



News from The Department Chair

Greetings from the Geology Department! We are all wrapping up a busy and productive fall semester and looking forward to the holiday season. The past year was full of memorable activities, events, and collaborative work efforts that I will elaborate on in the next few pages.

The Geology Department (and Cal Poly Pomona) are in the midst of the second year of our new the semester system. Last year was challenging for all as we adapted to a very different calendar that included an early start date during the heat of summer (mid-August) and 16 weeks of instruction per term, instead of 11. The extra time off (2 weeks) in January and earlier graduation date (mid-May) have been welcome changes for most of us. We are all reworking our laboratory courses to include 50% more contact time than in the old quarter system. This has been good for student learning (more time to develop important concepts) and has allowed faculty flexibility to design new learning modules. It also means more papers to grade, but through this process we certainly have ample opportunity to assess student learning and make adjustments or corrections for the next round.

Our faculty cohort continues to mature and grow. Dr. Stephen Osborn was promoted to Full Professor last Spring. Dr. Nick Van Buer has applied for tenure with promotion to Associate Professor. It is hard to believe has already been with the Department nearly six years. Likewise, Dr. Bryan Murray is in the middle of his 5th probationary year. Next August we anticipate addition of a new faculty member, in the specialty area of Remote Sensing / Geospatial Analysis. We were recently approved to conduct our first faculty search in 5 years. Dr. Jascha Polet and Stephen Osborn are co-chairing the search committee—more details are presented later.

We are pleased to learn that our graduates continue to find gainful employment in the geoscience industries, and several are excelling in graduate school. Later parts of this document provide brief notes on such alumni accomplishments. Please keep sending us periodic updates—your colleagues from the past are always eager to hear news about their friends. These tidbits also jog the memories of your professors from those good old days.

Generous contributions from alumni continue to support the mentored student research components of our Department mission. During the past year, alumni donations were important in offsetting the costs of student travel to conferences such as Cordilleran GSA meeting in Portland, the Southern California Earthquake Center (SCEC) conference in Palm Springs, the national GSA meeting in Phoenix, and the upcoming AGU (American Geophysical Union) meeting in San Francisco. It has been especially fun to sit in the audience and watch our students present their first professional talks or listen to them explain the merits of their posters to interested scientists. Alumni funds also helped our students obtain thin sections and analyze rock or water samples for senior and MS thesis projects. All of us are much appreciative of your patronage.

We hope you enjoy reading this **27th Edition** of our **Mylonite Newsletter** as you relax with family and friends over the holidays. We in the Cal Poly Pomona Geology Department want to wish everyone excellent health, good fortune, new achievements, and continued happiness in the New Year. In keeping with previous publications, let's kick this publication off with a group photo of the GSC 3330L Structural Geology class in Anza Borrego State Park, well-known for superb exposures of the Holocene San Jacinto fault system:



Structural geology students at the mouth of Glorieta Canyon. Outcrops of Borrego Springs shear zone are to the left; the active Coyote Creek fault scarp and Coyote Mountain are in the near background; the active Clark fault and Santa Rosa Mountains are in the far background.

Peter Valles Article

Alumnus Peter Valles (BS,1983) was recently featured in the College of Science alumni newsletter. Peter is a long-time supporter and benefactor of the Geology Department and is the primary funder of our annual award that has been renamed the Valles-Henderson Scholarship on recent plaques. He frequently makes a special trip to southern California to attend our alumni reunions. Thank you, Peter, for your continued engagement with the Department! Below is a link to the article: <https://www.cpp.edu/~sci/Newsletter/alumnus-peter-valles-helps-others-reach-higher.shtml>

New Faculty Search

Last spring we were approved for our first faculty search in 5 years. Drs. Polet and Osborn are co-chairing the search committee and have filed the required documents including a position description in the specialty areas of **Remote Sensing / Geospatial Technology**. We are actively seeking applications from persons with PhDs in related disciplines. The ideal candidate will be able to utilize our newly purchased ground-based LiDAR system (described below) in their teaching and research. Here is a link to the job announcement: https://www.cpp.edu/~sci/geological-sciences/docs/gsc-posdesc_edicc_acc.pdf

If you know of persons with appropriate backgrounds and skill sets, please encourage them to apply before the **December 30, 2019 deadline**. We plan to conduct telephone interviews in early February, followed by campus visits and interviews of finalists.

New Equipment Purchases

Several major equipment items approved or purchased at the end of the previous cycle have been utilized extensively over the past year. These new purchases are enhancing our research and mission while providing the most modern learning experiences to our students. Below are a few details and related photos:

- **LiDAR ground-based surveying system** (\$100,000)—A lottery proposal written by Dr. Nourse was funded in April 2018 to purchase a ground-based LiDAR (Light Detecting and Ranging) system for use in several of our field courses. After arranging on-campus demonstrations from four vendors, we decided to go with the **Polaris LR** model manufactured by Teledyne Optech. This tripod-mounted instrument uses a laser to scan landscape as distant as 2000 m and creates high resolution topographic images from the reflections received. Last July, Geology faculty participated in a training session that included a survey of mid San Antonio Canyon, followed by intensive software manipulation of the acquired data. Drs. Van Buer and Polet have been using LiDAR this fall to map fault scarps produced by the July 2019 Ridgecrest earthquake (see photos below):

Li-DAR training session in San Antonio Canyon



Dr. Polet's GSC 4910L class near Ridgecrest, surveying recent ground ruptures.





Dr. Van Buer's GSC 5030L class surveying a different area near Ridgecrest.

Our LiDAR equipment can also be used to delineate marine terraces obscured by vegetation and monitor changes in topography over time caused by active slope movements, flooding, and erosion. The associated software allows one to calculate volumes and generate topographic profiles and 3-D images of the landscape.

- **Seistronics Seismic Refraction system** (\$25,000)—Last fall the Dean approved Dr. Polet's proposal to purchase a new seismic refraction system to upgrade her existing seismic surveying equipment. The new system allows capability of using longer arrays of geophones and running two surveys at once.



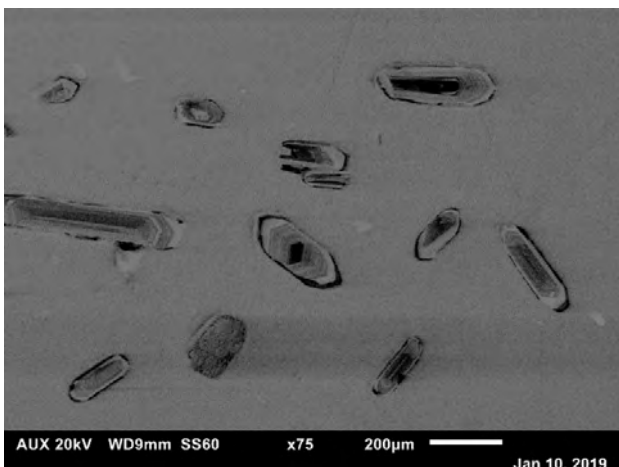
As before, the seismic source is a student-powered sledge hammer.

- **Pelcon Point Counting Systems** (\$20,000)- Drs. Nourse and Murray were awarded a \$15,000 SPICE (Special Projects for Improving the Classroom Experience) grant to purchase 3 automated point counters for our courses that teach microscopic petrography (Sedimentary Geology, Igneous-Metamorphic Petrology, and Mineralogy). Dean Baski augmented the purchase with \$5000 so we now have four systems to facilitate quantitative determination of mineral modes in thin sections. Dr. Murray's students have been utilizing the equipment in their GSC 4230 lab this fall.



Our Pelcon point-counting system, with one of the new Nikon microscopes.

- **New Nikon Petrographic Microscopes** (~\$32,000)—We are grateful to Dean Baski for finding funds to purchase four more microscopes for use in our Mineralogy and Petrology lab classes
- **Gatan Mini-Cathode Luminescence Imaging system** (\$20,000)—This is an add-on to the JEOL scanning electron microscope housed in the College of Engineering, Building 9. It creates high resolution images of our zircon mounts prior to U-Pb analysis at Stanford or Northridge. Resulting photomicrographs illustrate magmatic zonation as well as core-rim relations within individual zircon grains that allow one to select specific spots to target with the ion or laser beam.



CL image from our new system showing magmatic zonation in zircons from biotite granite sample JNKV 1810 that turned out to preserve a crystallization age of 146.7 ± 2.7 Ma

- **HP DesignJet Poster Printer** (\$5000). Faculty and students are pleased with the quality of recent posters and maps produced by our new large-format printer. The unit purchased last December at a much lower cost through Amazon turned out to be damaged, so we went with a direct purchase from HP, Model T1700. This replaces the poster printer acquired in the late 1990's and has capability to create documents as wide as 48 inches. Our students are using this machine regularly to print presentations for conferences, senior projects, and classroom assignments.



New HP poster plotter housed in 4-A-626.

