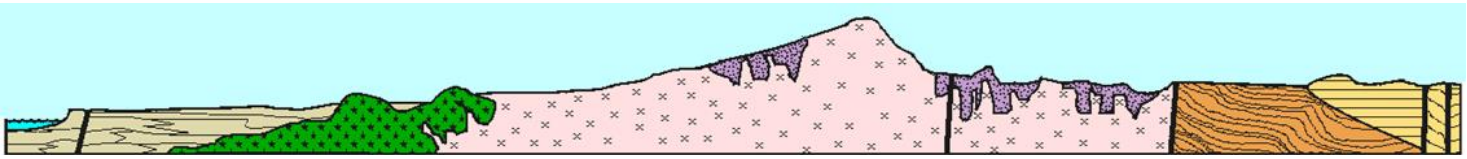


SAN DIEGO ASSOCIATION OF GEOLOGISTS

http://www.sandiegogeologists.org

SDAG MEETING ANNOUNCEMENT

Wednesday, April 17th, 2019 *3rd Wednesday*

- **Reconstructing Coastal Events Recorded in Ancient San Diego River Delta Deposits**
  Presented by**: *Eric Surratt, SDSU***

- **A Sentinel-1 study of Okmok Volcano using InSAR time series analysis**
  Presented by: ***Sandra Slead, SIO/UCSD***

- **Late Pleistocene Hydroclimate Variability of S. Central Africa captured in a high deposition rate marine sedimentary sequence off the Zambezi River Delta**
  Presented by: ***Greg Mamikunian, UCSD***

- **GEOGLYPHS OF THE DESERT SOUTHWEST: Earthen Art as Viewed from Above**
  Presented by: ***Anne Morgan***

Where: **Geocon Inc. – Upstairs Lounge**
6960 Flanders Drive, San Diego, CA 92121 (See Map)

When: 5:30 pm – Social Hour
6:30 pm – Dinner
7:15 pm – Presentation

Dinner: Mexican Buffet - Tacos, Rice and Beans, Chips.
Cash Bar (Walawender Tavern)

Cost: $30 Member, $35 Non-Member, $15 Students.

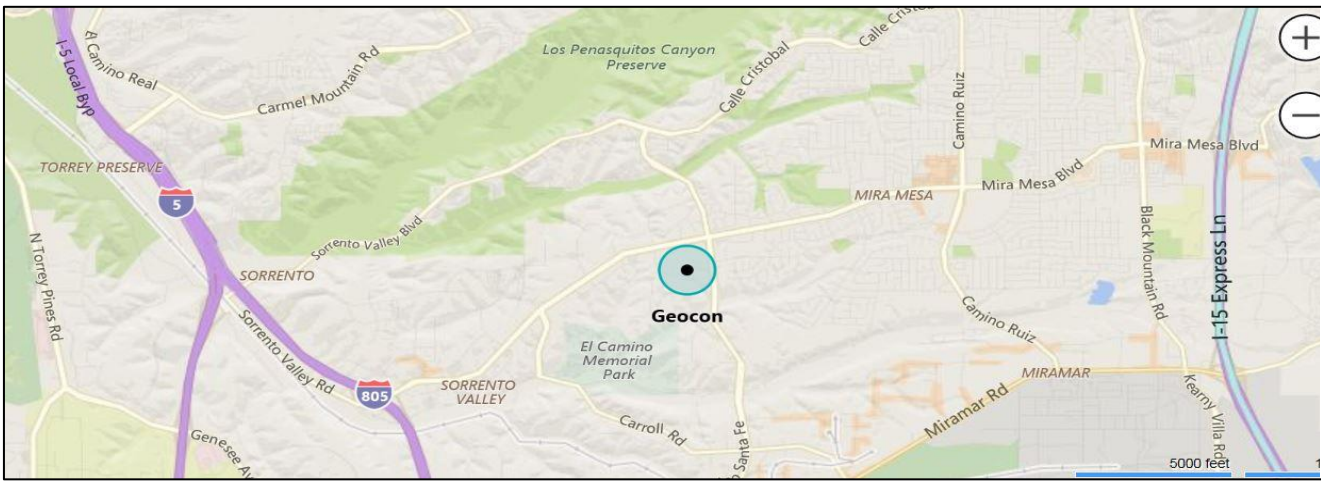
Reservations: Make your reservation **online** at http://www.sandiegogeologists.org/Meetings.html **no later than noon, Monday, April 15th**. Reservations cannot be guaranteed after Monday at noon, but are always preferred over walk-ins. **EARLY reservations well before the deadline are MUCH appreciated.**

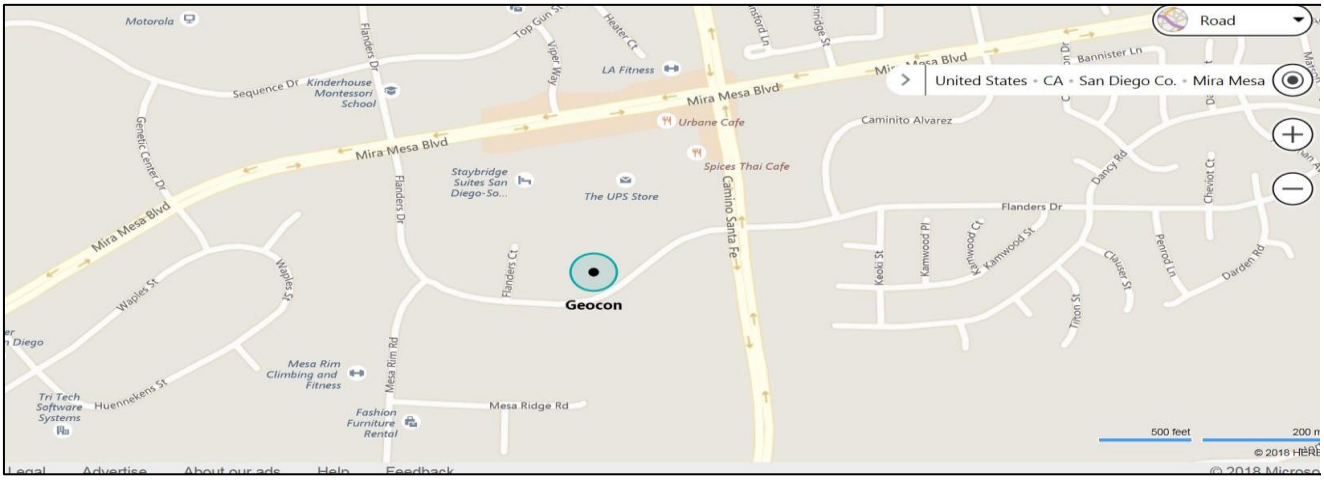
Directions:

FROM INTERSTATE 805: Take the Mira Mesa Blvd (Exit 27) exit. Head east on Mira Mesa Blvd for roughly 2 miles. Turn right onto Flanders Drive and Geocon will be on your left in about 0.4 miles.

