

New Mexico State University  
Department of Geological Sciences  
Newsletter 2023



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Front cover: Honors student AJ Gutierrez looks for Permian fossils in the Hueco Formation, Robledos Mountains, in an Honors Geology class. Photo by Jeff Amato.



Brachiopod from Robledo Mtns.



Above: Undergraduate student Bella Esparza admiring the Giant Sloth in the Zuhl Museum on the NMSU Campus, as part of Dr. Amato's Honors Introductory Geology class.

## NOTE FOR LOCAL ALUMNI!

If you want to be added (or removed!) from the email list announcing the weekly Colloquium talks, please email [amato@nmsu.edu](mailto:amato@nmsu.edu) with your request.



# Message from the Department Head

It's interesting how some things stay the same in the midst of major changes. Our mission statement is:

“The Department of Geological Sciences is committed to field-based and lab-based teaching and research. We strive to be one of the top departments in the nation at which to earn undergraduate and MS degrees in the geological sciences as a foundation for a career in industry, government, or academia. We are dedicated to a greater understanding of Earth processes through research, service to the geosciences, and outreach to the general public and K-12 classrooms.”

That commitment to both research and teaching, to both field and lab, is the core of who we are. We are determined to keep field work and mapping in our curriculum and keep training the next generation of geologists with these fundamentally important skills. And we are determined to train our students in lab and computer work so that they are ready to meet the needs and challenges of society.

And while our core values stay the same, there is a lot of change afoot in the department! We hired Dr. Jennifer Thines this fall. Dr. Thines earned her BS with us in 2016 and her PhD from University of Iowa in 2020. She has been a visiting faculty member here for two years while Dr. Ramos and then Dr. McMillan were on sabbatical, and we were able to keep her on permanently. She will teach the core Rocks & Minerals/Mineralogy & Optics courses as well as Physical Geology and graduate courses. You can read more about that on her page in the newsletter. Welcome, Jennifer!

Andrew Hoxey from the University of Kansas is with us this year to teach tectonics and the GIS course. We are grateful to have him with us and are enjoying his stay!

One change that is coming up is that I will retire on 1 July 2024. I will have been a faculty member here for 35 years and department head for 17. There are more details on my newsletter page.

We have an amazing opportunity to collaborate with the new Reynolds Field Station for Education & Science Research in New Mexico—read more about it on the Reynolds newsletter page.

And now for the sad news---our old suburban was stolen from the Gardiner Hall parking lot earlier this fall. (Yes, we caught it on tape. A lot of good the cameras did us!). We are raising funds for a replacement and for the Seager Undergraduate Endowment. You can read more on the Donations newsletter page.

We are very grateful for the support of our alumni and friends, and quite proud of all your accomplishments!



Visiting Assistant Professor  
Andrew Hoxey in Nepal.

# 2023 Alumni Hall of Fame Ceremony

This year, Matt Wasson (BS '03) joined the Geology Hall of Fame. We knew Matt was someone special during his undergraduate years.....he was studious, soaked up information like a sponge, and earned a ridiculously high GPA. He even earned the top grade in the graduate level Carbonate Petrology and Depositional Systems class, setting the curve for the graduate students and foreshadowing his career in the energy industry. Matt just couldn't leave New Mexico, so even though he went to the University of Michigan, Ann Arbor, for his MS work, his thesis focused on algal mats in the Holder Formation in southern New Mexico. He integrated new skills such as geochemical and isotopic measurements with petrographic skills to decipher fluctuating sea levels as recorded in cements in the algal mats. Matt was hired by Chevron in 2006 and worked as lead geologist in the Vacuum Field, Permian Basin, New Mexico (he just can't stay away from this state!). He moved to ConocoPhillips in 2013, where he worked as Southeast New Mexico Lead Geologist in the Permian Basin. His expertise is in integrating data from geologic mapping, core analysis, petrography, petrophysics, and seismics. Currently, as Senior Petrographer, Matt is interpreting reservoir quality by applying computational techniques to petrographic and Scanning Electron Microscope images. We are proud of Matt's accomplishments and proud to have given him the foundation he needed for such great success.



Matt Wasson with his family at the annual Hall of Fame Luncheon.

From left, his daughters Abbie, Noelle, and Evelyn, and his wife Naomi (also an NMSU alum).

# 2023 Homecoming Field Trip

In addition to festivities associated with Friday's Hall of Fame, Brian Hampton led a trip to the Slot Canyon in the eastern Robledo Mountains. The canyon is eroded into the Rincon Valley formation. It is overlain by the Selden Basalt, which is 10.6 Ma based on some unpublished data acquired by Amato and undergraduate student



Photos from Homecoming trip to Slot Canyon

Above: Jeff Amato and Matt Wasson at the NMSU Homecoming football game, which NMSU won 16-7 in a tense finish against Middle Tennessee State University.