Geology MS Program Invites Applications

Our MS program welcomes applications from Cal Poly Pomona Geology alumni—many have been successful graduate students in the past despite juggling external work and family commitments. Some examples include **Andrew McLarty** (MS, 2014); **Logan Wicks**, (MS, 2014),

Hannah Mejia (MS, 2014), **Josh Sargent** (MS, 2014), **Celia Pazos** (MS, 2014), **Suzan Perez** (MS, 2015), **Ken-nis Ho** (MS, 2015), **Shawn Morrish** (MS, 2015), **Rachel Hatch** (MS, 2015), **Raymond Ng** (MS, 2016), and **Ken Craig** (MS, 2017). It seems that earning a BS degree from CPP Geology Department provides excellent preparation / work ethic for completing a Master's degree. Several recent Geology BS graduates are currently active in our program and making good progress on their theses. These include **Michael Dykstra**, **Alyssa Young**, **Peter Flores**, **Ashley Rivera**, **Kyle Macy**, **Stacey Petrashek**, **Craig Manker**, **Chloe Sutkowski**, **Thein Htun**, **Paula Soto**, **Andrew Garcia**, **Nicole Gage**, **Rob Ellis**, and **Reggie Agunwah**.

The application deadline for Spring semester (2020) has passed, but the Fall semester 2020 application cycle remains open until **April 1, 2020**. Early application is strongly encouraged to allow time to arrange financial aid and Teaching Associate appointments. Details of the MS program, including admission requirements, curriculum and instructional plan for the next three years may be viewed at: <http://www.cpp.edu/~sci/geological-sciences/masters-program/index.shtml>

Please check out our MS Thesis archive at <http://www.cpp.edu/~sci/geological-sciences/masters-program/thesis-archive.shtml> to access PDFs of all Geology MS theses completed to date.

How to Apply:

- Apply online through <https://www2.calstate.edu/apply>
- **For prompt feedback, also** send hard copies (or electronic files) of your application and supporting materials to:

Jonathan Nourse, Graduate Coordinator;
janourse@cpp.edu
 Department of Geological Sciences
 3801 W. Temple Avenue
 California State Polytechnic University
 Pomona, CA 91768

New Recruiting Efforts

Last year with Dean Baski's support and the assistance of Dan Griggs, College of Science Events Coordinator, we initiated a concerted drive to recruit new Geology majors at the high school level. The Geology Department has long gained most of its majors from community college transfers; freshman applicants are typically slim due to the fact that Earth Science is usually not taught in our local high schools. Our brochure has been redesigned by Geology faculty (see the link below): <https://www.cpp.edu/~sci/geological-sciences/docs/geologybrochurefinaloct2019.pdf>

In early November we mailed the brochure along with a letter of invitation to a large group of SAT takers who indicated geoscience as a preference. Many thanks to **Monica Baez** and student assistant **Brianda Hernandez** for their effort to send out some 1300 letters at short notice!

Last spring, Geology faculty and majors hosted open houses to the latest pool of admitted students, and presented a series of recruitment talks at local community colleges. Volunteer efforts of **Manny Vejar**, **Jessica Valenciano**, **Brianda Hernandez**, **Mary Gabito**, **Jed Villafuerte**, and **Evan Quo** are much appreciated!

If you enjoy pictures of students in action, there are many more posted on our student-run Geology Department Facebook site: <https://www.facebook.com/geology.csupomona>. This site is not officially censored by us, but Drs. Polet and Marshall provide occasional updates with news and images of various Geology exploits.

Personal News from Dr. Nourse

2019 has passed faster than usual, perhaps because of a four-month Spring semester sabbatical that seemed to evaporate in lightning speed. The year began with two weeks of crushing and pulverizing rocks, separating zircons, and creating /imaging epoxy mounts for multiple sessions of U-Pb zircon analysis. I took separate trips to Stanford University's SHRIMP laboratory in late January and mid March, followed by three additional multi-day sessions at the CSUN LaserChron laboratory in May and June. The assistance of **Frank Wille**, **Karissa Vermillion**, **Mike Dykstra**, **Vanessa Pena**, **Greg Blachly**, **Nick Van Buer**, and **Mark Thompson** with this intensive lab work was much appreciated! New U-Pb geochronology data from 25 rock samples collected in the Rand Mountains, Placerita Canyon, and Limerock Canyon are now fully reduced and ready for publication. Several new manuscripts are in the works, including a field trip guidebook for a trip I will co-lead for the forthcoming Pasadena Cordilleran GSA conference. Former CPP student **Karissa Vermillion** (BS 2018; now an MS student at New Mexico State University) and I presented preliminary results from Placerita Canyon and Limerock Canyon in back-to-back talks at the recent Phoenix GSA meeting.

Interspersed with the sabbatical laboratory work and thin section analysis at home were multiple geological mapping trips (20 days total) to the areas mentioned above, as well as a new field area—the type locality of Johannesburg Gneiss that likely represents the source of sheared out rocks in Plate II of the Rand thrust (a target of many GSC 4910L and GSC 5030L classes that many will remember). These trips provided a refreshing break in routine for me

and my faithful field assistant, Gordie; also my other assistants **Michael Dykstra**, **Frank Wille**, and **Mark Thompson**. Below are some memorable photos:

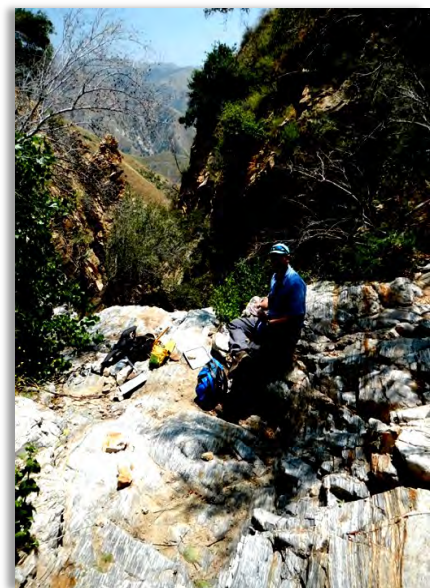


My faithful companion, Gordie at a remote January camp in the Rand Mountains.



Field assistants Frank Wille and Gordie on a foggy May day, collecting Cretaceous granodiorite sample JN 1933 (83.7 ± 0.8 Ma) on Limerock Peak.

Field assistant Mike Dykstra overlooks a major waterfall impediment in Limerock Canyon.



It was fun to spend a day in the field last August with **Dr. Larry Herber**, Professor Emeritus. We drove out Glendora Ridge Road, then up the Sunset Ridge Road to study several roadcuts and discuss evidence for landslides and faulting in this area. Our trip concluded with a stop in Mt. Baldy Village upstream from the Buckhorn restaurant, where we viewed Oligocene and Miocene dikes intruded into various components of the Vincent thrust mylonite, including the sample locality of a 1674 Ma augen gneiss. Larry is still very active and spry at the age of 82; I wish I had taken a photo of him wading across fast-flowing San Antonio Creek to access the geology. Below are a few pictures to commemorate this trip.



Drs. Herber and Nourse at the overview switchback on the road to Sunset Peak. Mt. San Antonio, Thunder Mountain and Telegraph Peak are in the distance.

Dr. Herber and Gordie stand in front of a nice exposure of the Sunset Ridge fault where it intersects Glendora Ridge Road.



Dr. Herber and Gordie provide scale for a landslide exposure along Sunset Ridge Road (the site of Logan Wicks' 2009 senior project).

I am proud of the research efforts of a new crop of students with whom several productive field days have been accomplished. **Mark Thompson** is finishing his Senior Thesis mapping endeavor in Claremont Wilderness Park. After collecting several rock samples, separating zircons, and preparing mounts, Mark was accepted into a summer geochronology workshop at CSUN where he learned the latest laboratory techniques. In one long day, he was able to analyze 375 zircon grains for U-Pb ages! Incorporating previous work by me and Wayne Premo and Karissa Vermillion, we are fast developing a new interpretation of the tectonic evolution of the Potato Mountain Block. MS student **Craig Manker** is making great progress on his study of the Blue Ridge block that will include geological mapping, assessment of detrital zircon provenance, and kinematic analysis of late Cenozoic faulting. And graduate student **Andrew Garcia** is developing a forensic analysis of two recent landslide events on the Mt. Baldy Road. He has measured a nice data set of fracture orientations that bear on slope stability in this area

Gordie the dog brings me much joy each morning with his wagging tail and happy face. He continues to be a great field and driving companion, and is always up for a walk or jog at any time. Gordie has developed a fair amount of patience when I stop to make field notes or collect rocks for age dating—although he still doesn't see the point of it all, at least he doesn't bark at the rock hammer any more. Rewarding him with a good Bar-B-Q and steak dinner at the end of a productive field day seems to help. Phyllis and I are always expanding Gordie's formal training and competitive instincts through agility and field trials.



Gordie enjoys a February snowfall along Chapman trail below Telegraph peak.

Gordie examines a sharp intrusive contact between an Oligocene dike and Mylonite of the Vincent thrust.