FROM INTERSTATE 15: Take the Mira Mesa Blvd (Exit 16) exit. Head west on Mira Mesa Blvd for roughly 3.3 miles. Turn left on Camino Santa Fe and then turn right on Flanders Drive. Geocon will be on your right in about 0.2 miles.

Map:





ABSTRACTS

RECONSTRUCTING COASTAL EVENTS RECORDED IN ANCIENT SAN DIEGO RIVER DELTA DEPOSITS

Presented by: ***Eric Surratt, SDSU***

Changes to coastal systems due to human modifications (e.g., dams, urbanization) and anthropogenic climate change have altered natural systems of sediment dispersal and models of future climate change show impacts to the coast continuing and even accelerating in the future. Our ability to predict those impacts and implement management strategies to adapt to change could be aided by a better understanding of how coastal systems have responded to similar changes in the past. We collected 6 sediment cores containing ancient San Diego River delta deposits from Fiesta Island in Mission Bay, to interpret river and coastal system response to past events including floods, fires, and seismic events. Previous work in southern California estuaries has demonstrated that a record of climate change is preserved in these depositional environments. Nevertheless, these studies have focused on longer time-scales and have not yet resolved a detailed event record for the region. Preliminary examination of the cores revealed complex stratigraphy with variations in grain size, amount of oxidation, mineralogy, and biogenic material. There are also finely laminated deposits, as well as layers with structures and erosive surfaces indicative of rapid deposition. We hypothesize that the sediment captured here records changes to the delta system through time and may include several event deposits that could help reconstruct a climate and seismic record for the region. As a starting point, a chronology has been established through radiocarbon dating that indicates a sediment record of —1800 yrs was captured in the cores. Using the radiocarbon dates an age model will be created to assess changes in sedimentation rate and ages of potential event deposits. Further analyses to reconstruct the delta's sedimentary history will be performed including detailed grain size analysis, particulate charcoal measurements, paleontology identification, and pollen analysis.

A SENTINEL-1 STUDY OF OKMOK VOLCANO USING INSAR TIME SERIES ANALYSIS

Presented by: ***Sandra Slead, SIO/UCSD***

Coauthors: Xiaohua Xu and David Sandwell

In active volcanic regions, ground displacement measurements can be used to detect signals of a changing magma source. Traditional measurements made by ground-based instruments such as GPS and tiltmeters are not suitable for remote locations where instrumentation is infeasible, so in order to study these locations it is preferable to use a satellite remote sensing platform. Interferometric Synthetic Aperture Radar (InSAR) is one such technique and has revolutionized our ability to collect this type of data by mapping ground deformation at millimeter level accuracy across a large and uniform spatial scale. In this study we use InSAR to observe surface deformation of Okmok Volcano.

Okmok Volcano is an active shield volcano in the Aleutian island arc that last erupted in 2008, sending up a 15 kilometer ash plume that interrupted trans-Pacific flights'. For this study we use Sentinel-1 SAR satellite data collected over Okmok to produce a time series of 237 interferograms spanning early 2015 to the present. Each interferogram is constructed from two SAR images of Okmok collected at different dates. Differencing these images results in an interferogram showing how much the ground moved up or down between these dates in the form of radar phase (see Figure 1). The interferograms produced in this study show a total maximum displacement of 19.3 centimeters of the volcano's surface towards the satellite.

The radial symmetry of the inflation pattern on Okmok suggests that the magma source causing the inflation can be represented by the Mogi model, which allows for estimating the surface deformation of a volcano based on the depth and volume-change of its assumedly spherical magma chamber[2]. Here, using our measurement of the volcano's surface deformation, we inversely implement the model to solve for the magma chamber's best fit depth and volume-change. Doing so results in an estimated magma chamber depth of 3 kilometers and an increase in volume of 0.008 cubic kilometers (approximately 3200 Olympic swimming pools). These results agree well with previous studies of Okmok in which the depth and volume-change of the magma chamber were modeled to be between 2-4 kilometers and 0.005 cubic kilometers, respectively[1,2,3]. From this as well as the good fit between our observed and modeled data, we conclude that this model sufficiently explains the surface deformation observed. Over the next year we plan to create a time series of Okmok's magma chamber growth, apply this process to other Aleutian volcanoes, and compare the results to previous publications.