# MISSING



## Have you seen this Suburban?

**Our 1999 'Burb was stolen from our parking lot over the summer. This is impacting field trips and field research for the students. We are asking for alumni donations to help purchase another vehicle. See page 22 for how you can help!**

# NMSU GEOLOGY ALUMNI NEWS

Here are some reports from our graduate alumni from the past 10 years:



**Cory Paliewicz** (MS '15): After he completed his MS at NMSU in 2015, he returned to his home state of Michigan and taught classes for about 2 years at Central Michigan University. Then he worked at a non-profit organization called the Superior Watershed Partnership in Marquette, Michigan and contributed to a Community Environmental Monitoring Program at the Eagle Mine near Marquette. In 2018, he accepted a job as a full-time geologist with Lake Superior Consulting (LSC) in Duluth, MN. He also helped John Curry (MS '15) join LSC a few years ago. He also got married recently, and at left is his son, born in September.

John Curry has been working at Lake Superior Consulting since 2020 as a Cathodic Protection Technician. He's worked across the lower 48 for various pipeline operators (liquids and natural gas) conducting and coordinating hundreds to thousands of miles of cathodic protection surveys. He recently attained a Cathodic Protection Technician II certification from AMPP (The Association for Materials Protection and Performance) and is working towards Cathodic Protection Technologist III in the next year.

**Rod Blackford** (MS '15) has been working as a mine manager/geologist for the past 7 years at a humate mine near Cuba, NM. There are two main types of humate that were originally deposited and accumulated in oxic and anoxic environments of deposition. Fulvic and humic acids derived from these two types of materials are used in cattle feed, fertilizers, and medicines.

We had two Colloquium talks from graduate alumni who went on to get their Ph.D. degree after NMSU. **Vanessa Swenton** (MS '17; right) recently finished at Portland State and gave a talk on her study of rhyolites in the Columbia River Basalt volcanic field. Vanessa recently was hired as a Geologist by the state of Oregon, which will thus force her to give up her job at a local brewery!



**Alicia (Bonar) Mount** (MS '18) completed her Ph.D. at the University of Oklahoma this year, and discussed her research on Neoproterozoic redbeds in Tanzania. Soon she will join her husband, Cole Mount (MS '18) at Continental Resources.



# NMSU GEOLOGY ALUMNI NEWS

Here are some reports from our undergraduate alumni from the past 5 years:



**Amber Rivera** (B.S. '23; left) is at the University of Wyoming working towards her Master's degree. She is doing bio-geochemical work (lipid biomarker and stable isotope analysis) as well as geochronology in the Mowry Shale in Wyoming to understand redox conditions and carbon cycling in the Western Interior Seaway at the time of deposition.

**Jarret Yargus** (B.S. '17) is working as a Senior Metallurgist in the Chino Mines Concentrator in New Mexico. He's working at the flotation operations side of the plant.

**Jonathan Moore** (B.S. '17): "I'm working full time as a heavyline/performance mechanic still trying to figure out how to do something different. I worked a year in Texas as a mudlogger before I started as a mechanic. Currently I ride motorcycles, fly Rc airplanes and helicopters and have 2 racecars as hobbies.

**Jennifer White** (B.S. '17): "After graduation, and a short adventure as a bartender at a bowling alley in Phoenix, I returned to Las Cruces to become a high school science teacher. In addition to my career as a science teacher, I also obtained my Master's Degree in Geoscience from Mississippi State University in August 2022. My thesis was on the health of the channel bed soils of the Rio Grande in the Lower Basin. As a science teacher, I have been awarded a ROSE Scholar internship by the University of New Mexico, and I am a NSTA Eclipse Ambassador for the 2023 and 2024 solar eclipses. Currently, I am teaching chemistry and physics at Mayfield High School here in LC, and I spend my summer, spring, and fall breaks taking long road trips (accompanied by my dog, Lucy) to rockhound and explore the U.S."

**Hayden (Thompson) Acosta** (BS '17) and **Lynn Acosta** (BS '18) (photo, right) sent an update. In 2018, Hayden started graduate school at UTEP in their geology department, and Lynn started working as a Staff Geoscientist at Souder Miller and Associates (SMA). Hayden's research at UTEP used H and O stable isotopes to investigate water movement through the soil profile of arid environments. In 2020, Hayden was hired at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, NM. Hayden defended her MS thesis in 2020. In late '21, Hayden took a new job in the oil and gas sector as the Environmental Coordinator for Salt Creek Midstream. 2021 was a busy year for us—we also got engaged and married! In 2022, Lynn started his own environmental/engineering consulting firm called Strata Resources. In May, Lynn graduated from UTEP with a Bachelor of Science in Mechanical Engineering. Lynn also started working as an Environmental Specialist for Energy Transfer, focusing primarily on air permitting/compliance.

In July 2023, Lynn and Hayden had their greatest achievement yet—we had a baby boy, Rhye Acosta!





# NMSU GEOLOGY ALUMNI NEWS (Cont.)

From **Chance Dixon** (BS '20): "Great to hear from you. For the last three years, I have been working for an Environmental Consultant here in Carlsbad. I started as a technician and have now worked my way up to the role of Project Manager. I mainly oversee remediation and reclamation projects for our clients. Remediations are guided by our soil sampling. This career has been great for excelling my soil science knowledge, which is ironic as I never took a soils class at NMSU. For the last year or so, I have been studying to take the ASBOG exam in the state of Texas to become a GIT (Geologist in Training) and then eventually qualify to take the higher exam to get my PG (Professional Geologist) license. I am hoping to apply that knowledge and certification to more geoscience and geotechnical projects that our company is currently specializing in Houston, Texas. Although my career has not necessarily taken the path that I expected in the past (yet), I am extremely grateful for my time at NMSU and I believe that the skillsets that I developed there have been extremely beneficial to what I am doing today."