Gordie takes a well-deserved rest break on the quartz diorite of Los Pinitos Canyon (78.1 ± 1.7 Ma).

Currently I am wrapping up the Structural Geology course (GSC 3330; taught on a bi-annual rotation with Dr. Van Buer), and awaiting submission of student maps from my advanced geological mapping class (GSC 4910L Field Module). The Structural Geology group has taken separate day trips to Glendora Ridge and West Fork San Gabriel Canyon, and a 3-day field excursion to Anza Borrego State Park. My field module students have completed their field work at two sites, investigating a faulted Neoproterozoic unconformity at Wildhorse Meadows of the San Bernardino Mountains, and a metamorphic sequence at the type locality of the Johannesburg Gneiss.



Part of the GSC 3330 students measure fold hinges and axial planes in Proterozoic gneiss exposure on the north side of the west fork San Gabriel River.

GSC 3330 students measure folds on south side of the river as others plot data on stereonet.



Structural geology students stand on a tilted nonconformity that forms the bottom of the Hawk Canyon half graben.

Finally, I almost forgot to mention the Fall conference ceremony where I received my **30 year service pin**. A few of you may recall when I started teaching for the Geology Department in 1989. Those days of teaching GSC 111, GSC 101, GSC 250, SCI 212, GSC 444, and GSC 360 seem like only yesterday. Not forgotten are many fond memories of students from that generation.



Celebrating 30 years of service at Cal Poly Pomona. To my right are Pearl Viggers and Sharon Cruise, staff members in the College of Science and a staff person from College of Engineering.

In closing, I hope you all enjoy the Christmas season, and wish you the best of health and happiness in the New Year.

Student Successes

Dean's List, 2018-19

We just received a list of Geology majors who made the dean's list last year; completing at least 12 units and earning a GPA of 3.5 or better in their course work. Congratulations to the following hard-working students for their academic excellence!

Fall Semester, 2018:

Matt Davis
Emily Duran
Rathana Sambath
Jared Ruiz
Margaret Grenier
Noah Porges
James Thompson
Sydney Le
Randall Lewallen
Mary Gabito
Nicolas Madera

Daniel Wright **Spring Semester, 2019:**

Danielle Whitfield
Rebecca Warner
Kristin Kulikoff
Laura Abbott
Jackie Zuniga
Nadia Guajardo
Emily Duran
Manny Vejar
Christopher Kimbrough
Jennifer Hamel
Margaret Grenier
James Thompson
Sydney Le
Megan Ward-Baranyay
Randall Lewallen
Mary Gabito
Nicholas Madera
Daniel Wright
Paul Gresoro
James Albritten

Graduation, 2019

I missed this festive event due to sabbatical. However, from the photos below (captured from the Department Facebook page) it appears that **twenty three** Geology majors and **four** MS students participated in commencement that took place earlier than usual this time (May 12) due to semesters. Dr. Osborn congratulated the students on the stage in my place while Drs. Marshall, Polet, Van Buer, and Murray lent their support from the aisles.



Most of the 2019 graduating class; with Geology faculty in the rear.



Another view of our majors from the main seating area.

2019 Alumni Reunion and Student Awards Ceremony

This event I was able to attend and take a few photos. Geology club and Geology faculty hosted a Bar-B-Que / picnic at Cahuilla Park in Claremont on May 11. It was fun to visit with our alumni, emeriti faculty, and friends including **Kevin Rosso ('92), Ken Craig (MSc '17), John and Gerry Klasik, Larry Herber, Alison Baski, and Anne-Marie Katze.** Below are a few highlights:



The winners of this year's raffle were Manny Vejar ('19), Jessika Valenciano ('18) and Ken Craig (MSc '17)



Dr. Polet says a few words about Peter Flores, recipient of the Geophysics award.



Nathan Pulver receives the \$1000 Ernest Prete Environmental Geoscience award.



Dr. Osborn presents the Valles-Henderson academic excellence scholarship (\$1000) to Mary Gabito.



Drs. Van Buer and Murray present the Peter Valles field mapping award to Mark Thompson and Ben Rucker



Dr. Polet presents the \$750 Margaret Van Buskirk award to Margaret Grenier.



Rachel Kreuziger ('19) and Manny Vejar ('19) receive the Peter Valles AGI Glossary Award from Drs. Murray and Van Buer.



Shane Bonanno ('19) and Emily Duran receive this year's Peter Valles Field Notebook award.

Vanessa Pena, Adan Renner, and Matt Davis were chosen for the Peter Valles Rock Hammer award.



Finally, Faculty selected **Jennifer Hamel** as this year's recipient of the Randal Burns Brunton compass award. Jennifer was unable to attend the alumni event, but we caught up with her later.

2019 News, Updates and Photos from Alumni and Friends

Below is the latest news from our active alumni and friends. We have pieced together various notes from fragments of emails, phone calls and other communications received over the past year. We are always interested to learn what you all are doing—please send me or Monica (mlbaez@crr.edu) an update anytime you have a few free moments. Photos are always welcome. Jon Nourse

Reggie Agunwah (BSc '08)

Reggie celebrated another work anniversary as Engineering Technician with the **City of Riverside**. Congratulations, Reggie!

Deanna Anelli (BSc '16)

Deanna has started a new position as Administrative Aide at **ThyssenKrupp**.

Brenda Ballesteros (BSc '17)

Brenda has started a new position as Staff Geologist at **Parsons Corporation**.

Ken Craig (BSc '15/MSc '17)

Ken stopped by the office a couple weeks ago, but I missed him. Catching up, on the phone, it's good to learn that he is now a Quality Specialist at **City of Hope Cancer Research Center**.

Caleb De Silveira (BSc '18)

Our Engineering Geology instructor, Ernie Roumelis, recently bumped into Caleb at a job site in Riverside. Caleb is working with **Southwest Geophysical**. That particular day he was working on a REMI seismic refraction-microtremor study to determine shear wave velocity of the local ground.

Ashley Espinoza (BS '16)

Ashley recently reached out to us and let us know that she is currently prepping to apply to take the Fundamental Geology exam next spring in New York. Sounds like she is doing quite well and we wish her the best of luck with the exam!

Darrin Hasham (BSc '01)

Darrin has left Kleinfelder and taken on a new position with a small geotechnical firm in **San Luis Obispo**. Speaking with him on the phone a couple of times, and Darrin seems really happy with the change of venue; also, the additional flexibility and responsibility that comes with the job. As a regional president of AEG (Association of Engineering Geologists), Darrin helped host another big conference at Kellogg West last November 8, focused on the recent Ridgecrest Earthquake.

Rachel Hatch (BSc '14/MSc '15)

Rachel visited us in early December to present a special seminar on her research related to earthquake swarms in the Walker Lane, Nevada. Rachel is currently a PhD candidate at the **University of Nevada, Reno**.

Tony LaBeau (BSc '18)

Tony started a new position in July as Geologist at **Geolabs Westlake Village**.

Jeremy Lancaster (BSc '00)

Jeremy was promoted last January to Regional Geologic Mapping Program Manager at the **California Geological Survey**. He and his family have been living in the Sacramento area for several years. Jeremy still races his bicycle when he can find time the time. He has been with the California Survey for 13 years. Many congratulations, Jeremy!

Lucas Lenhart (BSc '15)

Luke has started a new position as Programming Co-Chair at USC Alumni Veterans Network.

Larry James Martin (BSc '18)

Last August, Larry was hired by the **Army Corp of Engineers** to work in their Geology division under the supervision of Marc McLarty. It sounds like he is logging many hours in the field and loving it. We recently connected with Larry to retrieve a large donation of firewood for our Geology field trips. Many Thanks, Larry!

Andrew McLarty (BSc '00/MSc '14)

After many years with TetraTech, Andrew has joined the **Army Corp of Engineers** where he is working in their Engineering Geology division out of the downtown LA office. Andrew enjoys commuting by train to the office. Congratulations, Andrew!

Steve Mulqueen (BS '78)

Stephen Mulqueen, '78, retired in 2009. My career in geology began in June 1978 when hired as a Geotech for American Borate Company (ABC) at their Billie Mine located in Death Valley. Between 1979 – 1982, I was employed as a geologist at Kerr-McGee Chemical Corp.'s Searles Lake solution mine. By 1982, opportunity again resurfaced when he began a lengthy career with the State of California, Division of Oil & Gas at their Ventura office. During 2005, I was promoted to the position of Associate Mineral Resources Engineer with the California State Lands Commission in Long Beach. I retired in 2009 after 28 years with the State of California.

I continue to keep busy with projects related to public outreach. Projects include PowerPoint lectures, leading field trips and writing professional articles related to geology, paleontology, mining history and desert history. The year 2019 involved the leading of the 4th Annual Fossil Trip for the Southern California Paleontological Society during a 3-day weekend in April. This year's adventure included collecting trilobite fossils in the House Range and Ammonite Fossils in the Confusion Range located west of Delta, Utah. The group also enjoyed collecting fossils in the St. George area in southwestern Utah.