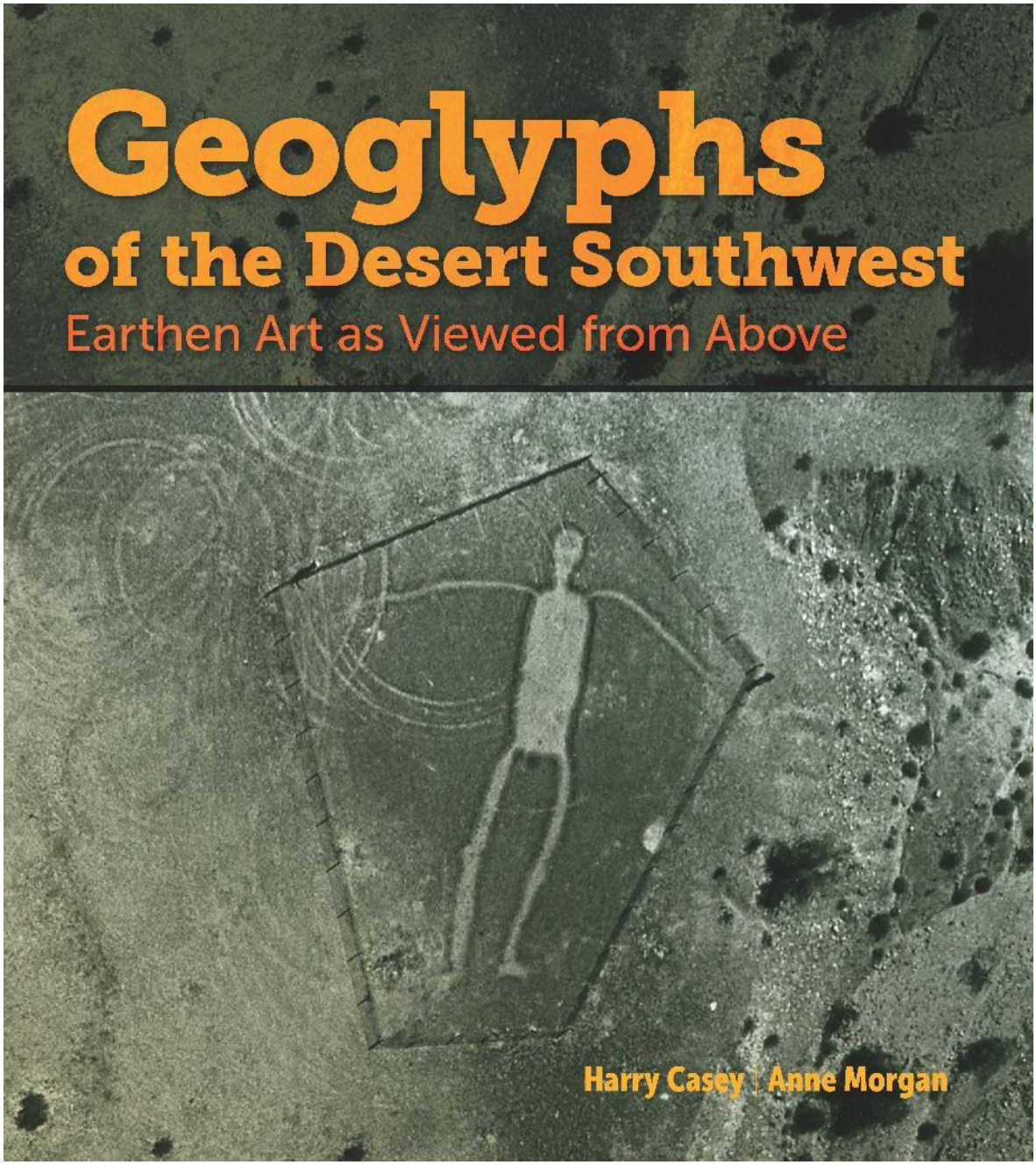
LATE PLEISTOCENE HYDROCLIMATE VARIABILITY OF S. CENTRAL AFRICA CAPTURED IN A HIGH DEPOSITION RATE MARINE SEDIMENTARY SEQUENCE OFF THE ZAMBEZI RIVER DELTA

Presented by: ***Greg Mamikunian, UCSD***

The El Nino Southern Oscillation (ENSO) is the largest reoccurring global climatic phenomena on interannual timescales. With oscillations of every 3-7 years, ENSO shifts precipitation patterns and sea surface temperatures across the temperate regions of the globe and drives interannual climate variability across the globe. Our knowledge and expectations for future ENSO events can be greatly advanced by clues of the modes and mechanisms of ENSO events in the geological past. In this study, we use a unique ultra-high-deposition-rate marine sedimentary sequence (IODP Site U1477) drilled off Mozambique at the output of the Zambezi River, to investigate the proxies for changes in sea surface temperature, salinity, precipitation and sea level over the last 100ka. The overall goal of this work is to understand interannual variability (El Nirio teleconnections) and its imprint on the hydroclimate variability of S. Central Africa.

The La Niria phase of the ENSO system affects the hydrology of S. Central Africa; the region currently receives anomalously high precipitation during a strong La Nina event. Increases in either the strength or recurrence of La Niria results in large flooding events and increased output of freshwater at the study site. Flooding events in this region are recorded as negative excursions in seawater $6^{18}0$ values and as increases in concentration of incompatible elements such as barium that are incorporated into the shells of the foraminifera. Barium in coastal marine carbonates has been used as a proxy for riverine discharge, because it is more abundant in continental crust; thus the rivers that carry the dissolved weathering products of this continental crust also feature elevated concentrations of barium. Though the sediment sequence does not explicitly resolve interannual variability (the resolution is quasi-decadal) we can measure increases in discharge as a negative skew in the histogram of individual foraminiferal $6^{18}0$ values or analogously, a positive skew in barium concentration of individual foraminifera.

In addition to glacial-interglacial comparisons, we also resolve hydrologic changes across the global climatic events known as Henrich Stadials periods of intense cooling and iceberg discharge in the North Atlantic Ocean that perturbed the global heat balance and that involved a southward shift of the Intertropical Convergence Zone. These global climate transitions offer a unique experimental platform to document the response of the ENSO system to changing global climate state. The Heinrich events are particularly valuable in that, unlike glacial-interglaical cycles, there was very little sea level change across these events that might influence the patterns of sediment deposition on the Mozambique margin. The results thus far suggest that the stadial events (including the Last Glacial Maximum and Heinrich Events) were in fact characterized by enhanced discharge from the Zambezi catchment.



GEOGLYPHS OF THE DESERT SOUTHWEST: Earthen Art as Viewed from Above

Presented by: ***Anne Morgan***

Across the deserts of the American southwest are one of the largest concentrations of geoglyphs outside of Peru's Nazca Lines. These ancient Native American works of earthen art can be up to hundreds of feet long, and yet are often invisible until viewed from above. Before drones, GPS, or GoogleMaps, photographer Harry Casey began a unique archaeology project. Armed with nothing more than topographic maps, 35mm film cameras, and his beloved Piper J3 Cub aircraft, Casey spent thirty-five years documenting the region's geoglyphs before natural erosion and human intervention could destroy these fragile sites. Here, for the first time, is a visual record of these beautiful and mysterious, little-known features.