From **Jorge Murillo** (BS '20): "I proudly graduated from NMSU in 2020 with a Bachelor's degree in Geological Sciences. I am currently living in Harlingen, Texas, situated at the southernmost edge of the State. I'm working as The Program Manager with the Jesuit Refugee Services at the Port Isabel Processing Service Center. Reflecting on my time at NMSU, I wouldn't change a thing, especially my choice of major. While my career path may not be what most people would anticipate for a geology major, I was well-prepared. The Geology department at NMSU fostered a tight-knit community that taught us the value of collaboration and working effectively with colleagues. Thanks to our department's size, I had the privilege of having the same professor for three to four classes, which significantly enriched my learning experience. My interactions with professors and fellow students not only enriched my academic experience but also gave me a valuable glimpse into the dynamics of a "real job," particularly in terms of my daily interactions with supervisors and colleagues. Being a geology major meant we were often outdoors, exploring the world more than most, and these experiences led to a lot of great memories - whether that meant getting stuck in a blizzard, staying up late by a campfire sharing stories, or sharing one restroom with 30 people while camping.

Geology required us to think outside the box, especially when we were out in the field where anything could happen. Geologists had to don multiple hats, from mathematicians and chemists to biologists, and sometimes even zoologists or meteorologists. The degree program encouraged us to think creatively, a skill that has proven invaluable in my current role. The essays and writing projects I composed honed my email and proposal writing abilities, and my scientific background taught me the value of being clear and direct, always relying on the "black and white" over my feelings. This approach is a trait that many appreciate in my line of work. I also attended a company retreat in Tucson, Arizona. During the retreat, we embarked on multiple hikes, and to my pleasant surprise, my geological background turned out to be something that many of the directors of my company found fascinating and enjoyable as I explained many of the features and rock types along the way. The future is uncertain, but I'm genuinely grateful for the experience and education I received at the Geological Department at NMSU, and I have no regrets. And I hope that one day I can return and see the Organ Mountains again."

From **Rita Adamec** (BS '21): "I completed my Masters in August 2023 from the University of Alabama, where I studied the tectonostratigraphic development of the Appalachian Mountains. In the summer of 2023 I was an exploration intern for ExxonMobil in Houston, Texas and I have accepted a full time position with them to begin later this year. I have taken a few months off to travel, and a highlight was swimming between the North American and Eurasian plates in Iceland this Fall."

# NMSU GEOLOGY ALUMNI MILESTONES

## **UNDERGRADUATE PROGRAM:**

50 Years for the Class of 1973:

John Bond, George Forsythe, Jeffrey Simonsen, William Spears

40 Years for the Class of 1983:

Dorcas Boerner, Paul Castillo, Jeffrey Dorwart, Richard Dubiskas, Royce Finley, Daniel Galindo, Joan Gardner (Hall of Fame Inductee, 2018), Kenneth Hunter, Cary Loggins, Stephen Maddox, Charles Matthews, Susan Myers, Ivan Pupulidy, Phillip Russell

30 Years for the Class of 1993:

Paul Biehl, Jeff Collins, Michael Urtaza

20 Years for the Class of 2003:

Kristine Baker, Diana Sitze, and 2023 Hall of Fame inductee Matt Wasson

10 Years for the Class of 2013:

Phil Bolen, Cass Dimitroff, Jordan Faltys, Matthew Harder, Amelia Hayes, Shane Hellekson, Michael Kove, Bridgette Miller, Daniel Rael, Joshua Roth, Gabby St. Pierre (who finished her doctorate at the University of Utah and is now working for the Utah Geological Survey), Aleah Worthem

## **GRADUATE PROGRAM:**

30 Years for MS degrees from 1993:

Lorena Goerger, Martyne Kieling, Alice Nightengale, James Witcher (Hall of Fame Inductee, 2012)

20 Years for MS degrees from 2003:

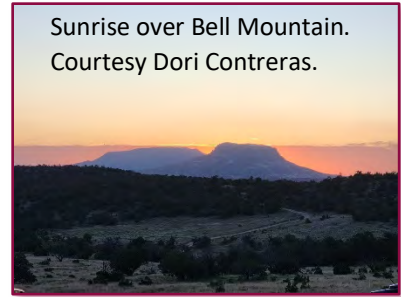
Jennifer Aschoff, Sam Bothern, Christie Cowee, Kyle Graff, Amos Sanders

10 Years for MS degrees from 2013:

Sean Gaynor, Sarah Machin, Sandra Mader, Bill Schellenbach

# Reynolds Field Station for Education & Science Research in New Mexico

A-Lan Reynolds is developing the Reynolds Field Station for Education & Science Research in New Mexico on land northeast of Datil, NM. The Crevasse Canyon Fm. (Cretaceous) is marvelously exposed with a multitude of fossils, sedimentary structures, and hydrothermal/igneous curiosities. A-Lan has generously included our department in her plans, including hosting a field trip to the property earlier this fall. Watch your email for more news as this project develops. In the meantime, enjoy these photos—they will show you what an amazing opportunity this is for geologists of all ages and expertise for years to come!