I keep busy with volunteer work at several museums including the Mojave River Valley Museum, Barstow, the Shoshone Museum, Shoshone and the California Oil Museum in Ventura. Museum exhibit work is related to desert history, geology, petroleum history and/or mining history. Steve feels fortunate to provide input and to prepare exhibits that will continue to educate museum visitors for years to come. One exhibit at the Shoshone Museum is dedicated to the field work of geologist Levi Noble who worked extensively during the early 1900s on the San Andreas Fault, the Grand Canyon and the complex tectonics of southern Death Valley. Most of the 100-year old publications of Levi Noble in the exhibit were found and purchased by me for permanent donation. Two years ago, I gathered, assembled and labeled a rock collection for a teacher in Culver City, CA. The collection featured 88 rocks from the three rock groups with 10 fossil specimens. The hand specimens were mostly self-collected with donations from fellow rockhounds and geologists. With rocks, minerals and fossils, scientists get creative with methods of procurement, relying on personal rock piles from many locations.

I learned about the importance of hand specimens from a class titled "Hand Specimen Petrology", taught by Dr. Herber way back in 1976 or so. Just try to assemble a meaningful collection consisting of 98 hand specimens. It took me three months. The rocks have a lifetime guaranteed. I state I graduated from the "School of Hard Rocks" after 4 years of a "rocky road" at Cal Poly.

A thank you goes out to all of the dedicated staff at the Geosciences Department from 1974 to 1978 for providing me with the essential requirements to apply towards a lifetime in an exciting career. From the depth of Death Valley to public outreach after retirement, it has been a and continues to be a great adventure in science ...

Steve Mulqueen, '78



Bingham pit, Magna, Utah, world's largest open pit mine.



Steve on the Bonneville Salt Flats, Utah.



House damage after the Ridgecrest earthquakes, July 4th & 5th, 2019.



Southern California Paleontological Society, 4th Annual Utah Fossil Trip, collecting trilobites in the House Range, west of Delta.



Alex Mundo (BSc '15)

What's up GeoPoly!

Three years ago, I left California to take a challenge and moved on with a fascinating experience at one of the world's most renowned institutions for scientific research and exhibition, the American Museum of Natural History, here in New York City!

Living on the "East Coast" was a big transition for me. I was not looking for this shift, and neither was expecting to end up here, but I guess it just came to be. It was during my attendance and presentation of my Cal Poly undergraduate thesis at a GSA conference in Washington D.C. that I found out about a postgraduate program at this museum. So I applied and within a few weeks, I was in.

The reality is that when you're given a unique opportunity such as a full ride for a master's program in Earth Science education at the American Museum of Natural History, you take it! and that's exactly what I did. I left everything including my family, friends and assets to move on to begin a new journey at the Capital of the World.

My master's program was very intensive as I had to go Monday through Friday from 9am to 5pm, but I had the great opportunity to study in informal settings, go out in the field, teach at the museum and learn about geology in New York. I have had great experience such as teaching coding climate change to middle schoolers, traveling back in time by investigating fossils in different locations of the local area, working with other scientists and educator at the museum, among others. I graduated in 2017 (see picture on the right)

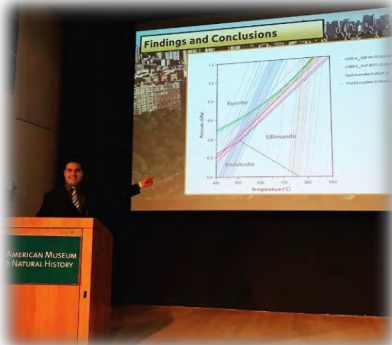
I have worked on different research projects at different occasions. One of the most valuable was my graduate research project which focused on mapping and interpret-

ing the lithological structures and glacial features, determine the mineral composition, and constrain pressure, temperature at peak metamorphism using different geothermobarometers when Manhattan was forming. Manhattan has so much geology exposure in parks, even though it's full of skyscrapers, so doing geology in New York City is unique.

Just earlier this year during summer I had the opportunity to do some more research upstate next to Canada, in Buffalo, New York, where I researched marine fossils that existed in local area including trilobites (see picture on the right). It was a great experience because I was able to classify these fossils and bring some samples that I collected there. In fact, I brought some samples so that some of my students could break them and do research with them as well, in a similar way as I did.

I am currently affiliated to the museum, but I'm also an Earth Science educator at a high school here in New York City, which can be challenging at times, but I'm always bringing my SoCal and Cal Poly geological experiences back in my discussions and teaching. I am enjoying my time here for now, I hope to come back to visit soon. The weather is getting colder now that we're approaching Winter.

I hope that everyone is doing well and want to wish a great end of the decade to everyone, wishing the best to everyone, wherever life takes us on the next decade! Also, merry Christmas and a wonderful 2020 to all!



Left—Alex presenting graduate thesis at AMNH. Below—Alex collecting fossils upstate New York.



Alex with students touching an Ammonite fossil



Clark Murphy (BSc '18)

Clark has completed about 18 months with **AECOM**, monitoring wells and supervising drillers. His primary job sites since spring has been Bakersfield. The commutes are long, but he seems happy. It was fun to visit with Clark when he joined my advanced mapping trips this fall in the type area of the Johannesburg Gneiss. Gordie was especially pleased with the quality of the steaks!

Celia Pazos (BSc '11/MSc '14)

Last Spring semester Celia returned to campus as an adjunct instructor to teach our Advanced Shallow Subsurface Geophysics lab (GSC 5640L). Thank you, Celia, for your efforts therein.

Jeff Pepin (BS '11)

In February 2019, I graduated with my PHD in Earth and Environmental Science with a specialization in hydrology. I now work as a Hydrologist for the U.S. Geological Survey in Albuquerque, New Mexico. I hope everyone is doing really well! (Congrats, Jeff and Good luck with your new career!)

Jon Perrenoud (BS '85)

It is with heavy hearts to inform our fellow Geology alumni and current community of the passing of one of our own. We learned of Jon's passing from his girlfriend, Sundee Proctor (thank you so much Sundee) and was told he passed in August of 2018 from liver cancer. She let us know that Jon often spoke of his college days and how much he loved his studies here. Just two months before his diagnosis they had gone to Franklin, NC to do some gemming and he was on cloud nine to have his hands dirty again and finding raw gems, even if the dirt was "salted." Sundee sent some photos to share with all of us (again, thank you Sundee). Rest in peace, Jon, you'll be missed.



Jon Perrenoud gemming in Franklin, NC.



Pattie Rose (Stephens) 1982-83 (GSc Minor)

This has been a busy year! There have been 7 Mineral/Fossil Collecting field trips this year with several clubs, with one more to go at the Red Cloud & Geronimo Mines near Yuma, Arizona, October 18 – 20. (Wulfenite, Vanadinite, Willemite, Calcite, Fluorite, Galena & Others). The evening of the 19th, I am leading a group through the tailings to collect Fluorescent Specimens. (I am a member of the Fluorescent Mineral Society, which meets in Tucson each February here in Tucson.) If my friends from the U of A attend, some of the fluorescents found may be added to the fluorescent minerals display in the soon to be opened, new University of Arizona Gen & Mineral Museum in downtown Tucson.

Many mineral specimens currently housed in the Flandrau Science Center & Planetarium, Mineral Museum on the U of A Campus will be moved to the new museum. This leaves room for Flandrau to expand its Paleontology section. In July, a member of the Museum's Board came to look at my specimens and was quite interested in my fossils (Dr. Berry would be proud.) So, perhaps some of them will go on loan to the museum when the time comes. I have also been added to their list of future docents and I am a "patron" level financial donor, so hopefully the museum will be opened on schedule in 2020.

We once again ran the NITRO Top Fuel Dragster, with my husband's boss at the NHRA Mile High Nationals, in Morrison Colorado, type location of the Morrison Formation. The racetrack is built right into the side of the Dakota Hogback. We qualified #11 out of 16 but went out in the first round when our blower belt broke, allowing the other car to pass us right at the finish line. (Lost by 3 feet!)

After the race, we went to the Dinosaur Museum in Morrison and I got to go into their lab and clean one small Stegosaurus finger bone out of the matrix, (one more thing off my bucket list). The week before, a Triceratops skeleton had been found in the area. We already had reservations for the remainder of our vacation. Too bad I couldn't stick around to help excavate it, (still on my bucket list).

We didn't come straight home. We made a trip to Rocky Mountain National Park, Glenwood Springs and Grand Junction, Colorado, enjoying grand vistas, museums and lounging in the hot springs.