Biography:

Anne Morgan: Born and raised in New Orleans, Louisiana, Anne Morgan took her lifelong love of history and turned it into a career by attending Simmons College in Boston, Massachusetts, to get a Masters in Library and Information Science, focusing on archives. She was hired as the Head Archivist/Curator at the Imperial Valley Desert Museum in Ocotillo, California, and promptly fell in love with the desert around her. While working at the IVDM Anne met Harry and Meg Casey and what began as an archival project on Harry's nearly 10,000 aerial images became a friendship and partnership as she helped edit Harry's original manuscript into a published book.

UPCOMING MEETINGS

Meetings are usually held on the 3rd Wednesday of the month may change to accommodate the speaker and meeting place schedules. Check the SDAG website for updates

May, 2019 TBD	Chuck Houser - TBD
June, 2019 TBD	Joint Meeting with SCGS - TBD
July, 2019 TBD	TBD

2019 SDAG EXECUTIVE COMMITTEE

PRESIDENT:	**Ken Haase; haase@geoconinc.com**
VICE PRESIDENT:	**Adam Avakian; armenianmenace1@gmail.com**
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PUBLICATIONS:	**Lowell Lindsay;** *Sunbelt Publications; Ph: (619) 258-4911, x111;* **llindsay@sunbeltpub.com**

SDAG PRESIDENT'S CORNER

Thank you, Matt Weingarten, for providing such an interesting and informative talk on your research into Induced Seismicity in Oklahoma. Everyone very much enjoyed it.

This month we have our student scholarship recipients presenting the work they were awarded for! This is a big part of what makes SDAG such a great organization. Providing opportunities for the next generation of geologists! We also have Anne Morgan who is in town to provide a talk regarding her study into Geoglyphs of the Southwest. Should be an information packed evening!

The meeting will be held on Wednesday April 17th at the Geocon office in the Upstairs Lounge. Happy hour starts at 5:30 pm at the Walawender Tavern, proceeds of which go to more student scholarships.

See the newsletter for pictures from the OSW to the Niland Mud Pots. Looks like it gives the railroad a whole mess of trouble!

Adam Avakian (VP) is hard at work for the Field Trip and should have updated info at the April meeting.

Thanks to everyone who turns out to the meetings and supports SDAG, we couldn't do it without you!

See you on April 17th!

Ken Haase
2019 SDAG President
Geocon, Inc.

Our March speaker Matt Weingarten surrounded by intrigued SDAG members.
(Rob H., Diane M., Matt W., Wes D., Todd W.)
Picture courtesy of Diane Murbach.

ONE-STOP WONDER CHALLENGE!

ONE OSW A MONTH IN 2019!

BE A PART OF SDAG HISTORY!

Have an idea for a one-day or half-day field trip?

Want to share your favorite aspect of San Diego geology?

Contact SDAG to schedule your One-Stop Wonder!

Your OSW may be chosen to be included in SDAG's One Stop Wonder Guidebook!

Contact Monte Murbach for scheduling!

montemurbach@gmail.com

Mud Pots on the Move

OSW – Niland, Imperial County, California
March 23, 2019

Sinkhole next to Union Pacific railway.

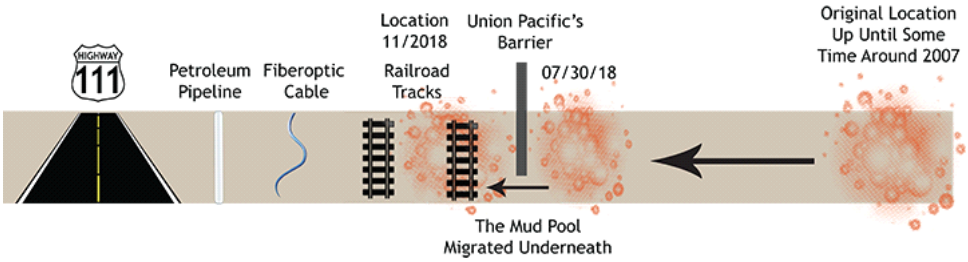
After months of inquiries, SDAG was granted access to a Union Pacific Railroad property where a giant mud pot forced the relocation of train tracks and continues to threaten existing tracks, a petroleum pipeline, a fiber optic cable and State Highway 111. The Union Pacific Railroad's southern California to Texas mainline parallels the eastern shore of the Salton Sea, where approximately 60 to 80 trains per day carry international goods from Asia to the interior United States.

Dave Lynch of Caltech met us to provide safety rules and give a summary of recent mud pot activity. We then followed Dave across the railroad tracks to view a 23-foot deep sinkhole that appeared to be furiously boiling. Although geothermal activity is present in this region, the water in the pit is actually at ambient temperature, and the disturbance seen is caused by CO_2 bubbling up through groundwater. The mud pot is currently being dewatered as a means to try to control it, and approximately 40,000 gallons of water are removed every day!

CO_2 is present all throughout this area, resulting from the decomposition of calcium carbonate sediments spurred by geothermal activity deep below the surface. The CO_2 moves up through the sediments but is only obvious in areas where groundwater is present. Where mud pots bubble up the water has been pushed up to the surface and in some cases the sediments collapse. This mud pot first appeared in 1953 and was a typical, stationary mudpot until some time around 2007 when it began to move westward. Its progress was slow at first, but since April of 2018 it has grown increasingly mobile and now has moved 240 feet from its original site.

SDAG geologists observing new mud pots forming on the Union Pacific property.

No one knows exactly why these mud pots are on the move. The USGS and NASA's Jet Propulsion Laboratory are assisting with research, and Dave has some theories, but we will have to wait until they are published. Look for Dave's article in the June issue of Civil Engineering.



Imaae from Desert USA

Mud pots at the Davis-Scrimpf field.

After the visit to the Union Pacific site, a smaller group of geologists headed out to the mud volcanoes of the Davis-Schrimpf Seep Field. A geothermal plant visible nearby confirms the presence of deep geothermal activity – a result of shallow magma intrusions associated with a spreading center at the southern end of the San Andreas Fault. Temperatures at depth can reach 300°C and higher, although by the time the CO_2-laden water reaches the surface it is often at ambient temperatures or slightly warmer. The heat, however, helps to break down the sediments, releasing the CO_2 gas. The result is a unique geological phenomenon of bubbling, gurgling, mud-spurting volcanoes – a delight for geologists and all!

