South Coast Geological Society Newsletter View this email in your browser

THE RECORD

OFFICIAL NEWSLETTER OF THE

South Coast Geological Society

In this edition:

MEETING INFORMATION

Location:

Green Dragon Tavern and Museum

6115 Paseo Del Norte

Carlsbad, CA

Cost:

Member $30

Non-Member $35

Meeting Date: Tuesday, January 15th

Topic: A Landscape Altered: The Explosive End to Kilauea's Summit Lava Lake and the Lower East Rift Zone Eruption of 2018

Speakers: Dr. Ken Hudnut, Matt Burgess, and Diane Murbach

Please join South Coast Geological Society and San Diego Association of Geologists for our joint meeting on Tuesday, January 15th, 2019 at 5:30 PM to be held at the Green Dragon Tavern and Museum in Carlsbad, CA (6115 Paseo del Norte, Carlsbad, CA 92011, Tel: 760.918.2421). We are hosting three guest speakers, Dr. Ken Hudnut, Matt Burgess, and Diane Murbach who will present their topic: "A Landscape Altered: The Explosive End to Kilauea's Summit Lava Lake and the Lower East Rift Zone Eruption of 2018."

Green Dragon, 6115 Paseo del Norte, Carlsbad, CA 92011
5:30 PM - Social Hour,
6:30 PM - Dinner,
7:30 PM - Presentation

Student/Prof. $15

Menu: Herb Grilled Chicken Breast, Vegetarian Cheese Ravioli, Classic Caesar Salad, Vegetable Medley, Garlic Mashed Potatoes, Bread Rolls, Cheesecake.

REGISTER TODAY

Meeting Information

Abstract 1: Kīlauea is a basaltic shield volcano located on the Island of Hawai‘i characterized by a summit caldera and two radiating rift zones. Currently ranked by the USGS as the number one threat for U.S. volcanoes, along with Etna and Piton de la Fournaise (Reunion Island), it ranks among the world's most active volcanoes and is often considered the most active volcano on Earth. Kīlauea, which is built on the east flank of the massive Mauna Loa volcano, has been Hawaii's most active volcano during historical time. Once thought to be a mere satellite of its giant neighbor, research over the over the past few decades shows that Kīlauea has its own magma plumbing system, extending to the surface from more than 37 miles deep in the mantle. It lies along the Kea trend of magmatic composition, chemically similar to Mauna Kea, Kohala, Haleakalā (Maui), West Maui and east Moloka‘i and chemically distinct from the sub-parallel Loa trend volcanoes: Lō‘ihi, Mauna Loa, Hualālai, Māhukona, Kaho’olawe, Lāna‘i, west Moloka‘i and Ko‘olau (O‘ahu).

Abstract 2: Eruptions are prominent in Polynesian legends as the volcano is home to the deity Pele, who isrevered in Hawaiian culture; and though written documentation only extends back to 1820, itrecords frequent summit and flank lava flow eruptions interspersed with periods of long-termlava lake activity. The 1.9 x 3.1 mile caldera was formed in several stages, with the most recent caldera forming period lasting about 300 years between 1500 and 1790 CE. The penultimate lava lake within the Halema‘uma‘u crater in the summit caldera, persisted for about 100 years, ending with explosive eruptions in 1924 when an intrusion entered the lower East Rift Zone.Since 1952 there have been 34 eruptions on the volcano. Eruptions have also originated from the >32 mile long East and >19 mile long Southwest Rift Zones, both of which extend to the sea from the volcano's summit. About 90% of the surface of the volcano is made up of lava flows less than 1100 years old and 70% of the volcano's surface is younger than 600 years old. A long-term eruption from the Pu‘u‘Ō‘ō vent on the East Rift Zone that began in 1983 produced lava flows covering more than 39 square miles of land, inundating the community of Kalapana, destroying nearly 200 houses (before 2018) and adding new coastline to the island. In the spring and summer of