Sunrise over Bell Mountain.  
Courtesy Dori Contreras.



Ripple marks!  
Courtesy A-Lan Reynolds.



A-Lan Reynolds and undergraduate Gideon Kuykendall  
Courtesy A-Lan Reynolds.



The NMSU Fall Field Trip Group.  
Courtesy Leo Kuyl.



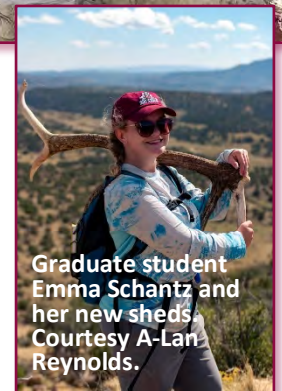
Graduate student Leo Kuyl has a new window into the Cretaceous.  
Courtesy A-Lan Reynolds.



Brian Hampton holding forth.  
Courtesy Dori Contreras.



One of many fossil leaves.  
Courtesy Dori Contreras.



Graduate student Emma Schantz and her new sheds.  
Courtesy A-Lan Reynolds.

# Faculty Profile: Dr. Jeff Amato

Somehow it has come about that I am in my 25th year at NMSU! Time certainly flies, particularly after our two children were born in 2008 and 2010. Since the last Newsletter, I have been working on projects in both New Mexico and Alaska. One of the three New Mexico projects is finished and published: a monograph on the Mud Springs Mountains, coauthored with Spencer Lucas, director of the New Mexico Museum of Natural History, and others, including former Amato Research Group student Chelsea Ottenfeld (MS '15). The other two New Mexico projects are a study of the Fra Cristobal Mountains, also with Spencer Lucas, and I am coauthor on a study of the Bell Top Formation tuffs with Emily Johnson and her former student Karissa Vermillion. There are two Alaska projects in progress. The first, coauthored with Jeff's former Ph.D. advisor at Stanford, Elizabeth Miller, is a study of a newly discovered Proterozoic assemblage of metasedimentary rocks intruded by 680 Ma granitic rocks, now deformed to orthogneiss. The other project is a grand synthesis of my geochronology work in the Alaska/Bering Straits region.

The Amato Research Group (ARG) now includes five current graduate students and two undergraduates. Lee Hughes (from Sonoma State) is making great progress with his geochronology and geochemistry study of the Uvas Volcanic field. Amit Millo (UC Berkeley) is learning the technique of "Structure-from-Motion" which involves collecting hundreds of outcrop photographs and assembling them into a 3D model using software. He is applying this to an area formerly studied by Rosie Williams (MS '15), the Red Rock region of the Burro Mountains. Alexis Salmeron (CSU Northridge) is focusing on additional mapping and geochronology in the Salinas Peak area of the San Andres Mountains, continuing the work started by Colby Howland (MS '18). We have two new students this year: Emma Schantz is from U. Mass Amherst, and Zach Betta is from the University of Missouri. Undergraduate Jordan Bell is helping Amit with his drone work, and Gideon Kuykendall is helping Alexis with some of the geochronology. Looking at the historical record, ARG had six students simultaneously in 2003-2004, and five students concurrently in Fall 2011.

In family news, this summer Stephanie did a Half-Triathlon in Kona, Hawaii, so the whole family went over to cheer her on. We were fortunate to visit Hawaii Volcano National Park on the first day of an eruption—it had been quiet for months before that. Seeing the lava fountains in the crater was a great experience for all of us. Sofia is a sophomore at Las Cruces High, where she is running track and cross-country, and she's also on the basketball team. She's taller than her dad now, and just got her driver's license. Wesley is in 7th grade and is involved in many activities including choir and golf.



Jeff with the new earthquake monitor he installed in the Gardiner Hall lobby.



Jeff, Wesley, and Stephanie at Los Lunas for the annular solar eclipse on 10/14/23.



Sofie running cross-country for Las Cruces High.



View of the 6/7/23 eruption at Kilauea in Hawaii.

# New students in the Amato Research Group



There are two new MS students in the Amato Research Group. Top left, Zach Betta grew up in St. Louis and got his Bachelor's degree in Geology from the University of Missouri, where he also minored in Math. He did a senior thesis on locating earthquakes on the India-Burma plate boundary to determine slab geometry. His thesis project at NMSU will be a study of rift-related faulting in the Robledo Mountains and their influence on basalt intrusions.

Top right, Emma Schantz, grew up in Maryland and got her geology degree from the University of Massachusetts (coincidentally, where Jeff's dad got his MBA back in 1967). Emma has started her project on some of the youngest Cretaceous sedimentary rocks and tuffs associated with the Laramide orogeny on Ted Turner's Armendaris Ranch near Elephant Butte reservoir.



Undergraduate Gideon Kuykendall is working with Alexis Salmeron on geochronology of the Proterozoic rocks in the San Andres Mountains.



Undergraduate Jordan Bell (above, right) is doing a microprobe study of low-grade metamorphic rocks in the Burro Mountains, as well as assisting Amit Millo (above, left) with his drone work.

