dated 2018. I co-lead the August, 2018 Fall Field Frolic to Nevada with Dr. Yule, and look forward to attending the 2020 version, especially if it is in the Eastern Sierra. Natasha and I send greetings and wish continued success for all the crew at CSUN Geology.

Dr. Ali Tabidian



Upon retirement from the department in 2018, I took a road trip with my family. We headed north up the coast through the Redwoods, avoiding the wildfires inland. We followed logging trucks loaded with huge trees heading out of the forests, traipsed through Muir Woods, and stayed in a cabin overlooking the Pacific. The Northern end of the trip culminated in Seattle, where we rendezvoused with our daughter, son-in-law, and two grandsons for a food and fun-filled cruise to Alaska. We all enjoyed watching puffins hitching rides on ice flows, calving glaciers and a train ride through White Pass. The highlight of the return trip was a drive through Lassen Volcanic Park.

Soon after returning from that amazing trip, we left Simi Valley for Poway. While our Simi house was associated with mostly clayey soil of sedimentary-rock origin, our new residence in Poway is rich with micaceous (muscovite) sandy silty soil of granitic rocks (sounds like the hand-auger exercise). With good drainage and some soil enhancement for organic material, I should be able to continue with my top life-long hobby, playing with soil and water. When not busy gardening, reading, writing, and translating, you'll find me playing hide and seek with our grandkids (2 and 6), who are just minutes away from us.

I would like to express my appreciation to all of you who gave me the opportunity to know you, through taking my classes and having you involved with various academic projects. If it happens that you are in the San Diego area, please don't hesitate to vistit Poway. I would love to catch up and provide tour of my garden/orchard and taste the fresh produce.

Degrees Conferred 2019

Master of Science Degrees

Sirena Ulloa
Carlos Gomez

Bachelor of Science Degrees

Armen Aghakiant
Jennifer Bautista
Andrew Barajas
Lois Cabrera
Cindy De Jesus Bartolo
Nicholas Gutierrez
Kyle Ikeda
Michelle Jimenez
Marshal McGurk
Leticia Medina
Maxwell Pearson
Isabel Piña
Melony Robinson-Williams
Nader Tavassoli
Alexander Thoben
Talen Wickenden
Matthew Woytas
Miguel Zamora-Tamayo

Student Awards

Hanna Summer Research Fellowship

Anthony Downey
Alison Franco
Gillian Greenberg
Rachel Hohn
Christian Hoover
Justin Pardo
Maxwell Pearson

Richard Squires Scholarship

Joshua Barnes

Vicki Pedone Catching Fire Scholarship

Joshua Cottingham

Larry Collins Scholarship

Adam Brackman

Betty and Charles Leach Scholarship

Jillian Podmore

Lorraine Wyler Memorial Graduating Senior Award

Matthew Woytas

Gene Fritsche Scholarship

Julia Carras
Marshal McGurk
Jocelyne Nolasco
Deanna TerVeer
Christina Tristan

Peter W. Weigand Memorial Scholarship in Geochemistry

Kendra Carty
Erin Wales

Coast Geological Society Award

Kendra Carty
Christian Hoover

Frank Hanna Field Studies Award

Lois Cabrera
Kyle Ikeda
Matthew Woytas

Ernest Prete, Jr. Foundation Field Camp Scholarship

Jennifer Bautista
Daniel Fomenko
Maxwell Pearson
Karen Ramirez
Nader Tavassoli
Alex Thoben
Talen Wickenden

Our Department

Faculty

Robinson Cecil — Associate Professor
Jennifer Cotton — Assistant Professor
Matthew d'Alessio — Professor
Eileen Evans — Assistant Professor
Priya Ganguli — Assistant Professor
Scott Hauswirth — Assistant Professor
Richard Heermance — Professor / Chair
Julian Lozos — Assistant Professor
Kathleen Marsaglia — Professor
Elena Miranda — Professor
Joshua Schwartz — Professor
Dayanthie Weeraratne — Professor

Full Time Lecturer

Karen Savage

Part Time Faculty

Jenna Fleck
Brittany Huerta
Paul McBurnett
Jennifer Pavia

Emeritus/Retired Faculty

Herb Adams
Larry Collins
George Dunne
Vicki Pedone
Gerry Simila
Jon Sloan
Richard Squires
Ali Tabidian
Doug Yule

Staff

Terry Dunn — Administrative Assistant
Mari Flores-Garcia — Department Secretary
Zhan Peng — Instrument Technician
Perla Vielma — Administrative Support
John Wiesenfeld — Department Technician

Graduate Students

Andrew Allevato
Christopher Bellingham
Kendra Carty
Jeng Hann Chong
Matthew Dietel
Anthony Downey
Alison Franco
Adit Ghosh
Gillian Greenberg
Rachel Hohn
Gregory Jesmok
Brandon Page
Justin Pardo
Liselle Persad
Shaparak Salek
Erin Schmitt
Hanah Sloan
David Stone
Massis Tavitian
Cali Trammell
Erin Wales

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– Thank You –

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We welcome contributions to our department for student scholarships or to maintain our field equipment and vehicles. For information about how to donate, including the option to donate online, please visit our website at: https://www.csun.edu/science-mathematics/geology/giving-geological-sciences.

Please contact us with any questions about how to contribute.

Contact Us

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