2018 Kīlauea underwent drastic changes in its eruption, forever altering the once familiar landscapes. The PuʻuʻŌʻō vent collapsed on April 30 and magma migrated down rift. A magnitude 6.9 earthquake occurred on the volcano's south flank on May 4th and ~60,000 earthquakes occurred on the volcano between April 30 and August 4. Fissures formed in the populated Leilani Estates area of the lower East Rift Zone, eventually erupting ~1 billion cubic yards of lava. 716 dwellings were destroyed as 13.7 square miles of land was inundated by lava and 875 acres of new land was created by ocean entries. The lava lake in Halemaʻumaʻu, present in the Overlook vent since 2008 and overflowing onto the floor of the crater between April 22 and 28, had completely drained by May 10th, a decline of almost 1000 ft. Beginning on May 16 the summit vent became the site of explosive events that sent ash as high as 30,000 ft. On May 29 the caldera around Halemaʻumaʻu began to subside and near-daily summit collapse events continued until August 2nd, with each event releasing energy equivalent to that of a ~ magnitude 5 earthquake. When the dust had settled the partial collapse of the caldera had increased the area of Halemaʻumaʻu by ~1 billion cubic yards and maximum subsidence in the caldera was over 1,600 ft. By August 17th eruption of lava from fissure 8 had stopped and the ocean entries were no longer active by August 21. By September 4th when lava was no longer visible in the fissure 8 spatter cone, Kīlauea's largest eruption in at least 200 years was at least temporarily over.

Speaker Information:

Dr. Ken Hudnut has studied earthquakes as a geophysicist for the U. S. Geological Survey (USGS) in Pasadena since 1992. He recently led large team efforts to develop the HayWired Earthquake Scenario, as well as to obtain high-resolution topographic data using helicopter-mounted lidar to assess the eruption of Kilauea volcano. To help understand the San Andreas Fault system and the behavior of faults in general, he has studied earthquakes worldwide using satellite & airborne imagery along with field work to provide ground truth. Recently, he receivedawards for distinguished service and leadership from the American Geophysical Union and for meritorious service from the U.S. Department of the Interior. He is a Visiting Associate in Geophysics at Caltech and a Lecturer (on engineering geology) in Civil & Environmental Engineering at UCLA. He received his Ph.D. from Columbia in 1989, and his A.B. (high honors) from Dartmouth in 1983.

Matt Burgess was the seismic analyst for the USGS Hawaiian Volcano Observatory from 2013 - April 2018. On May 4th, 2018 he was called into emergency service for the USGS response to the eruption of Kīlauea volcano. For the following five weeks he stood watch 12 -15 hours per day over streaming real time geophysical data, providing situational awareness on the eruption from seismic, infrasound, deformation and atmospheric radar

reflections off the tops of ash columns to Observatory staff in the field and Emergency Operations Command from his homein San Diego. He has a MS in Geological Sciences from SDSU (2008) and has previously worked for the USGS California Water Science Center, San Diego Natural History Museum as well as on geophysics research projects at Mt. St. Helens, Long Valley Caldera, volcan Villarrica in Chile and the Alpine Fault, New Zealand. He is currently parenting full time, a volunteer research associate with the Hawaiian Volcano Observatory studying patterns of seismicity on Kīlauea and Mauna Loa, volunteering with the Guza lab coastal studies LiDAR group at ScrippsInstitution of Oceanography, and looking for meaningful long term employment in the geological sciences in San Diego.

Diane Murbach is a Certified Engineering Geologist (CEG) with 35 years of experience and registered in the States of California, Oregon, Washington and Arizona. She is a principal engineering geologist working as a co-owner of Murbach Geotech (MG) with her husband Monte Murbach. Diane received a B.S. degree from Eastern Washington University and an M.S. degree from San Diego State University in Geology. Diane's volunteer work for geologicalsocieties includes being a past President for the San Diego Association of Geologists (SDAG), and the South Coast Geological Society (SCGS). She currently serves as Secretary on the Board of Directors for the San Diego Geological Society, Inc., and chair for the Earth Science working group updating the San Diego Tijuana Earthquake Planning Scenario. Diane's background with volcanoes began in 1979 with Monte when both attended a two week Geology of Hawaii class on the Big Island. Six months later both were on another geology class next to Mount St. Helens in the state of Washington when this stratovolcano erupted. Diane and Monte have been chasing volcanoes and visiting all the Hawaiian Islands for the past 40 years.