# Faculty Profile: Brian Hampton

2023 found members of Hampton's Basin Research Lab in the field just about every month of the year and working on new and ongoing research projects as well as for numerous class field trips! Our research this year was focused on a range of projects throughout the Desert Southwest (more detail below!). On the teaching front, Hampton led field trips to the Guadalupe Mountains, Marathon Mountains, and Big Bend, as well as a number of trips around southern New Mexico. Hampton also directed the 2023 NMSU Summer Field Camp and added a few new localities including a 2-day project in the Valles Caldera (with the help of Dr. Frank Ramos). In addition to research and teaching, Hampton is serving as the Chair of the GSA Sedimentary Geology Division which he took over from NMSU alum Amy Weislogel (2001). This position would have been nearly impossible without Amy's amazing institutional knowledge of the division (Thank you so much, Amy!) Hampton is also serving as President for the NM Geological Society, and recently took over as Director of the Southern Rift Institute at NMSU (from Dr. Jeff Amato).

On the research front, Justin Friend will soon defend his MS project on provenance and K-feldspar alteration trends from Permian nonmarine strata throughout New Mexico. Justin accepted a full-time job at Fugro and spent time this fall on a survey ship working on the Atlantic Shores Offshore Wind Project, offshore New Jersey. Ethan Schneider is nearly completed with his MS project on provenance trends and closed-basin sedimentation during the early stages of the Rio Grande Rift. Ethan presented some of his findings at the 2023 GSA Rocky Mountain Section Meeting in Fort Collins in May. Ethan recently accepted a full-time position this fall with North Wind Group in Los Alamos. Nicole Salladin and Thomas Valenzuela are in the second year of their MS projects both focused on the stratigraphic history and provenance of the Eocene San Jose Formation in the San Juan Basin in northwestern New Mexico. This is a collaborative project with Drs. Kevin Hobbs and Matt Heizler at the NM Bureau of Geology & Mineral Resources. Thomas and Nicole presented preliminary results at the NMGS Spring Meeting in Socorro in April and at the GSA Annual Meeting in Pittsburgh earlier this month. The Basin Research Lab welcomed 1 new graduate student this fall (Leo Kuyll). Leo joined us from Bucknell University and is the second member of the group that spend time as a NCAA Division 1 swimmer (along with Nicole Salladin). If this "aquatic trend" continues, we may need to swap out our field hammers and Jacob's staffs with snorkel gear and swim goggles! Leo will be working out the stratigraphic history and provenance of the Crevasse Canyon Formation in west-central New Mexico (just north of Datil, New Mexico).

The lab also welcomed 2 new undergraduate students that are just getting started on research projects. Jagger Giffing will be working on characterizing Cretaceous paleoflora of the Crevasse Canyon Formation. Both Leo and Jagger's projects are a collaboration with A-Lan and Jim Reynolds of the Reynold's Field Station, Drs. Dori Contreras and Ron Tykoski from the Perot Museum of Nature and Science, and Darryl Reano at Arizona State University. Our second undergraduate researcher, Janelle Hansen, is just getting started working on provenance trends of lag quartzite clasts from the Hueco Formation in southern New Mexico. Janelle spent a few days in October analyzing detrital zircons at the University of Arizona LaserChron Center with other members of the research group. Finally, Greg Mack and I continued to collaborate on a range of local and regional projects throughout New Mexico and the Desert Southwest. We have several manuscripts in review addressing rifting throughout southern New Mexico and our Permian-themed book ("A Beginners Guide to Permian Geologic History of the American Southwest") was recently accepted for publication.

# Faculty Profile: Brian Hampton (cont.)

Finally, this annual report wouldn't be complete without a list of CONGRATULATIONS to present and past group member (and there are a TON to list this year)! Highlights from the 2023 proposal season include Thomas Valenzuela's GSA Grad Student Research Grant and Nicole Salladin's highly competitive GSA AGeS2 Geochronology Grant as well as a NMGS James and Sue Cearley Geochronology Grant. Nicole is working closely with the New Mexico (Argon) Geochronology Research Lab in Socorro for this project. Congrats also to Nicole for earning internship opportunities at both Devon Energy (this summer) and Chevron Corp. (in 2024). Congrats also to Thomas for his recent invite for an on-site visit to present his research at ExxonMobil later this month and to Leo Kuyl for recently receiving an internship offer from ExxonMobil (for 2024). Congrats also go out to alum Rita Adamec (2019) for a successful defense of her MS project at the University of Alabama and recent full-time offer from ExxonMobil. Congratulations finally to alum Dr. Alicia Mount (2018) for successfully defending her PhD project at the University of Oklahoma and recent full-time offer from Continental Resources (Dr. Mount has a nice ring to it!!).