Provided by: **Jennifer Morton**

2019 SDAG Annual Field Trip – Owens Valley, CA

Hi SDAG members. My name is Adam Avakian. I am the current secretary and future 2019 vice president for SDAG. I am very excited to be tasked with pulling together the annual field trip for 2019 and have some big shoes to fill after attending our latest trip out to the Mojave Desert (thanks to Ken and everyone involved for an amazing trip, and what an awesome group photo!). I am planning on taking us to Owens Valley / Eastern Sierras. I have a few stops in mind already but could definitely use some help on more stop suggestions and ***especially any enthusiastic speakers*** who have some knowledge and a love for the geology of Owens Valley. Here is a sneak peek at next year's trip:

- Owens Valley Fault - 1872 Earthquake Fault Scarp - Lone Pine.
- Alabama Hills – I was recommended a very interesting geological feature to look at here, also potential campground
- Poverty Hills Geology - Owens Valley Fault Pressure Ridge and beautiful fault scarps preserved in basalt flows - Tinemaha Dam – Big Pine
- Crowley Columns – Lake Crowley
- Bishop Tuff – Ideas??
- More ideas (basalt flows, glacial moraines etc.??)

Because it's a long drive and there is a lot to see I would like to try to start the trip Friday morning which would require participants to either get up extremely early Friday morning to drive or to camp out with the group Thursday night (my preferred option) or you can join the group midday on Friday. The bulk of the trip would be completed Friday and Saturday. I think I will plan for a half day of stops on Sunday and try to make them on the way back south towards home. Sunday would also be optional if anyone wants to get home earlier they can head out Sunday morning and skip the stops. Any help or advice would be much appreciated. Like I said, speakers are more than welcome. I'm planning to speak at Tinemaha Dam as my company has done work there but that's all I've got so far! Please send responses to armenianmenace1@gmail.com

Cheers!

Adam

Southern California Section of SME (SoCal SME)

April Meeting

Date: Thursday, April 11th

Time: 6:00 pm Social*, 7:00 pm Dinner followed by Presentation

***Bar sponsored by Barr Engineering Co.**

Location: Dave & Buster's Conference Room (4821 Mills Circle, Ontario, Ca 91764**)**

Cost: RSVP: Professional $35, Students $10 (first 10 to register get free admission sponsored by Gene Dewey)

At Door: Professional $40, Students $20

RSVP: Todd Ririe: todd@gtririe.com *by Wednesday April 3*

Speaker: **Dr. Don Buchanan, Professor of Geology-retired**

Please join the Society for Mining, Metallurgy & Exploration for our meeting on Thursday, April 11th, 2019 at 6:00 PM to be held at Dave & Buster's, Ontario CA. We are hosting Dr Don Buchanan, retired Professor of Geology, for his presentation: "**Making Minerals Rock-Unearthing the Human Element"**

Meeting Information

Abstract:

Minerals are an important component in everyday life although most of the public is not aware of the critical role mining plays in supplying minerals needed to maintain a growing economy. To help educate the public on the importance of minerals the San Bernardino County Museum opened a new exhibit on July 5, 2018 entitled "Making Minerals Rock-Unearthing the Human Element." Minerals are all around us in modern life; they are a critical component of our cellphones, roadways, and toothpaste, yet these same minerals can have significant global impact. San Bernardino County has a rich history in mineral production and still has approximately 100 active mines including the largest rare earth element mine outside of China: sand and gravel, limestone (for cement), decorative rock, gold, trona and other saline minerals, talc, and clay including specialty clays used in cosmetics. The "Minerals Rock!" exhibit illustrates how vital minerals are to San Bernardino County from the colorful history of exploration and scientific discovery, to the mining industry that fuels economic prosperity, to the numerous products that benefit our everyday lives, and the ways in which our choices in the dispersal of these products can have significant impact on our environment.

Biography:

Dr. Don Buchanan received a B.S. Degree in Geology from University of Missouri and completed a one-year Air Force Meteorology Training program at the University of Texas. He also has a MSc in Oceanography/Climatology from the Naval Postgraduate School in Monterey, CA and Doctorate in Education from USC. His career included meteorological work and doing research and applied Earth Sciences for the USAF and other branches of the military until retirement in July 1989.His second career included, teaching meteorology for Embry Riddle Aeronautical University. Additionally, he taught geology at several community colleges including San Bernardino Valley, Crafton Hills and Victor Valley. Don has been serving as President of Southern California Friends of Mineralogy Chapter of the nationwide Friends of Mineralogy since January 2015 developing symposiums and field trips around the state of California and into Nevada and Arizona.

Pacific Drilling Co.'s NEW Drill Rig

Additional information and services can be found at: https://pacdrill.com/

Photograph by Diane Murbach

Geology Education Rule Making Notice – Board of Professional Engineers, Land Surveyors and Geologists

On November 30, 2018 the Board for Professional Engineers, Land Surveyors, and Geologists (Board) published the Geology Education Rulemaking Notice. The Board proposes to adopt Title 16, California Code of Regulations sections 3022, 3022.1, 3022.2, and amend Title 16, California Code of Regulations section 3031.

Certified Hydrogeologist (CHG) Occupational Analysis Survey

On March 4, 2019, the Board for Professional Engineers, Land Surveyors and Geologists (the Board) initiated the occupational analysis survey that will be used to update the content of the Certified Hydrogeologist (CHG) license examination. The Board needs a minimum of 200 CHGs to complete the survey in order to have sufficient data to update the examination. The survey will take approximately 45 minutes to complete and must be completed by April 30, 2019.

Please note that you may have participated in another recent occupational analysis survey that the Board conducted for the California Specific Examination (CSE) used for the Professional Geologist license, or the CEG occupational survey used to update the Certified Engineering Geologist license exam. Each licensing examination administered by the Board requires its own occupational analysis. For those of you who completed our previous surveys for the CSE or CEG, we thank you.