Presidents Corner

Happy 2019, SCGS Members!

I hope you all had a fun and festive holiday season and are keeping up with those New Year's resolutions! I am honored to have been elected as president for this upcoming year, and I can't wait to continue elevating South Coast, as our previous presidents have done.

When I began with SCGS, I had no idea that I would be gaining a rock-solid family. This

society contains some of the most devoted, passionate, and warmhearted people I've ever had the pleasure of meeting. In my 3 years on the board, this group has shown me support, given me access to a wealth of information, allowed me to build incredible friendships, and so much more. I hope that in 2019 I can repay even a fraction of what I have received from this group.

This year, our officers are excited to continue some of our favorite traditions, as well as try a few new events. We will be scheduling additional Hike and Brews, planning a sporting event, and preparing another training seminar. Additionally, we intend to plan some fun networking/social events, geared at getting people out of their shell and interacting with other members in a casual setting. If you have any suggestions regarding future event possibilities, feel free to reach out to SCGS through email (scgs.mgmt@gmail.com), or talk to any officer!

Don't forget, TONIGHT is our monthly meeting! This month, we'll be in Carlsbad at the Green Dragon Tavern and Museum at 5:30. Remember, the first hour is social hour and check-in, so don't worry if you're running late because of work/traffic. Come when you can and come as you are; you're always welcome with South Coast!

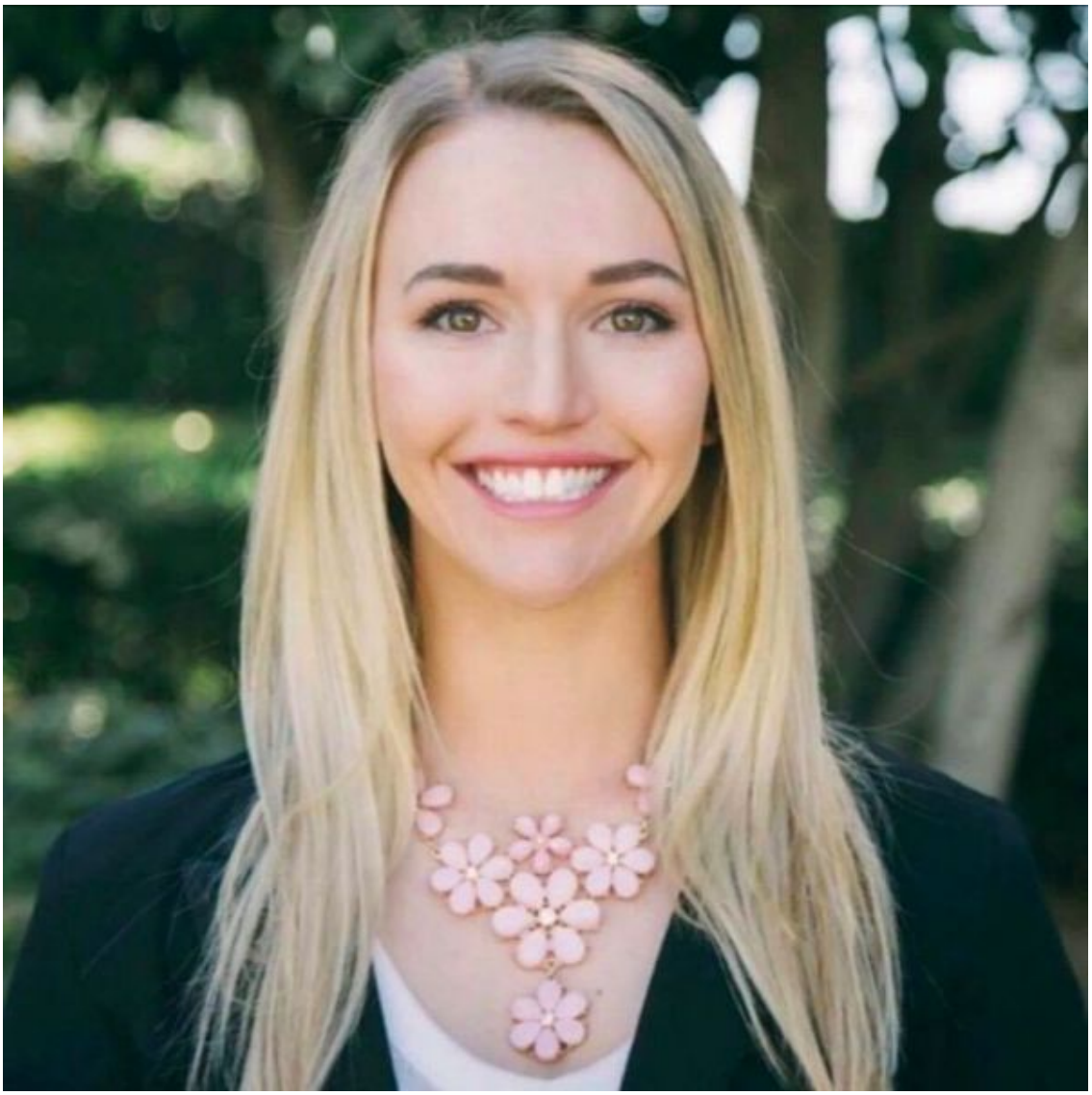
Tonight's meeting will feature 3 esteemed speakers: Dr. Ken Hudnut, Matt Burgess, and Diane Murbach. Their talk titled A Landscape Altered: The Explosive End to Kilauea's Summit Lava Lake and the Lower East Rift Zone Eruption of 2018, will be broken into three segments. I personally can't wait to hear about Diane and Monty's adventures chasing lava at Kīlauea! It's also going to be interesting to learn about such a recent geologic event from Matt, who will be presenting a chronology of last year's eruption from the perspective of the geophysical response, and Ken, who is going to share how he used helicopter-mounted lidar and aerial photography to observe rapid topographic changes. Warning: do not attend tonight's meeting if you already want to quit your job and move to Hawaii.