In closing, a special (family and friends) congrats to everyone below including Alicia and Cole Mount (2018) who were married at White Sands National Park this past January. I was honored to perform their wedding ceremony on the beautiful white sand dunes (my first as an "official" ordained minister!). Alicia and Cole were joined by family and friends including alumni Samantha Weis (2019) and Colby Howland (2018). Alicia and Cole are expecting their first baby in November and Cody and Sam Weis (2019) are expecting their first child in early 2024 (CONGRATS YOU GUYS!!). We need to get these kiddos on the rocks ASAP in 2024 (smile!!). Congratulations also to Ethan Schneider and his fiancé Isabella who were also recently engaged. And, I was just about to wrap up this summary when I received a message from Shay Ridl (2020) letting me know that he and his fiancé Lauren were also engaged and plan to marry sometime next year (I might know where you can hire an ordained minister on the cheap!!). I caught up with Shay at GSA a few weeks ago and am happy to report that he has completed his PhD comprehensive exams at the University of Iowa and accepted an internship position at Hess Corp. for 2024.

Thanks to all our collaborators and current and past students in the research group through the years for making my job easy and amazing, and to everyone who made 2023 a great year!! I hope to see as many of you as possible on the rocks in 2024!!



Photo from Alicia and Cole's wedding at White Sands National Park. From left, Colby Howland, Sam (Bartnik) Weis, Cole Mount, Alicia (Bonar) Mount, and The Officiant, Dr. Brian Hampton! Below, at Laserchron Lab in Arizona.



# Faculty Profile: Nancy McMillan

It's been an interesting year! I was on sabbatical for the 2022-2023 academic year. Mainly, I got my head back together after 18 months of being department head for both Geological Sciences and Psychology. There was lots of science, too. I presented my research at three conferences, and published two invited chapters in the latest two-volume book on Laser-Induced Breakdown Spectrometry (LIBS). Both were authored with NMSU alumna Catherine McManus, and explored gem provenance (Application of Multivariate Analysis to the Problem of the Provenance of Gem Stones (Ruby, Sapphire, Emerald, Diamond)) and the idea of using the entire LIBS spectrum instead of selected peak intensities in multivariate analysis (Full Spectrum Multivariate Analysis of LIBS Data). I also submitted two papers on tourmaline analysis with Dr. Barbara Dutrow at LSU: A multivariate statistical approach for mineral provenance determination using laser-induced breakdown spectroscopy and electron microprobe analytical chemical data: A case study of copper-bearing tourmalines and Laser-Induced Breakdown Spectroscopy analysis of tourmaline: Protocols, procedures, and predicaments. I have to say it was fun to submit a paper with the word "predicament" in the title!

I've decided that it is time to retire. So, starting 1 July 2024, I will be doing more science and less administration. And more hobbies and other interests! It has been an amazing 35 years at NMSU, filled with so many warm memories of students, science, staff, and colleagues. Field adventures and lab adventures. Ideas that were brilliant (??) and published, and those that were brilliant (??) and didn't get published! Mostly, my time here has been made rich by the relationships of everyone I've worked with. My career has been a blessing.

Dean Enrico Pontelli has been very supportive of my succession plan. We hired Dr. Jennifer Thines to replace my role as mineralogist in the core curriculum. Her energy has already infused the department with positivity. We have just opened an external search for a new department head, who will start in July. Neal and I are planning on staying in Las Cruces, and I will hang around the department for a year to smooth the transition for the new department head. I'm looking forward to finally having the time to attend NMGS fall field conferences and meetings. And I will be able to attend all the homecoming field trips as a proud alumna instead of fretting about the logistics!

As NMSU alumni, Neal and I will be starting an endowed scholarship for undergraduate geology majors. Watch your email for more details if you would like to help us push this to the \$25,000 goal.

Thanks to all my students for the honor of being part of your lives!





# Faculty Profile: Dr. Frank Ramos

The Ramos research group keeps pushing science forward. We had two new students join us and two graduate. Camila Mejia joined us after finishing her BS at Florida State University and Sergio Ruiz joined us from the Universidad Autonoma de Chihuahua. Sergio is starting a project on volcanic rocks associated with the Hunga volcano in Tonga. Remember that massive volcanic eruption that occurred on January 15th 2022 in the south Pacific, that was Hunga-Ha Apai and it generated one of the most explosive eruptions in the last 100+ years. In contrast to the south Pacific, Camila Mejia is separating minerals and groundmass from two young trachytic eruptions that occurred at 1640 and 1563 AD in the Azores island chain in the north Atlantic. Both projects focus on young eruptions and apply U-series isotopes in dating crystals and magmas from active volcanoes. In addition to these new research group members, Mike Murphy is writing up his results from the Canary Islands, another hot spot volcano chain located further south in the Atlantic ocean off the coast of Africa.

As for recent graduates, Jenelle Hansen successfully defended late last fall and accepted a job with the State of Kansas Environment Department. She currently uses a range of technologies to monitor water and environmental samples associated with their nuclear reactor. She and her Emperor Penguin now reside in an apartment in Topeka not far from work. She is doing new things, making “real” money, and, at last check, was very happy in her new digs. In addition to Jenelle, Allison Mrotek successfully defended in April, did a brief stint at an oil services company, and is now full time at Los Alamos National Laboratory. She joins Steve Levesque, Nick Butterfield, and Jacob Buettner from the Ramos research group. Looks like the Ramos group will be taking over the lab soon, bummer Pinky. She may still be down here but was planning to move north soon. She was hired to operate a Neptune mass spectrometer so her background with equipment seems a critical aspect to her scoring her new job. Ramos is hoping to get Jake or Nick to come down and talk with the Ramos group soon.

