

SAN DIEGO ASSOCIATION OF GEOLOGISTS

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SDAG MEETING ANNOUNCEMENT

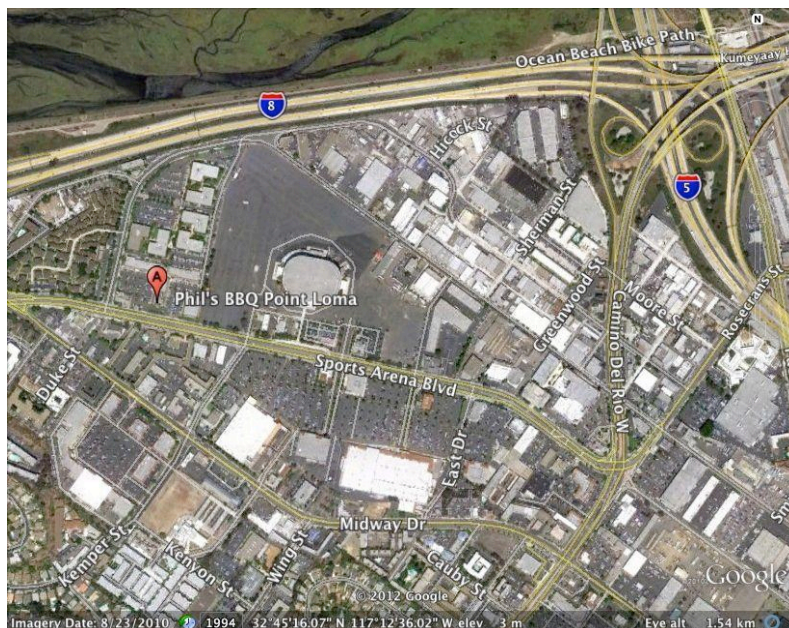
WEDNESDAY, September 19, 2012

RECENTLY-EXPOSED FUMAROLE FIELDS NEAR MULLET ISLAND, IMPERIAL VALLEY, CALIFORNIA

Presented by

Dr. David K. Lynch
United States Geological Survey (USGS), Pasadena
California.

- Where:** **Phil's Barbecue Event Center, Point Loma**
(Across the Parking Lot, Behind Phil's BBQ Restaurant)
3750 Sports Arena Boulevard, San Diego, 92110
(619) 226-6333
- When:** 5:30 pm – Social Hour
6:30 pm – Dinner
7:15 pm – Program
- Dinner:** Choice of Baby Back Ribs, Chicken, or Veggie Burger. Includes sweet baked beans and fresh coleslaw.
- Cost:** \$30 per person, \$5 discount for members, STUDENTS: \$20. Add \$5 if you did not make a reservation.
- Reservations:** Please try to make your reservation **online** at www.sandiegogeologists.org by **Wednesday, September 12th**. RESERVATIONS ARE ALWAYS PREFERRED OVER WALK-INS



SPEAKER ABSTRACT

Recently-Exposed Fumarole Fields near Mullet Island, Imperial Valley, California

Dr. David K. Lynch

United States Geological Survey (USGS), Pasadena California.

New field observations, lidar measurements, aerial imaging and preliminary laboratory measurements of mud samples are reported of three formerly submerged fumarole fields in the Salton Trough near Mullet Island in southeastern California, USA. The fumarole fields have recently been exposed as the Salton Sea level has dropped. The largest of the three fields visited in January 2011 is irregular in outline with a marked northeast elongation. It is roughly 400 meters long and 120 meters wide. The field consists of approximately one hundred warm to boiling hot (100° C) mud volcanoes (0.1 – 2 m in height), several hundred mud pots, and countless CO₂ gas vents. Unusual shaped mud volcanoes in the form of vertical tubes with central vents were observed in many places. Lidar measurements were obtained in the time period Nov 9-13, 2010 using an Optech Orion 200M lidar from an elevation 800 m AGL. They reveal that the terrain immediately surrounding the two fields that are above water level reside on a low (~0.5 m high) gently sloping mound about 500 m across that shows no evidence of lineaments indicative of surface faulting. With other geothermal features, the fumaroles define a well-defined line marking the probable trace of the Calipatria fault. Although the precise locations is uncertain, it appears to define a straight line 4 km long between the Davis-Schrimpf mud volcanoes and Mullet Island. Mullet Island is one of five late Quaternary rhyolitic volcanic necks in the immediate area of the fumaroles. The Calipatria fault is subparallel to the San Andreas and Imperial faults and only one of many verified or suspected faults (including cross faults) in the complex tectonic setting of the Salton Trough.