If anyone is currently looking to help the society, we accept cash, time, and supplies! If you are interested in volunteering with anything from small tasks, such as sorting maps for an afternoon, to more time-consuming jobs, like being a committee manager for the year, please reach out and let me know. If you would like to become a financial sponsor, follow the link to our website and check out the awesome benefits you'll receive for your tax-deductible donation! Also, if your company has deep pockets, kindly send me the contact information of someone important that I can harass. Lastly, we are in process of organizing our storage room which is generously donated by Eldon Gath and Earth Consultants International. If you have any storage containers, shelves, map bins, etc. that you no longer need, SCGS will gladly take them off your hands!

I can’t wait to see what incredible adventures this year holds for the society. I may be biased when I say that SCGS is be best rock & dirt group in California, but I still think congratulations and thanks are due to each of you for being a part of it.

Cheers to another year!

Allison Bieda
2019 President



Allison Bieda, SCGS President

MEMBERSHIP

Your membership in 2018 allowed SCGS to host stellar field trips, provide over $2,000 in student scholarships, and improve the society in many ways. South Coast Geological Society raises our annual budget through private contributions, so your membership is essential for us to continue the society, make improvements, provide phenomenal meetings, host field trips, and award student scholarships. To support the goals of SCGS we are asking for your membership renewal for 2019.

A membership to South Coast Geological Society has many benefits including discounted meeting and field trip costs, exclusive field trips and events, and more!

We welcome you to join or renew your membership with SCGS, one of the largest, most active Geological Societies in Southern California.

Membership Costs:

Professionals: $35 / year

Students: Free

Click Here for the Membership Form!