Additional updates on past graduates includes Sean Scott (NMSU, 2012), er Daddy Sean Scott. After defending his thesis, Sean obtained his PhD at the University of Wyoming in 2018 and went on to operate a Neptune mass spectrometer at the Wisconsin Department of Health. Last year, he accepted a job at the Pacific Northwest National Laboratory in Hanford, Washington. He and Veronica have been in Washington for about a year now and Sean is operating a Neoma Mass Spectrometer, which is the next generation of the Neptune line. He was hosting a technician named D.r Criss Coath from Durham University recently. Criss was a post-doc at UCLA when Ramos was getting his PhD so I am sure there were plenty of ex-advisor stories. Another example of how small the Geology world is.

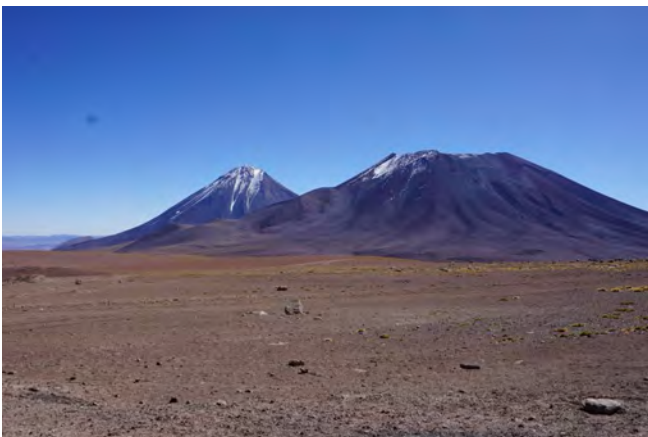
In addition to his students, Ramos also has been busy. He still organizes the “Geochemistry” side of the annual GSA meeting and continues to sit on the NMGS Foundation Board. He will be giving another Hunga talk at AGU in December and he is hoping to get to the Azores this summer. Ramos also joined alumni Gary Michelfelder in Chile this past May. He spent 2 weeks visiting a range of volcanoes in the Andes (and also got the truck stuck on the slide of a steep slope). The Andes are very different than the Cascades though. At one place, there were up to 8 volcanoes well within sight that were either active or recently active. There are a lot of volcanoes in the Andes! Gary and Ramos were also able to interact with researchers from Chile and may host some of their students here at NMSU next year. Gary was recently made an endowed chair and has a big group of students at Missouri State in Springfield. He graduated in 2009 after doing an MS with Dr. McMillan and has been very successful since getting his PhD at Montana State. Hopefully more fun trips are in the future.

# Faculty Profile: Dr. Frank Ramos (cont.)

In addition to Ramos group research activities, the Johnson Mass Spectrometry Laboratory was humming along. Ramos submitted a research proposal to the DOE with a range of engineers to expand NMSU capabilities in training students for the nuclear industry. Within it, there is a request for a new magnetic sector ICPMS that, if funded, will be installed in the Johnson Lab. So keep your fingers crossed and maybe the lab will be expanding capabilities in the near future. Unfortunately a NMSU power outage back in May took out our Neptune control computer and it took 4 months to get a part to fix it. It is now humming along but the sample backlog is brutal. If you visit, ask for a lab tour but be careful, Ramos has a habit of training visitors to operate the machine and analyze lab samples. Since COVID settled down, our lab visitors have been arriving again. Amanda Semanko (MS, 2020, NMSU Anthropology) analyzed Macaw bones from Mimbres sites in Arizona and Debarati Banerjee (NM Tech) analyzed neodymium and dysprosium from hydrothermal experiments. More visitors are scheduled for Christmas break.

This letter concludes with some sad news. Ramos' advanced field mapping Professor at UCLA, and friend, Dr. An Yin unexpectedly died in July. He was in the field with students at Poleta Folds and had a fatal heart attack. He leaves behind his wife Sandy and two great kids. He successfully advised many graduate students that are now professors across the US (and world) and will be dearly missed. Ramos looks back to the good times we had mapping in the Mojave Desert and appreciates the time he spent with us (every other weekend for 2 quarters!). Dr. Paul Kapp, one of his advisees who is now a professor at University of Arizona, gave a great memorial address at a recent UCLA retirement gathering for Mark Harrison and Kevin McKeegan. It was heartfelt and Paul will visit us for a colloquium talk here next April so put it on your calendar. An, Mark, and Kevin were all very supportive of Ramos while he pursued his PhD at UCLA. We all have folks that supported us in the past. Make sure to thank them if you get the chance as the Department has had many influential professors including Bill Seager, Russ Clemons, Tom Giordano, Greg Mack, Tim Lawton, Kate Giles, and more. Such events allow an opportunity to look back and appreciate the effort and time that mentors give to all of us. With that the Ramos group hopes for the best in the new year and visit if you can make it back to the department.

Sincerely,  
Ramos Research Group



Picture showing Lincancabur volcano in the background and his “brother” volcano Juriques in the foreground. Lore indicates that Lincancabur beheaded his brother for being disrespectful to his elders. Note both reside in the Atacama Desert.



Picture of Mount Teide and Pico Veijo protruding from the Las Canadas caldera, Tenerife Island, Canary Islands.