Next, we headed into Utah and stopped by the Moab Giants Museum to check on the progress made concerning the Dino footprints I had found in 2018. I didn't send this in last year because these were in a very public accessible location (a photo pull out on the road to Canyon Lands

National Park), the find was kept quiet and the pull out closed until the tracks could be safely cut out of the sandstone and moved to prevent theft or destruction. Evidently, the tracks had been hidden under sediments/sand on the mesa top until a heavy downpour exposed them the day before I found them & reported their existence to one of the Utah State Geologists at the Dead Horse State Park. Upon looking at the raw version of the photo below, he freaked and called the BLM and the Moab Giants Museum to meet us at the site. The tracks are currently under study at the University of Colorado. A paper is in progress. I gave them copies of all my photos. My car keys will be forever memorialized, LOL.



Our next stop was Septarianville near Clawson, Utah. Here we collected several septarian nodules, (large & small weighing in at 225 pounds) and had fun with the claim owners who have invited us back to visit their Ammonite claim, featuring rainbow iridescent specimens often used in Ammolite jewelry. They do not break the small ammonites up, but instead wire-wrap them. So, I need to learn how to wire wrap before next summer.

Our last stop before heading home was Zion National Park, which included a stop at the lesser-known Kolob Fingers area and an off-road trek to Lava Point. From here you can look down into the canyon from the top. We continued through the main section of the park as my husband had never been there and spent the night in Flagstaff, AZ. before returning home. In all I took over 1,400 photos on this trip, not counting the 868 photos of the dragster & crew in action.

I am forever thankful for what I learned in the Cal Poly Geology Department. Even though I ended up with Geology as a Minor along with my Business degree, I still get many opportunities to use what I learned and expand my knowledge in the field. My advice to any student is the keep reading and stay current. Build relationships with other professionals and armatures by joining societies and

clubs. When you travel, look at the landscape and see what's really there. The possibilities are endless.

Kevin Rosso (BSc '92)

It was fun to reconnect with Kevin at the alumni reunion. I had not seen him since the early 1990s when he was one of our top undergraduates, completing a senior thesis on fluid inclusions under Dr. Jessey's tutelage. For quite a few years, Kevin has been Laboratory Fellow and Associate Director of the Physical Sciences Division at **Pacific Northwest National Laboratory** in Hanford, Washington. He made the trip down her last May to present a special seminar to the Geology Department. I was just perusing Kevin's resume, accessible at the link below. Quite an impressive research and publication record—it's good to learn that the Cal Poly Geology training has served him well! <https://www.pnnl.gov/people/kevin-rosso>

Gary Thompson (BS '90)

Dear Cal Poly, Pomona Geological Sciences Department, Over the last year or so, our family's main focus have



been on our son's GCSEs. As part of his English Literature studies, Felice and Gianpaolo went to London to see Christopher Eccleston play *M a c b e t h*. Gianpaolo finally took his exams in May, 2019 and did very well in all of them. He is now attending a nearby college, taking Sciences and Math. After his exams, Gianpaolo passed his Head Boy title to the next candidate. He then went to his school's Prom Night in a sleek, black Jaguar with some of his friends. Other arriving vehicles ranged from a vintage fire engine to an Aston Martin. In addition, we did some jobs around the house. And in April, Felice performed in a local dance show. During the summer, our town of Taunton hosted some of the matches for the Cricket World Cup. England enjoyed buoyant celebrations for the 100th Anniversary of the Armistice of WWI and the birth of the Duke and Duchess of Sussex's baby, Archie. Otherwise, it was an unusually turbu-

lent year. We had numerous BREXIT and climate change demonstrations and several prominent companies went into administration. We've seen a period of political animosity and paralysis; resulting in a temporary suspension of Parliament, a string of political resignations and the departure of, at least, one Prime Minister. In August, we went to the London Film and Comic Convention and then we flew off to visit the newly opened Galaxy's Edge in Disneyland. And, I did wear my Cal Poly shirt and cap! Even though we returned to London to find our car vandalised and endured a 12-hour drive home via tow truck, we still plan to return to California next summer for the Star Wars Celebration in Anaheim

Gary Thompson ('90)

Jessika Valenciano (BS '18)

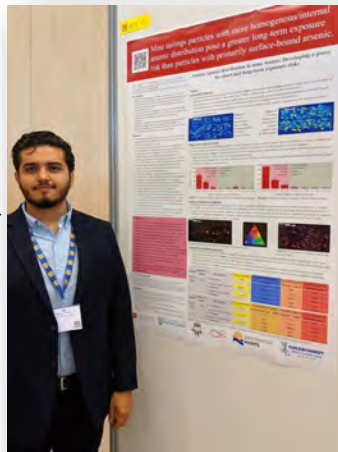
After graduating in June 2018, I spent a year working as the lab manager and senior research assistant for the Kim environmental Geochemistry Lab at Chapman University. This past August I presented my research on the bioaccessibility of arsenic-contaminated mine wastes at Goldschmidt 2019 in Barcelona, Spain. I am now pursuing a PhD at the University of Notre Dame studying lunar petrology, including Apollo 17 core samples that have remained unopened since they were collected on the Moon.

Ashley Varnell-Lusk (BSc '16)

Ashley recently celebrated a 6-year work anniversary at **Aera Energy LLC**.

Manny Vejar (BS '19)

After graduating last May (2019), I presented my research on Arsenic speciation and spatial distribution in mine tailings at the Goldschmidt 2019 conference in Barcelona, Spain, with the support of a grant from the Geochemical Society and the support of CPP Geology (thanks to Dr. Osborn!). I am now pursuing a PhD at the University of Notre Dame studying environmental actinide chemistry.



Manny Vejar's poster presentation at the Goldschmidt conference in Barcelona, Spain, 2019.

Oliver Wolfe (BSc '14)

Oliver has completed his PhD, and is now a postdoctoral research fellow at **Rensselaer Polytechnic Institute, Albany, New York**.

Jackie Zuniga Baldenegro (BSc '19)

Jackie has started a new position as Physical Sciences Laboratory Technician with the **Los Angeles Community College District**.

Scott Zylstra (MSc '17)

Scott is working for **Parsons Engineering** in Laguna Beach as Senior Geologist and Field Inspector with experience in construction management and tunneling.

Terry Watkins, Jr. (BSc '03), Lauren Carey-Wicks (BSc '09), Logan Wicks (BSc '10/ MSc '14), Russell Kyle (BSc '96)

Terry, Lauren, Logan, and Russ recently celebrated work anniversaries with **Geoscience Support Services, in San Dimas**. Groundwater continues to be an important commodity.

Staff News

Carol Vera Retirement

We don't have many retirements in the Geology Department, so let's close with a message of congratulations to **Carol Vera**. After a decade or so of similar work with the Kinesiology Department, Carol served as our part-time Administrative Support Assistant II for Geology between 2015 and 2019. Carol was the front person at the main desk in the Department office. She enjoyed working with our students and keeping their files organized. Gordie the dog also appreciated the many tasty treats she kept available. Last June we held a retirement ceremony in the Geology conference room (pictured below). Carol, we wish you all the best in your new life chapters!



Dr. Nourse congratulates Carol Vera on her retirement.

Emeritus Staff News

Rosalie Giroux

Greetings Geology Faculty, Staff and Students

Its been awhile since I sent news of my life in retirement from CPU as Administrative Coordinator in the Geology Dept. in 2006. Has it been that long ago? Unbelievable!! I always enjoy reading the Mylonite and keeping up with all those wonderful field trips you have and the news from the faculty, alumni and current student achievements!

My family is growing larger again. I now have 9 great – grandchildren, and 5 grand children. I have to count the pictures on the wall to remember them all! Ha ha. So its a grand total of 14!

Ray and I had a great cruise for our 25th anniversary to Mexico. His back is a big problem, but we managed to take the cruise leaving from Long Beach, so no air travel. Spent most of the time on the ship, but did take a couple of shore excursions in Puerto Vallarta. I was going to swim with the Dolphins, but got side lined by too many tequilas! Darn! We had fun on board though. Maybe next time I can swim with Dolphins! We do take trips to San Diego to see the kids, which he can handle well. We both ride the MegaBus to Las Vegas to see the kids too. Ray loves it, a big 2 story bus leaving from Riverside with free wi-fi and stops for lunch. All in all, its a 4 hour drive, and as long as he has food to eat on the way, he is a happy camper! Its cheap too, its about \$50 round trip for one.

As for me, I keep up with my club activities here, helping with our community outreach to seniors in need, etc. Also joined a couple of fun groups in Canyon Lake, LOL (Ladies of the Lighthouse) and the Garden Club. We take many interesting day trips to local gardens and learn a lot about plants and landscaping. With all the water restrictions

we have here, we try to keep our yards in desert plants.

At Christmas my daughter Robin and I took a wonderful Vantage river boat cruise up the Danube river from Budapest to Regensburg, taking in all the food,(the best weinersnitzle ever) Christmas markets, and walking tours of each city. This was the trip of a lifetime. I brought my down coat, boots and gloves. It was 4, 5 and 7 degrees the first few days there but later got up to 40, so the snow melted.