South Coast Geological Society Corporate Sponsorship

SCGS greatly appreciates our Corporate Sponsors! Corporate sponsorship allows SCGS to host stellar field trips, provide annual scholarships, and publish guidebooks. There are four Corporate Sponsorship Levels: DIAMOND ($1,000+), GOLD ($500+), SILVER ($250+), and BRONZE ($100+).

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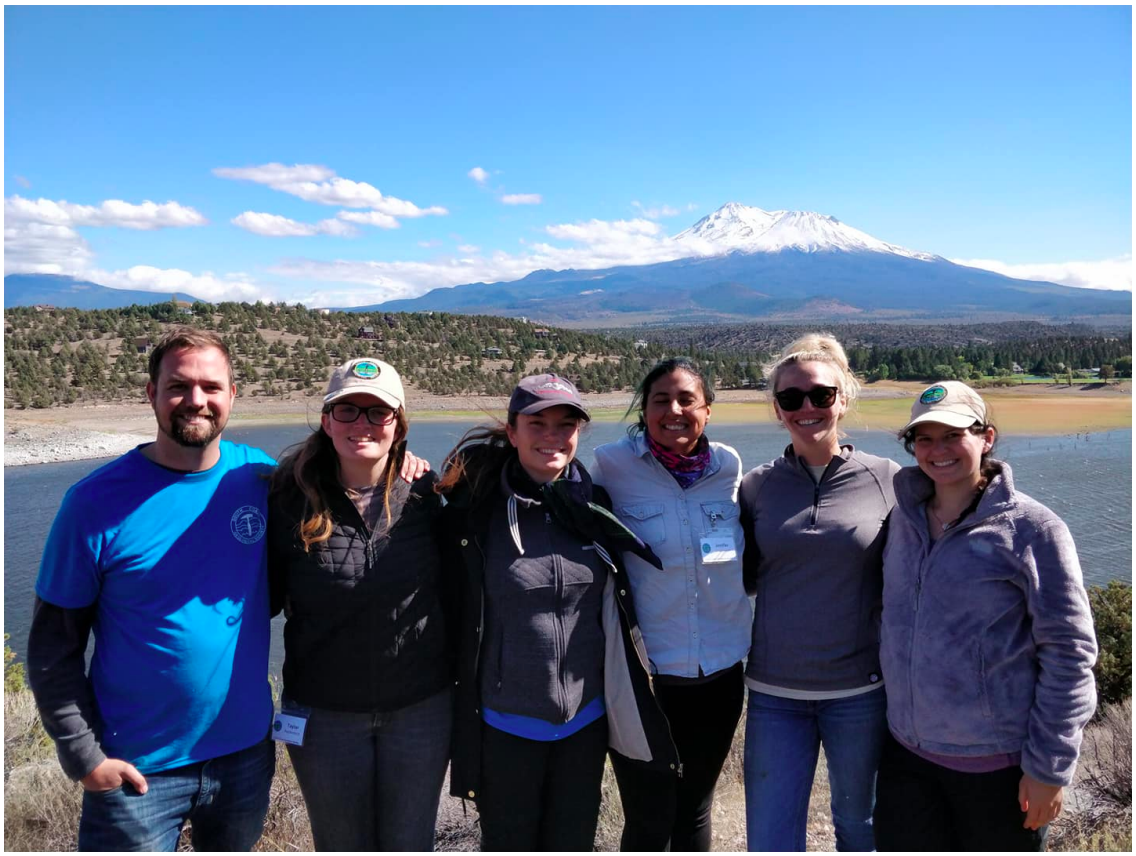
Volunteer with SCGS

South Coast Geological Society is seeking a motivated individual for the volunteer position of Secretary. Duties include checking-in members at meetings and events, sending monthly Newsletters and meeting announcements, managing membership, and maintaining meeting records.

Contact SCGS if you are interested.



ADDITIONAL LINKS

Association of Environmental & Engineering Geologists - So. California

Association for Women Geoscientists - LA/OC Chapter

American Society of Civil Engineers

Coast Geological Society

Groundwater Resources Association of California - So. California

Inland Geological Society

Los Angeles Basin Geological Society

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South Coast Geological Society
P.O. Box 10244
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