For those persons who hold the Certified Hydrogeologist title authority license, we also request that you also take the time to complete this most recent occupational analysis survey for the CHG examination as soon as possible.

The link to complete the survey is posted to the home page of our website (www.bpelsg.ca.gov) under "New and Important Updates" with the date of March 4, 2019.

Support SDAG/SDGS using AmazonSmile

What is AmazonSmile?

AmazonSmile is an automatic way for you to support the **"San Diego Geological Society"** (SDGS) SDAG's 501(c)(3) as your favorite public charitable organization every time you shop on Amazon at no cost to you at smile.amazon.com.

How do I select a charitable organization to support when shopping on AmazonSmile?

On your first visit to AmazonSmile smile.amazon.com, you need to select a charitable organization to receive donations from eligible purchases before you begin shopping. Please select the **San Diego Geological Society.** Amazon will remember your selection, and then every eligible purchase you make at smile.amazon.com will result in a donation to SDGS (SDAG).

How much of my purchase does Amazon donate?

The AmazonSmile Foundation will donate 0.5% of the purchase price from your eligible AmazonSmile purchases.

How can I learn more about AmazonSmile?

Please see complete AmazonSmile program details.

SDAG Research Tool

SDAG RESEARCH TOOL - A comprehensive listing of all papers published by SDAG, whether as annual field trip guidebooks or special publications, is now available on our website. Entries are sorted by primary author, or chronologically by date of publication, starting with our first guidebook in 1972, from Coast to Cactus in 2014, and finally on the Julian 'Road to Gold' in 2017. These can be accessed or downloaded as .pdf files. They are fully searchable in Adobe Reader or Acrobat, so if you are researching a topic, "oikocryst" for example, you can search for that keyword. This listing will be updated as new books are published. Thanks to Greg Peterson and Hargis + Associates, Inc., for making this possible. See the links below:

http://www.sandiegogeologists.org/SDAG_Pubs_authors.pdf

http://www.sandiegogeologists.org/SDAG_Pubs_chronological.pdf

Interactive Fault Map for San Diego - Tijuana

As part of the update for the San Diego-Tijuana Earthquake Planning Scenario, Working Group No. 1's "Fault Map Subcommittee" completed the first publicly available bi-national active and potentially active fault map (http://sandiego.eeri.org/?page_id=265). This interactive GIS map includes the first publicly available active and potentially fault map locations from the City of San Diego. The map also integrated the faults south of the border for a bi-national cross border view. This map is an on-going project as our knowledge increases about local active and potentially active faults.

You can expand the map legend on the left side to select layers that can be turned on or off for the map view. You can also select from 1 of 12 base maps at the base map icon. You can click on the fault line in your map layer view to see the meta-data source. In addition, the City of San Diego Seismic Safety Study Geologic Hazards & Faults Maps are available in the layer titled "GeoHaz SD City." Please note that the City "Zone 12 Potentially Active" fault layers was not included in this data, therefore you will need to use the City Maps to find Zone 12.

The Fault Map link is available at: http://www.sandiegogeologists.org/Faults_map.html

Please contact Diane Murbach (dianemurbach@gmail.com 619-865-4333), Chair for the SDTJ Earthquake Scenario Working Group #1 - Earth Science, if you have any questions, or see any errors on this new fault map.

I would like to thank Carolyn Glockhoff for her endless GIS work, Jim Quinn and the City for providing their data and time, Jerry Treiman with CGS for his time preparing the Surface Rupture and providing their new State fault data layer, and Luis Mendoza at CICESE for providing the faults south of the border. Please contact Diane Murbach (dianemurbach@gmail.com), Chair for the SD-TJ Earthquake Scenario Working Group #1 - Earth Science, if you have any questions, or see any errors on this new fault map.

Diane Murbach (619) 865-4333

Engineering Geologist, C.E.G.

www.murbachgeotech.com

Request for 2019 SDAG/SDGS Publication Sponsors

On behalf of the San Diego Geological Society, Inc. (SDGS), a public benefit 501(c)3 nonprofit educational corporation, we would like to request tax deductible Donations for our San Diego Association of Geologists (SDAG) group. The list of paid Sponsors and the forms to become a Sponsor are located on the SDAG web site at: http://www.sandiegogeologists.org/Sponsors.html.

Your donation will further the SDGS mission to promote geology and related fields in the greater San Diego region, operating through the San Diego Association of Geologists (SDAG), a committee of SDGS. To achieve our primary educational objective, we organize frequent field trips and maintain a program of monthly meetings featuring speakers on current geological topics. We also publish field trip guidebooks and other publications related to geology and natural history. We encourage scholarship and research by awarding scholarships from the elementary through graduate levels. With your $100 "EMERALD" donation, your name/business will be listed as a sponsor on the SDAG web site (http://www.sandiegogeologists.org/) and in the monthly SDAG meeting newsletters. With your $500 "RUBY" or $1,000 or more "DIAMOND" level donation, your business card will also be included on the SDAG web site and in the monthly SDAG meeting newsletters. In addition, as a “$1,000 or more DIAMOND” level donation you will be presented with a thank you plaque.

Should you have any questions regarding a Sponsorship, please contact our non-profit SDGS Secretary (Diane Murbach) at 619-865-4333.

Call for Articles

SDAG invites members to submit articles on their current research or an interesting project they are working on for publication in the monthly newsletter. The article should be no more than 1 page in length. Photos are welcomed; too. Please submit articles to the SDAG secretary via email.

Geo Job Listings

Project Geologist Wanted

R. T. Frankian & Associates, Inc.

R. T. Frankian & Associates, Inc., a geotechnical engineering and engineering geology consulting firm since 1963, seeks a qualified individual for Project Geologist position. This position is to work on medium to large size land development-type projects, as well as to develop work within the public sector. The successful candidate must meet the following criteria.

The Project Geologist must -

- Possess BS/BA in Geology, with classes in geologic field mapping, stratigraphy/sedimentology, and structural geology
- Have 1-3 years experience in hillside grading in L. A. County or Southern California
- Be able to perform downhole boring logging, test pit logging, field supervision, slope stability analysis
- Be able to assist CEG with various aspects of land planning and development projects, **especially** field-related aspects
- Be willing to work in various aspects of the job (field, office, and as needed inspection)
- Possess excellent written and verbal communication skills, as well as excellent interpersonal skills
- Being a PG in the State of California is preferred but not required

R. T. Frankian & Associates, Inc., offers a competitive salary, commensurate with experience and abilities, and a benefits package.