Viking and Vantage are owned by two brothers who are always in competition with each other according to ship gossip from the on board brother - owner of the Vantage line! Ha ha! Afr a 9 hour flight to Budapest we drove to Vienna to board our ship and have a much needed drink with the ship Captain. Next day in Bratislavia, we were treated to a demo on making apple strudel before our walking tour through the Christmas markets and took in a classical organ recital at a local French Gothic Cathedral. The next day we were in Austria, where we toured the Liechtenstein Palace, summer home of the Hapsburg Dynasty. So much gold and chandeliers it boggled my mind! The following day in Vienna we took in a majestic rehearsal of the famed Lipizzaner horses at the Spanish riding school, and in the evening we were treated to an exclusive private classical music concert and ballet at the Kursalon Music Hall, where Johann Strauss often performed. (The highlight of the cruise). The following day we explored the locale in Salzburg featuring The Sound of Music. On our last day we had a walking tour of baroque Passau, located at the confluence of the Inn, Liz, and Danube rivers.

We learned how to make “Lebkuchen” (gingerbread) at a demo on the ship. In Regensburg there was more tours of the city with its early Roman stone buildings, bridges, shopping and cathedrals dating back to the Roman Emperor Marcus Aurelius. Definitely got us into the Christmas spirit. I recommend you do this tour!

I hope you and all your family have a great happy and prosperous new year!

Rosalie & Raymond

Emeritus Faculty News

Dr. Larry Herber

Dear Alums, Students and Faculty,

Sorry! Recently I've been Mylonite -AWOL-. Lucy and I always looked forward to its arrival noting increased student opportunities and higher enrollments.

While “AWOL” we took a few cruises and observed sea stacks, caves and spits between L.A. and Mazatlán; glacial calving in AK; and the terrors of early 19th century slavery in the Mississippi Delta region as well as favorable aspects of construction in loess, (excavating caves), for temporary communal housing during General Grant’s siege of Vicksburg. If I had taken these trips prior to teaching geomorphology, you good students would have got more “bang for your buck.”

Our 2018-19 rainy season was a real humdinger here at home near the apex of the Cucamonga alluvial fan – 32in. or more than 14 in. than our long term yearly average according to my Folger coffee can “precision” rain gauges.

Fortunately, our local groundwater recharge conservancy was prepared. It had deepened and greatly broadened seven old, ineffective percolation basins excavated perhaps in the late 1930s/40s. The new basins filled successively until finally breached during the sustained heavy rains of January/February. Percolation/infiltration continued through their newly alluviated, permeable broad bottoms, and the downstream Cucamonga dam/reservoir never reached more than 1/3 to 1/2 capacity. Good show planners! (and I’m finally convinced that the cobbles/boulders of Cucamonga Creek are transported not by Nature Americans, but by flood/mudflow waters.)

We remember the familiar faces of good professors Jessey and Berry as they must still grieve for their loss.

Our family: Laura, Margie, Ray, Genevieve, Phil, Eric and I also suffered our greatest loss late night of June 28, 2018. Our sacrificial mother and wife of age 83 died suddenly, unexpectedly and peacefully at home. Unexpectedly because we had just celebrated her birthday two days earlier with a raucous Mexican dinner at Rosa’s in Temecula followed by a pleasant stroll window shopping as we walked twice across the Temecula thoroughfare. She always prayed for a happy death and won it – a consolation for us. Now we work on the virtue of acceptance. I have been helped by our Catholic church family at St. Peter and St. Paul, a nice brunch with the Professors Klasik and also the Professors Nourse – including a dandy field trip updating me on tectonics and ages of rocks adjacent to San Antonio Canyon. By golly my understanding there has sure changed since the late 1960s thanks to Professor Nourse.

Thank you good students for contributing to my charmed life, and you good colleagues for useful insights and wisdom. Special thanks to you Dave (Rogers ’76) for your great contribution to early Geology Department history, including visuals, as summarized in the 2017 Mylonite.

Gratefully,
Larry Herber (1966-2001)

Dr. John Klasik

GREETINGS ALL YOU FINE ALUMNI

I have now been retired for over five years. This has been another good year. I will talk about our travels and the alumni reunion.

In May we had another good alumni reunion. It was too bad not many alumni attended the event. As always the food was good. The company was great. It was especially nice to catch up with Kevin Rosso (Dr. Rosso, class of ’91). Kevin made the long trip from Washington State back to Cal Poly. He gave a professional presentation to the Department and attended the reunion. I must admit (and Kevin will vouch for it) it took my aging gray cells an hour or more to fully make the connection between Kevin and his exploits both at Cal Poly and afterwards. Once the pieces of my brain finally fell in place we had a great time reminiscing about Cal Poly and learning about his work. I hope Dr. Rosso continues to keep in touch with the Department and manages to, at least occasionally, fit in a reunion.

In March we took advantage of the Super Bloom to take an overnight trip to Anza Borego State Park to enjoy the



wildflowers. It was a fun experience and we both truly loved looking at the blooms. The flowering was

amazing. The colors and blooms were spectacular. The painted lady butterflies added to the spectacle. Watching the other many visitors was also fun. We saw the whole spectrum from practically professional photographers to amateurs less than our lowly photographic stature. As you can see from the photo, I had to get down low to get the “perfect shot”.

A week after the May alumni reunion we traveled to Italy. It was my first trip to Europe so those of you experienced

travelers bear with me. Our overnight, upgraded (thanks to our son) to business class, from Dulles International to Rome was certainly a fascinating great circle flight path up the east coast, over the north Atlantic to Ireland, England and “down” to Rome. I watched sun rise over a cloud covered France. After an early morning arrival in Rome, we took a high speed train from Rome to Florence. We spent three days in Florence and a week in gorgeous Tuscany. Being immersed in so much history was, at times, difficult to fathom.

Our accommodations in Florence were in an elegant hotel right on the Arno River. If you have read “A Room With a View” that is what we had.

Our spacious fifth floor room overlooked the Arno and the Ponte Vecchio. It was wonderful. Of course, being in historic Florence we did all the museums: Uffizi,



The Academia (David), the Bargello, Pitti Palace, Boboli Gardens. In addition we went to the famous and absolutely huge Duomo capped by Brunelleschi’s epic achievement, the massive Dome. We visited the adjacent Baptistery and saw Ghiberti’s huge brass doors at the Duomo Museum. We also toured the church of Santa Croce, where Galileo is entombed. I was the only person in the throngs to actually look at the building stones. The Florence buildings are made from locally quarried Cretaceous marine sandstones. Many are turbidites. Many exhibit soft sediment deformation. The photo included is from the Piazzale Michelangelo.

From Florence we drove south to the heart of Tuscany and our “apartment” and base for the next week at Agriturismo Renello. The working olive farm was a bucolic setting and central to our week’s stay and travels around Tuscany. Tuscany is beautiful. It somewhat reminded me of the Shenandoah Valley of Virginia. We traveled to a half dozen Hill Towns, each with their local charm, among them: Siena, Pienza, Montepulciano, Montalcino. Each Hill Town is very photogenic: narrow cobble stone streets, fascinating shops, fun eateries, towers, interesting local building stones, and great views of the surrounding countryside. The building materials varied from town to town: basalts, travertine to more sandstones. I bet there have been field trips to Hill Towns to study building stones and their source quarries.

We also went to two hot spring sites, Bagno Vignori and Bagni San Fillippo (see photo). Fifth century BC Etruscan era water tunnels and Roman cisterns added a deeper dimension to Tuscan history at Chiusi. It was a great trip.

In late June and early July we flew east for our annual family reunion on the south New Jersey shore. The visiting was great. The weather was fine and the water was surprisingly tolerable.

In late October we again flew east to visit our son in Chapel Hill, North Carolina. We took advantage of the late October

date to also drive 300 miles west from Chapel Hill to Great Smokey Mountain National



Park to see the fall colors. Great Smokey National Park is a no entry fee park. The main road through the park is a US highway connecting western North Carolina with Gatlinburg and Dollywood, Tennessee. Those two factors lead to much traffic and congested conditions. We “summitted” Clingmans Dome (6643 feet), hiked two trails to nice waterfalls, enjoyed the numerous beautiful streams and took in the developing fall colors. I took advantage of the proximity of Chapel Hill to Durham to visit my old stomping grounds at Duke University. I quickly discovered that you can’t relive history! I remembered parts of Duke Gardens. The Duke Chapel is unforgettable. But there were so many new buildings! I also went to Duke’s East Campus to see my old Geology Department. It is now an art museum. My grad school days office is now a huge electrical utility room. It was fun but rather sad in some ways. We also walked around the Univ. of North Carolina. UNC is a wonderful, old, history-full, campus.

That about covers it for 2019. I hope some of you managed to view the transit of Mercury. I hope many more alumni come to next year’s reunion! I would love to, as I had to do with Kevin Rosso, exercise my little gray cells and interact with you all.