Mud from several volcanoes was analyzed using scanning electron microscopy (SEM), and energy dispersive X-ray spectroscopy (EDS). One sample contained boussingaultite, (NH₄)₂Mg(SO₄)₂·6(H₂O), a rare mineral that is known to sublime under fumarolic conditions, possibly by ammoniation of hydrated MgSO₄.

As the Salton Sea level continues to drop, the third fumarole field is expected to surface in the next couple of years. It is also likely that as more land emerges, many of the CO₂ gas seeps currently under water will begin to form mud volcanoes and mud pots, most of them along the same NW trending axis as the others. At about the same time a land bridge will form to Mullet Island, the first in about 60 years.

SPEAKER BIO

David Knight Lynch received a B.S. in Astrophysics in 1969 from Indiana University and a Ph.D. in Astronomy in 1975 from the University of Texas in Austin. He specializes in infrared spectroscopy of comets, novae, supernovae, young stars and very old stars. Dave also works in the field of optics in nature (rainbows, mirages, etc.) and geologic mapping. Dave has held research positions at the University of Texas, Sacramento Peak Observatory, Caltech, UC/Berkeley, Hughes Research Laboratories and The Aerospace Corporation. He has published over 160 scientific papers and 10 books. He has organized 12 international scientific meetings. He is currently with the United States Geological Survey (USGS) in Pasadena, where he studies the [San Andreas Fault](#).

2012 SDAG MEETING SCHEDULE – Mark Your Calendars!

Meetings are usually on the 3rd Wednesday of the month but may change to accommodate speaker and meeting place schedules. Check here for updates!

October 17, 2012	Chuck Houser
November 14, 2012	Joint meeting with EERI
December TBA, 2012	Tom Demere

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PRESIDENT'S CORNER

“Waiting for a Tsunami” is a couple of days away, anticipating another stellar SDAG field trip. Thanks go to Cari and all the usual suspects involved in organizing these field trips!

My how time flies- I've started planning for the December meeting already. This month, we will be entertained by the USGS's Dr. David K. Lynch presenting his talk “Recently-Exposed Fumarole Fields near Mullet Island, Imperial Valley, California.” Looking forward to hear more about boussingaultite, $(\text{NH}_4)_2\text{Mg}(\text{SO}_4)_2 \cdot 6(\text{H}_2\text{O})$! Upcoming speakers include our own Chuck Houser in October, a joint SDAG-EERI meeting on November 14, and finally the December holiday meeting at the San Diego Natural History Museum.

California State Parks does not want your money! Its official, all the pledged funds raised by Friends4Picacho to save Picacho SRA will not be solicited by State Parks via the donor agreement. It appears some normalcy has returned to Picacho, although the operating budget is still tight, and park staffing has been cut. If you pledged money to the cause, thanks for caring!

Todd Wirths
President

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NEW SDAG RESEARCH TOOL NOW AVAILABLE! 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, from our first guidebook in 1972 (40 years ago!) to all things Picacho in 2011. 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, "tsunami" 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

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Contact: Clay Clifton

ENGINEERING GEOLOGIST- California PG, MS Geology, over 13 years of applied geotechnical experience, proficient in geotechnical investigations, hazard evaluations, geophysical surveys, construction management and quality control, engineering analyses, special interest in earthquake-hazard and seismic design related applications, strong problem-solving and organizational skills. Detailed resume upon request: Anna, 201-407-7461, Afyodorova103@gmail.com

ENTRY-LEVEL ENVIRONMENTAL SCIENTIST - I am a recent UCSB graduate with a double major in Environmental Studies (BS) and Geology (BS, Earth Systems emphasis) who is looking to begin a career in environmental consulting. I have prior lab experience in both professional and academic settings. I am looking to establish myself with a passionate and hard working environmental

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