Email resumes to resumes@rtfrankian.com**.**

Senior Engineering Geologist Wanted

R. T. Frankian & Associates, Inc.

R. T. Frankian & Associates, Inc., a geotechnical engineering and engineering geology consulting firm since 1963, seeks a qualified individual for the Senior Engineering Geologist position. This position is to work on medium to large size land development-type projects, as well as to develop work within the public sector. The successful candidate must meet the following criteria.

The Senior Engineering Geologist must –

- Possess BS/BA in Geology, with classes in geologic field mapping, stratigraphy/sedimentology, and structural geology
- Have 3-5 years experience in hillside grading in L. A. County or Southern California
- Be able to perform downhole boring logging, test pit logging, field supervision, slope stability analysis
- Possess excellent written and verbal communication skills, as well as excellent interpersonal skills
- Be willing to work in various aspects of the job (field, office, and as needed inspection)
- Be a CEG in the State of California

R. T. Frankian & Associates, Inc., offers a competitive salary, commensurate with experience and abilities, and a benefits package.

Email resumes to resumes@rtfrankian.com**.**

GEI Consultants, Inc. is a leading consulting engineering and environmental firm ranked #92 in the ENR top 500 (2018), with over 800 employees in multiple offices throughout the U.S. and Canada. We serve hundreds of government, energy, industry and institutional clients, and have completed 50,000 project engagements throughout the United States, Canada, and more than 20 other countries. Our technical experts are involved in dozens of specialty services emanating from our core solutions in water, energy, buildings, infrastructure and industrial.

We are seeking a full-time **Senior Engineering Geologist** for our Carlsbad, CA office. Experience in geologic investigations for dams and other water infrastructure projects is a plus.

Essential Responsibilities & Duties

- Manage the technical, financial, and client relationship aspects of a variety of geologic/geotechnical engineering projects throughout the country, with a geographic emphasis in California.
- Prepare technical scopes of work and budgets for proposals, and prepare requests for proposals for subcontractor services.
- Plan and lead the implementation of geologic/geotechnical site assessments and subsurface investigations, which include: field mapping, aerial photograph interpretation, rock and soil borings, surface and downhole geophysics, LiDAR analysis, preparation of technical reports, and providing technical oversight of subcontractors including review/approval of invoices and work proposals.
- Participate actively in professional organizations and conferences; deliver presentations, and write technical papers.
- Generate new business.
- Prepare and deliver technical presentations to clients and regulators.
- This position has a field component; travel, and some overnight travel are required.

Minimum Qualifications

- B.S. in Geology; M.S. is a plus.
- P.G. and C.E.G. with registration in California.
- 10+ years of previous professional experience in engineering geology.
- Excellent technical report writing and communication skills.
- Willingness and ability to travel on short-term assignments as needed.
- Valid U.S. driver's license.

GEI is an EEO/AA/M/F/Vet/Disability employer

Apply here: https://jobs.ourcareerpages.com/job/396913

For other opportunities within GEI, go to: https://geiconsultantsinc.ourcareerpages.com/

Trevet is an Environmental and Engineering Consulting Firm headquartered in San Diego, CA. We are seeking a **full-time staff level Geologist or Environmental Scientist**. Two to five years of experience preferred. At a minimum a bachelor's degree in geology, engineering, or a related scientific discipline is required. Must be eligible to work in the United States, and on Department of Defense installations. Ability to travel for extended duration (2 to 3 weeks) is required. The ideal candidate will possess great attention to detail, excellent written and verbal communication skills, and ability to work independently and within a team.

Duties will include a combination of field and office related tasks.

Field experience should include:

- Installation of soil borings using multiple drilling methods
- Describing soil using the USCS and ASTM classification systems
- Installing and abandoning groundwater monitoring wells
- Field sampling of groundwater, soil, and soil gas
- Remediation system operation and sampling

Field work may be performed at project sites with environmental media (e.g., soil, sediment, groundwater, surface water, etc.) that has been impacted with hazardous substances and/or hazardous wastes.

Office experience should include:

- Field data collection, analysis, and interpretation
- Preparation of data in visual, graphical, and tabular formats
- Technical report writing

Other Requirements

Familiarity with CERCLA/RCRA requirements

OSHA 40-Hour HAZWOPER Training with current 8-hour refresher class preferred.

Trevet is an Equal Opportunity Employer

Please apply at

http://www.trevetinc.com/

STAFF GEOLOGIST

Helenschmidt Geotechnical, Inc. seeks a full-time staff geologist for its office in Carlsbad, California. Requirements: Bachelor's degree in geology or engineering geology (Master's degree preferred), strong technical and writing skills ability to work as a team player. Competitive salary and benefits package. EOE. Email resume in confidence to engineering.hgi@att.net.

HARGIS+ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

Entry-Staff Hydrogeologist

OVERVIEW:

Hargis + Associates, Inc. (H+A) is an environmental consulting and engineering firm founded in 1979 with a commitment to providing high-quality, cost-effective services for our clients. We are headquartered in San Diego and have offices in Sacramento, CA, and Phoenix and Tucson, AZ. Our practice focuses on large facility investigation and remediation projects for Fortune 500 clients where we provide responsive, practical and innovative solutions for the treatment of soil, vapor and groundwater contamination. H+A also provides hydrogeologic and engineering services for groundwater resources assessment, stormwater management, and environmental regulatory and litigation support. H+A employs a staff of approximately 60 hydrogeologists, geologists, engineers, industrial hygienist, and project support personnel.

We are currently seeking an entry-staff level hydrogeologist to join our San Diego office supporting environmental investigation and remediation projects located throughout Southern California. These projects are primarily focused on the characterization and remediation of soil, vapors, and groundwater impacts at large industrial sites. In addition to implementing fieldwork for site investigations, the position will also involve data entry, interpretation, and technical report writing for various soil and groundwater monitoring programs.