Best regards

John A. Huch



Faculty News *(in alphabetical order)*

Jeff Marshall

Season's Greetings! Despite starting classes in what seemed like the middle of summer, our first year on semesters overall went well. In fall, I taught Geomorphology, Natural Disasters, Grad Seminar, and a Coastal Tectonics Field Module. The Field Module was a blast, with a great group of students doing fieldwork at Crystal Cove near Laguna Beach, and Montaña de Oro near Morro Bay. Student teams mapped and surveyed uplifted marine terraces using laser range-finders, and constructed stratigraphic sections using structure from motion photogrammetry. The weather and scenery were awesome, and we enjoyed several spirited nights around the campfire. In the spring, I used grant re-assigned time to work with my New Zealand research team, and also taught Watershed Restoration at the Lyle Center for Regenerative Studies. The watershed class is always great fun, with interdisciplinary teams doing fieldwork and developing restoration plans for local creeks around Cal Poly Pomona. In addition to teaching, I continued my service work with the CSU COAST Initiative, NSF GeoPRISMS Education Advisory Committee (GEAC), and Geosciences Division of the Council on Undergraduate Research (CUR).

One highlight this year, was receiving the College of Science Ralph W. Ames Distinguished Research Award. My

award lecture, entitled “*Sizing up the subduction beast: A tale of earthquakes and ancient shorelines in Costa Rica and New Zealand*” featured two decades of my fieldwork with CPP students along the Middle America and Hikurangi plate margins. I am forever grateful for the awesome student researchers who have helped to build my career. You all know who you are. ¡Pura Vida and Kia Ora! Thank you!

In January, four geology students and I traveled to New Zealand for the third field season of the NSF SHIRE Project, studying subduction zone tectonics along the North Island’s Hikurangi margin. This year’s team included undergrads Jen Hamel and Caleb Miller, and grad students Chris White and Emmons McKinney. On arrival, we spent several days in Wellington, buying supplies, picking up gear at GNS Science, riding the Cable Car up Kelburn Hill, walking through the botanical gardens, and exploring the beautiful waterfront. We then traveled north to the port city of Napier in Hawkes Bay to begin fieldwork. Our first goal was to collect IRSL sediment cores and tephra samples to establish age constraints on Pleistocene marine and fluvial terraces at Cape Kidnappers (focus of Emmons’ MS research). Our next task was to continue mapping and sampling uplifted Holocene platforms at Clifton, Ocean Beach, and Waimarama, along the seaward edges of Cape Kidnappers (focus of Jen and Caleb’s senior projects). We hiked along multiple beaches, surveyed profiles with laser range-finders, and collected shell samples for radiocarbon dating from stream banks, coastal bluffs, and hand-

-dug pits. This year, we flew a Mavic Pro drone over our field sites to

gain a better perspective and to record aerial imagery. Using LiDAR digital terrain models as a mapping base, the students are creating detailed terrace maps and profiles in ArcGIS that will be used to interpret coastal uplift patterns from paleo-earthquakes. Beyond our fieldwork, we enjoyed excursions to the Cape Kidnappers gannet colony, Te Mata Peak, Maraetotara Falls, Ahuriri Lagoon, and the vineyards of the Tuki Tuki Valley. We also made the rounds of Napier’s great eateries, and visited the 1931 Earthquake Museum, Art Deco Centre, and National Aquarium of New Zealand.



Visiting GNS Science, Lower Hutt, NZ L-R Jen Hamel, Caleb Miller, Chris White, Emmons McKinney

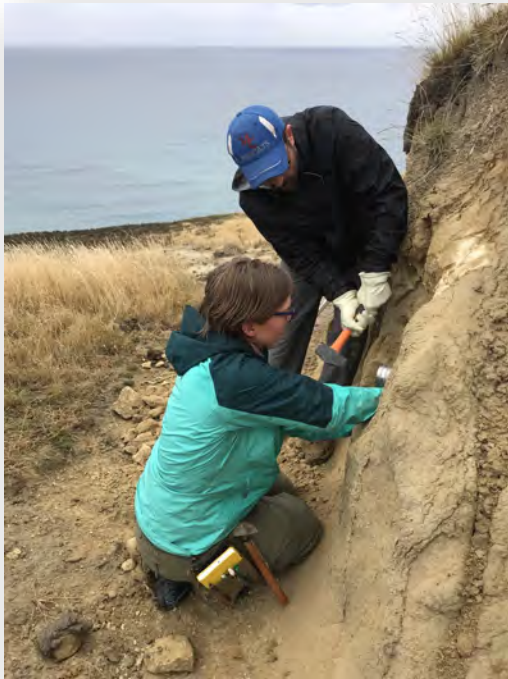
From Napier, we traveled north to Gisborne, where we spent several days collecting shell samples and recording drone imagery of uplifted Holocene shore platforms along the Gable End coast. This spectacular coastline is the traditional home of Maori ancestor Paikea, the Whale Rider. Its crystal-clear azure waters break against white sand beaches and rugged windswept greywacke cliffs. A shallow thrust fault, however, lurks just offshore and the tsunami hazard is ever present. In the evenings after fieldwork, we wandered around lovely “Gizzy”, strolling the seawall past the Captain Cook memorial, stepping gingerly across the old railroad bridge, chowing down on local seafood at the harbor, and sipping a few pints at our favorite microbrewery. On our return trip south, we visited the classic marine terrace sequence at Mahia Peninsula, stopped in for a night at Napier, then made our way to Masterton in the Wairarapa Valley. From there, we made a long day trip over the coast ranges to Chris White’s MS field area at Riversdale to revisit last year’s IRSL sampling sites, describe stratigraphic sections, and record drone imagery of Pleistocene terraces. We also hiked along the beach in an unsuccessful attempt to find uplifted Holocene shore deposits. In the end, we returned to Wellington where we visited our colleagues at GNS Science, walked along the Wellington Fault scarp, drove up to the Mt. Victoria overlook, toured the Te Papa Museum, and made the rounds of our favorite restaurants and watering holes. All in all, this was an excellent trip.

As usual, I also traveled far and near for research conferences. In August, I participated in the NSF Coastlines & People (CoPe) Scoping Workshop in San Diego. CoPe is a new NSF initiative to build broader collaboration between coastal scientists, government agencies, and local communities to address coastal hazards and environmental change. I was invited to give a short plenary talk on the role of the California State University in building a diverse scientific community. I also worked with several geoscience colleagues writing a white paper on “*The Science of Extreme Events*”. This trip allowed me to spend a few days visiting my mom at home in San Diego. Twice during the year, I was invited to give my “*Sizing up the subduction beast*” talk at local professional meetings, first at the joint meeting of Southern California AEG and South Coast Geological Society in Orange, and again at the Inland Empire AEG meeting in Colton. In December, grad student Emmons McKinney traveled to AGU in Washington, D.C. to present an overview paper on our New Zealand research project. Unfortunately, I was unable to make this trip, but Emmons assured us that it was a great meeting. In February, I traveled to San Antonio, Texas to participate in the NSF GeoPRISMS Synthesis and Integration Workshop, held at the historic Menger Hotel across from the Alamo. This is where Teddy Roosevelt recruited the Rough Riders, and I

think some of them were still sitting around the bar! During the workshop, I served as a breakout session moderator and gave a short talk on undergraduate research opportunities through NSF MARGINS and GeoPRISMS. I also took some time to tour the Alamo, wander the Riverwalk, and dine with my retired PhD advisor and his wife who now live in San Antonio. In May, I attended the GSA Cordilleran Section Meeting in Portland, Oregon with my New Zealand SHIRE students Jen Hamel, Caleb Miller, and Chris White. They each presented excellent posters on their individual research projects, and together we made the rounds to enjoy some great local grub and microbrews. In July, I attended the ESRI GIS User conference in San Diego, and was thoroughly wowed by the opening plenary on GIS as a tool for environmental sustainability and global peace. Jane Goodall, E.O. Wilson, and Jack Dangermond (ESRI founder and CPP alum) led a brilliant discussion that framed a stunning sequence of GIS case studies from around the world. The ESRI conference is always a blast, and I look forward to attending again next year (if I can score a free pass again).

This summer was disrupted by big changes on the home front. Our landlord announced he was selling the home my son and I have lived in for a decade. Suddenly, we were thrown into a scramble of finding a new house and moving. We are still in Claremont, but now closer to the foothills and further from the Village. Kyle is a high school junior, still getting straight A’s, and busy with Theatre, Comedy Sportz, and Speech & Debate. He turns 17 soon, has his own car, and is now about a foot taller than me (or so it seems). We’ve begun the exciting process of exploring future options for college. We are both looking forward to winter break, and a Christmas trip home to grandma’s house in San Diego. We wish you all peace, love, and happy holidays!





Emmons McKinney and Caleb Miller sampling marine terrace deposits for luminescence age dating, Cape Kidnappers, New Zealand.



Hiking along Ocean Beach, Cape Kidnappers, New Zealand. L-R: Jen Hamel, Emmons McKinney, Caleb Miller, Chris White.