# Faculty Profile: Dr. Jennifer Thines

After two years with the department as a Visiting Assistant Professor, I am very excited to join this semester as tenure-track faculty! I will be teaching Introduction to Rocks & Minerals (GEOL 1150, Fall semesters) and Mineralogy & Optics (GEOL 312, Spring semesters) as well as graduate courses related to volcanology/geochemistry/mineralogy. Last spring, I took undergraduate students from GEOL 312 and some graduate students to the Tucson Gem & Mineral Show for the weekend where we had a great time looking at the beautiful mineral specimens (and of course we had to take some of those home with us). Graduate students in my Volcanology class got to check out our amazing local geology with field trips to the Potrillo Volcanic Field (PVF), Robledo Mountains, and Doña Ana Mountains. The course culminated in a trip to Aden Crater (PVF) where they catalogued the various rock and flow textures before trying to figure out what an eruption of that magnitude would look like in Las Cruces.

This last year I had the pleasure of advising two of our undergraduate students, Teresa Dominguez and Mikayla Earnest, on research in the PVF. We collected samples from Black Mountain, Little Black Mountain, and Santo Tomas, a series of cinder cones and lava flows just south of Las Cruces near Mesquite and Vado along the eastern margin of the PVF. Teresa and Mikayla separated feldspar and olivine crystals for analysis on the Electron Probe Microanalyzer (EPMA). They both prepared posters for the New Mexico Geological Society (NMGS) Spring Meeting in April 2023. They have now both graduated - Teresa began her graduate studies at the University of Alabama and Mikayla is working in environmental engineering and remediation.

My research broadly aims to understand the storage conditions and formation mechanisms of magmas using a variety of whole rock, mineral chemistry, and geochronology methods. Locally, I am investigating the origin of the previously mentioned cinder cones and flows from the Potrillo Volcanic Field, a project I hope to continue with more undergraduate and graduate students in the future. I am also seeking a graduate student to study the origin and geochemistry of rhyolite pipes and hydrothermal mineralization in Catron County near Datil, NM. Another major focus of mine is the formation of large-volume silicic magmas from the Afro-Arabian province. Here I am mainly interested in the relationship between a series of ignimbrites and the flood basalts of Yemen and Ethiopia as well as the timescales of magma assembly. While field work to the study area in Northern Yemen is unfortunately impossible at this time, future students and I will continue the tried-and-true tradition of scouring through rocks in the basement and field photos to get the job done. I am also collaborating with researchers from the University of Auckland on the 2022 Hunga Tonga-Hunga Ha'apai eruption and researchers from Harvard on the exceptional soft-tissue preservation of trilobites from upstate New York.

New Mexico truly is a dream location to study geology (particularly volcanology!) and I'm looking forward to the years to come with our wonderful students, alumni, and faculty.



Left, Aden Crater.

Above, Black Mountain

# 2023 FIELD CAMP



Upper left and right: San Lorenzo Canyon. Left, Bailey Schafer and Luke Parrott cooking a meal. Right, Teresa Dominguez collecting field data. Below, Frank Ramos explaining the Valles Caldera eruptions.



# GSA ANNUAL MEETING: PITTSBURGH



Above, from left to right: Amy Weislogel (MS '01), Gary Michelfelder (MS '09), Jennifer Thines (BS '16), Nancy McMillan (BS '79), Brittani Thompson McNamee (BS '08), and Shay Ridl (MS '19).

Below left: Brian Hampton with Michael Whiting (BS '19). And at lower right, Bailey Schafer (2nd from left) and Camila Mejia (far right).

# NMSU FALL FIELD CONFERENCE



# MISCELLANEOUS STUDENT PHOTOS



Top left: Leo Kuyl. Top right, Zach Betta. Middle left: Thomas Valenzuela. Middle right: Brian Hampton pointing out key features. Lower left: Brian Hampton with Alexis Salmeron. Lower right: Leo Kuyl. Photos by Lee Hughes.

## Giving Tuesday is November 28, 2023

Giving Tuesday is a global celebration of the many ways that everyone can help organizations meet their goals. It's a time of giving back to the communities that have given to you. Please consider a gift to one of the Geology Scholarships, especially these highlighted funds.

### Southern Rift Institute

The Southern Rift Institute was created to provide support for graduate and undergraduate field-intensive geologic research projects in the Southern Rio Grande rift.

Your gift will be used to pay for research costs associated with student thesis projects.

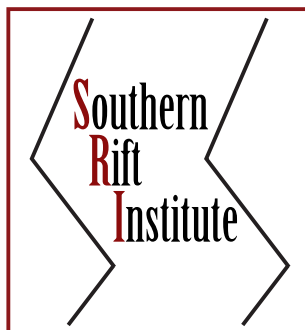
Online Donations Link:

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### Geology General Scholarship Fund:

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### Geology Field Teaching and Research Fund

Your gifts to this account will allow us to pay for a new vehicle to replace the one that was stolen.

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Thank you for your continued support of the department, and thank you for considering a gift to the department this Giving Tuesday.



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Dr. Hampton's annual field trip to Mescal Canyon near Truth or Consequences. Photo by Lee Hughes.