RESPONSIBILITIES:

- Implement/and support field investigations for soil sampling, groundwater sampling, borehole drilling, and well installations.
- Complete tasks requiring utilization of critical-thinking skills, scientific, geologic, and engineering analytical techniques.
- Assist in the preparation of reports, work plans, sampling and analysis plans, remedial investigation reports, and groundwater monitoring reports under the direction and guidance of a Senior Geologist/Engineer/Scientist.
- Follow corporate health and safety and quality management plan standards.

REQUIREMENTS:

- BS degree in geology, hydrogeology or related technical discipline is required.
- 1-3 years of field experience in environmental consulting is preferred.
- Experience with geologic, engineering, scientific, or general environmental projects and data interpretation.
- Field experience with drilling, sampling (soil and groundwater), and well installations is a plus.
- OSHA 40-hr. HAZWOPER, current refresher preferred; training provided.
- General computer knowledge (Microsoft Office, Email); GIS and other environmental software experience is a plus.
- Excellent organizational and sound written/oral communication skills.
- Local candidates only; must be eligible to work in the United States.

PHYSICAL DEMANDS:

- Ability to drive, travel and/or perform field work approximately 50% of the time; some overnight and extended travel.
- Ability to lift 45 pounds.
- Must be able to perform the following actions while conducting fieldwork: stooping/kneeling/crouching, standing for long periods of time, pulling/pushing and lifting equipment and supplies, walking on uneven terrain.
- Ability to work in outdoor environments and hot/arid conditions.
- Ability and willingness to work long hours and in proximity to loud noises and hazards (i.e., proximity to moving mechanical parts, moving vehicles, and exposure to chemicals, fumes, odors, dusts, and gases).

Those who seek to apply may submit a cover letter and resume via email to hargisinfo@hargis.com

All qualified applicants will receive consideration for employment without regard to race, color, national origin, ancestry, sex, gender, gender identity, gender expression, age, sexual orientation, religious creed, physical or mental disability, medical condition, genetic information, marital status, veteran status, or any other classification protected by applicable federal, state, or local law.

MP Materials, Mountain Pass, CA

Seeking Industrial Hygienist/Radiation Safety Officer

Please contact:

Chris Baker
Senior Environmental Specialist
m: 562.331.4507
cbaker@mpmaterials.com | www.mpmaterials.com

PHOTOS OF THE MONTH

If you would like to submit a photo, email them to secretary@sandiegogeologists.org and I will try and put them in the newsletter. Provide a short description of the picture.

PHOTO 1: Sinkhole next to Union Pacific railway.

PHOTO 2: SDAG geologists observing the petroleum pipeline.

Topic: **Niland Mud Pots**

Photographs by: **Diane Murbach**

*****Please see the One-Stop Wonder (OSW) titled "Mud Pots on the Move" provided by Jennifer Morton in the Announcements of this Newsletter for further information.

HARGIS+ASSOCIATES, INC
HYDROGEOLOGY • ENGINEERING

Hargis + Associates, Inc. is an environmental consulting firm specializing in hydrogeology and engineering. We are headquartered in San Diego, California and have offices in Mesa and Tucson, Arizona. Our practice areas include all aspects of hydrogeology and engineering.

As a client service organization, we pride ourselves in being attentive and efficient in meeting our client's needs and solving their problems. In addition to our technical expertise, communication and responsive coordination are hallmarks of our reputation.

We invite you to explore our website to learn more about our firm and the services we provide. We welcome the opportunity to discuss our consulting expertise directly with you.
Contact: ***Dr. David R. Hargis***

H&P Mobile Geochemistry Inc.

H&P Mobile Geochemistry is an industry-leading provider of environmental lab services. With ten mobile labs and five direct push sampling trucks and unparalleled experience, H&P's repertoire of environmental lab services includes many forms of environmental lab sampling techniques all the way to on site field analysis services. H&P has successfully and accurately performed environmental lab services delivering quality results to our clients for over 16 years.
2470 Impala Dr., Carlsbad, CA 92010
(800) 834-9888 ***Contact: Louise Adams or Suzie Nawikas***

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Tetra Tech is a leading provider of consulting, engineering, and technical services worldwide. We are a diverse company, including individuals with expertise in science, research, engineering, construction, and information technology. Our strength is in collectively providing integrated services—delivering the best solutions to meet our clients' needs.
http://www.tetratech.com

Contact: **Rupert Adams, CEG**

Geocon Incorporated
6960 Flanders Drive, San Diego, CA 92121
P| 858.558.6900

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Contact: Barry Anderson **760-754-1337**

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Trevet is a San Diego-based environmental engineering and consulting 8(a)-certified small business enterprise.

Leighton is a multidiscipline engineering firm, providing geotechnical, environmental, and testing and inspection services. Founded in 1961, Leighton provides engineering solutions to public agencies, property owners, and facilities. With offices located in San Diego, Irvine, Los Angeles, Temecula, Rancho Cucamonga, Palm Desert, Santa Clarita, Ventura, and Bakersfield, we efficiently service any region of Southern California. Our professional staff of Registered Geotechnical Engineers, Professional Geologists and Certified Engineering Geologists, Registered Hydrogeologists, and Registered Environmental Assessors and Certified Inspectors provide decades of local experience for the successful completion of your projects.

For additional information, please contact Bob Stroh (rstroh@leightongroup.com)

Website link: http://www.leightongroup.com

- Dr. Pat Abbott — SDSU Professor of Geology, Emeritus
- Marty and Sherry Bloom
- Joe Corones
- Greg Cranham — Consulting Geologist
- Damon DeYoung — Battelle
- Dr. Margaret R. Eggers, CHG — Eggers Environmental, Inc.
- Karen Evans for Jim Evans (Deceased)
- Phil Farquharson — Geology Guy
- Carolyn Glockhoff — Caro-Lion Enterprises
- Dr. Sarah Gray
- Blayne Hartman — Hartman Environmental Geoscience
- Rob Hawk
- Dr. Monte Marshall—SDSU Prof. of Geology & Geophysics, Emeritus
- John Minch
- James R. Ashby/Mission Geoscience, Inc.
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