Digging for shell fossils in paleo-shore deposits, Clifton Beach, Cape Kidnappers, New Zealand. L-R: Chris White, Nicola Litchfield (SNS Science), Caleb Miller, Emmons McKinney, Jen Hamel.



Flying the drone at Makarori Beach, New Zealand. L-R: Chris White, Emmons McKinney, Jeff Marshall, Jen Hamel.

Bryan Murray

Greetings!

This past year at CPP has been at blast, even with the challenge of transitioning from quarters to semesters! I started teaching a brand new GSC GE course at CPP – “Planet Earth: A Citizen’s Guide”. This class covers topics ranging from natural disasters, climate change, and environmental stewardship – basically the things students should know in order to be informed citizens about how our planet works and how to take care of it properly. I’ve also had an exciting time with my field courses this year. Last spring, I took my GSC 4990L Tectonics of Sedimentary Basins advanced sedimentary geology course on a field trip to the Grand Canyon. There we spent a day hiking along the “Trail of Time” and visiting the Yavapai Point geology museum on the south rim. Along the trail, we discussed the different

stratigraphic units of the canyon, with students presenting an overview of the depositional history and tectonic setting of each formation. The following day, several students and I hiked the Bright Angel Trail down to the Colorado River. This was the first time I've completed this 25 km hike (with 1,370 m elevation change) down to the river, and I was awestruck at the depth and beauty of the canyon. I hope to make this a regular trip with my advanced sedimentology courses in the future. Closer to home, the rainy winter we had last year brought on a "megabloom" of wildflowers to the Mojave Desert, which made for some beautiful trips for my field courses last Spring. We returned to the classic Marble Mountains field mapping site for GSC 2550L Field Methods and had great weather for three days of introductory field mapping. For my GSC 4910L Field Module course, we worked in one of my favorite sites in southern CA, the Diligencia basin in the Orocochia Mountains. This site had a little of something for everyone: spectacularly folded and faulted sedimentary and volcanic rocks and gorgeous augen gneiss basement rocks. We camped at a nice site adjacent to the Clemens Well fault at the southern boundary of the Orocochia Mountains Wilderness area and hiked about a kilometer each day into the wilderness to the mapping area. In the evenings we enjoyed the warmth of a large campfire. Included here are several photos from the field this year. Until next time!

Bryan Murray



GSC 4990 Tectonics of Sedimentary Basins field trip to the Grand Canyon—spring 2019.



Admiring the Permian Hermit Shale-Coconino Sandstone contact along the Bright Angel Trail, Grand Canyon.



GSC 4990 students Brandon Ferguson & Eduardo Silva at the Colorado River, bottom of the Grand Canyon.



Pitstop on the CA-AZ border on our way home from the Grand Canyon field trip.



Beautiful outcrops of the Diligencia basin in the Orocopia Mountains (Spring 2019 Field Module).



Campsite, Spring 2019 Field Module in the Orocopia Mountains.



Blooming desert mallow in the Diligencia basin (Spring 2019 Field Module).



Awesome field kitchen for Spring 2019 Field Module in the Orocopia Mountains, has it all, excluding the kitchen sink (which didn't make it out on this field trip).



Megabloom near our campsite in the Orocopia Mountains (Spring 2019 Field Module).



Morning breakfast time by the remnants of our giant campfire (Spring 2019 Field Module).



Spring 2019 Field Methods students mapping in the Marble Mountains.



Checking out the Chambless, Marble Mountains (Spring 2019 Field Methods).



Spring 2019 Field Methods crew on the Zabrewsky.



Wildflowers blooming in the Marble Mountains (Spring 2019 Field Methods).

Stephen Osborn

At time of publication Dr. Osborn was unable to submit an article this year, but wishes everyone a wonderful Holiday and New Year.

Jascha Polet

Hello everyone!

I have just returned from a very busy AGU Fall meeting and with a pile of exams left to grade, my letter for the Mylonite will describe my past year mostly through photos. It has been an eventful year, filled with research, earthquakes, travel and field trips.



One of the classes I taught last Spring was Advanced Shallow Subsurface Geophysics. The lab for this class consists of two large field projects, and one of these projects was a geophysical investigation of the area between the Mono Domes and Mono Lake. Students used gravity (as shown in the image above) and magnetics to try and detect a magmatic intrusion in this area



At the end of the academic year, there is commencement of course, and this past year commencement was on my birthday!



There was much travel this year, to some awe-inspiring places such as Chile, where I witnessed the total solar eclipse. And missed the Ridgecrest earthquakes...

There was much travel this year, to some awe-inspiring places such as Chile, where I witnessed the total solar eclipse. And missed the Ridgecrest earthquakes...



In addition to the eclipse, we saw amazing wildlife and great scenery, often combined.



Right after we returned from Chile, we had to go see the surface rupture of the Ridgecrest earthquake.



For the Volcanology class in Fall semester, we visited the Long Valley Caldera and did some surveying to investigate volcanic inflation. Although it was a bit chilly, the snowy mountains provided a great backdrop, and the weather was definitely preferable over the near blizzard conditions of the previous two field trips.



This Fall semester, I also taught a Field Module for the first time in quite a few years. For the first field project, students measured GPR and resistivity profiles (as shown in the image above) across the berm of Malibu Lagoon to investi-

gate any exchange of groundwater. The resulting resistivity models confirmed and expanded upon results from a recent publication and provide motivation for potential new thesis projects.



Ground Penetrating Radar was also used at Malibu Lagoon, with varying levels of success.



For the second field project for the field module, students investigated the seismic and resistivity properties within the fault zone of the recent Ridgecrest earthquake. We used my new seismic refraction equipment, as well as the department's LiDAR unit to image one of the Trona pinnacles, which was damaged due to shaking. The results of the seismic experiment were particularly interesting and may result in a follow up field module or even a thesis project or two. In the photo above, students are celebrating getting the truck unstuck from what appeared to be a very powdery fault zone gouge.



The academic year came to an end at the Fall AGU conference, where undergraduate and graduate students presented excellent posters on their research projects and we also met up with several CPP Geology alumni.

Happy Holidays!
Jascha

Nick Van Buer

Hello All!

It's been another busy year of adjusting to semesters, and in my case, also toddler maintenance. Ian has been growing rapidly and is now 18 months old, walking and talking, picking up new words daily. Soon he'll be swinging the rock hammer himself. So far, he's a good traveler, and has come with us to New Orleans and Barcelona in the last year.

New student research projects initiated this year investigate early and late Cretaceous intrusions in the Mojave that fall outside normal Cordilleran Arc chronology. Several students have begun mapping/sampling projects in various parts of the Soda Mountains, where a large, ferroan, purple -K-spar, ~140 Ma granite complex seems to defy the expected geochemistry for arc magmatism. Results from previous research were presented at both the GSA Cordilleran Section meeting in Portland last Spring, and also the GSA annual meeting in Phoenix this Fall.

Teaching highlights in the last year include a Field Module to map a detachment fault in the remote north Bristol Mountains and a new Volcanology trip to the Salton Trough, Amboy Crater, and lava tubes at Pisgah Crater. New grad-student field trips included an Advanced Structure trip to study multiply deformed rocks in the Big Maria Mountains and two Field Investigations trips to study the surface ruptures associated with July's Ridgecrest earthquakes. We brought along the new terrestrial laser scanner and created a detailed 3-D model covering about 6 km along the fault, which we used to map the complex rupture traces as well as apparently offset shorelines from Pleistocene Lake Trona. I anticipate next year will bring

some new exciting field trips.
Cheers!
-Nick Van Buer



Camping in the Big Marias



LiDAR—GSC 5030L students take notes while our new terrestrial laser scanner measures the Ridgecrest earthquake surface rupture below.



Ridgecrest sunset.

Ian last December.



Ian now.

SAVE THE DATE!

The 2020 Alumni BBQ & Geology Student Award Ceremony, will be held on **Saturday, May 9th**. Time: 11:30-3:00pm—the place is still to be determined. Updates will be coming soon, so please be on the look-out for posts, e-mails and/or USPS mailings.



If you have made it this far, please read a few more lines and consider giving back to the Geology Department:

A Request for External Support

We in the Geology Department wish to express our sincere gratitude to the many alumni and friends who have made generous contributions in recent years. These gifts have been directed toward fundamental needs that include thin section preparation, laboratory analyses of rock samples, geochemical analyses of water samples, student or faculty travel to GSA and other professional conferences, field vehicle expenses, campground and parking fees, and purchase of field or laboratory equipment, camping gear and firewood. Several recent gifts continue to support our department mission.

These are challenging economic times for everyone. That is why your gift at this time will be especially meaningful to all of the students and faculty in Geology. In offering your gift, we ask that you make your check payable to **Cal Poly Pomona Foundation** and mail to the address below. If you wish your contribution to be directed to a particular emphasis, please indicate so on your check:

**Geology Department
3801 W. Temple Avenue
California State Polytechnic University
Pomona, CA 91768**

Thank you so much, and we very much appreciate your continued patronage.