

Introductory field geology of the Eastern Mojave Desert and Mitchell Caverns, 3:00 PM, Friday, December 8, 2017 to 11:00 PM, Sunday, December 10, 2017. No prior geologic knowledge is required.

Trip is a fund raiser for the Geologic Maps Foundation (GMF). More information on the GMF's objectives and results are available at: www.geologicmapsfoundation.org

This is an introductory geologic field trip with several short hikes, a cavern tour, and an opportunity to learn about and appreciate a beautiful, rugged, yet fragile environment. Focus will be on visiting and explaining geologic features and concepts best learned in the field (especially the desert), and showcasing the fascinating and complex geologic history of the southwestern US. Van transportation is available or personal vehicles are allowed (for those using personal vehicles please consider car-pooling). We will stay Friday and Saturday nights at the Desert Research Center (DRC) near Baker, CA with meals provided.

Costs: Donation of \$250.00/participant using a personal vehicle, or \$350.00/participant using provided van transport is required.

The Geologic Maps Foundation, Inc. is a 501 (c) (3) organization.

If interested in trip, please contact Thom Davis at geologicmapsfoundation@gmail.com



What you will learn and see on this field trip: We will observe and discuss landform types and their development, various rock units and formations and the clues they provide to the geologic history, relative geologic time and stratigraphic order, faults, folds, and unconformities (time gaps) that indicate past tectonic events common across the western US. You will also learn how to read and use geologic maps and cross sections, and topographic maps. The trip will capped by a ranger-led tour of the Mitchell Caverns (recently reopened).

This is not a camping trip: We will stay Friday and Saturday nights at the Desert Research Center (DRC) near Baker, CA, run by CSU Fullerton (it's the historic Zzyzx Resort). DRC is set-up for education and research and includes a small museum, library, dining hall, and dormitory style rooms (think college living). DRC will provide breakfast, a sack lunch, and dinner on Saturday, and breakfast and a sack lunch Sunday. Accommodations are clean, basic, and out of the weather and are welcome after a day in the field as they include a warm room, bed and showers. Please acquaint yourself with the facility, what's available and what personal items to bring, and their rules before signing on trip: <http://nsm.fullerton.edu/dsc/>

This trip is led and hosted by the Geologic Maps Foundation. Donation of \$250.00/participant using a personal vehicle, or \$350.00/participant using the provided van transport is required (this is a very discounted price from what we normally charge for field trips). Pay by check, made out to: Geologic Maps Foundation. To reserve a spot contact Thom Davis at geologicmapsfoundation@gmail.com soon and mailing payment instructions will be provided. You will be required to make a \$100 nonrefundable deposit to hold a spot (If GMF cancels or reschedules trip a full refund will be made). Balance of donation will be due no later than December 1, 2017. All payments are donations to the Foundation and are tax deductible. Costs include van transportation (\$350.00 option), breakfast, lunch and dinner on Saturday, and breakfast and lunch Sunday, and a trip guidebook. You are responsible for your Friday and Sunday dinners (we'll probably stop at a restaurant in Barstow). Trip is limited 13 (trip needs a minimum of 10).



(HH photo)

Itinerary:

Thousand Oaks, Porter Ranch (City of Los Angeles) and Barstow, CA meeting points are for those using provided van transport, for those using personal vehicles meet-up point is Desert Research Center (DRC) at 9:00 PM 12/8/2017.

Friday, 12/8/2017, 3:00 PM: Meet and depart from Rancho Road Park and Ride, Thousand Oaks, with a 2d meeting point at Porter Ranch Park and Ride @ 4:00 PM, and a 3d meeting point at Park and Ride Barstow, CA @ 5:30 PM. Drive to DRC with a dinner stop in Barstow. Spend the night at DRC.

Saturday, 12/9/2017: Explore DRC grounds and depart @ 9:00 AM. Stops for the day: Afton Canyon and the ancient Mojave River, sand dunes, Paleozoic carbonate outcrops near Baker, Pleistocene cinder cones area, Mesozoic convergent tectonics and mining at Mountain Pass, and a ~2 mile Cima Dome hike. Return to DRC at 5:00 PM for the night.

Sunday, 12/10/2017: Explore DRC grounds and depart @ 9:00 AM. Stops for the day: Mesozoic granitic rocks at Mid-Hills, volcanic flows at Table Mountain, Hole-in-the-Wall ~2mile hike and Miocene caldera complex, Paleozoic rocks and

mining of the Providence Mountains and Mitchell Caverns tour @ 2:00 PM. If time and daylight permit, a visit to Kelso Dunes. Dinner stop in Barstow. Return to meeting points with arrival at Rancho Road Park and Ride @ ~11:00PM

Mitchell Caverns links:

http://www.parks.ca.gov/?page_id=615 ;

http://www.stateparks.com/mitchell_caverns.html



Meet-up point location links:

Rancho Road Park and Ride, Thousand Oaks, CA:
<https://www.mapquest.com/us/california/business-thousand-oaks/thousand-oaks-bus-information-353360089>

Porter Ranch Park and Ride, Porter Ranch, CA:

<https://www.google.com/maps/dir/Porter+Ranch+Drive,+Chatsworth,+CA/34.272246,-118.569592/@34.2723342,-118.5717176,17z/am=t/data=!4m8!4m7!1m5!1m1!1s0x80c284ad4ac4abcf:0x3c8ae439469f90cc!2m2!1d-118.569494!2d34.2724146!1m0>

Barstow Park and Ride, I-15 and L Street. Barstow, CA:

<https://www.google.com/maps/place/L+St+Park+%26+Ride/@34.885845,-117.05605,15z/data=!4m5!3m4!1s0x0:0x53108436d46088a6!8m2!3d34.885845!4d-117.05605>

Desert Research Center (DRC): <http://nsm.fullerton.edu/dsc/desert-studies-location-fac>

Update on the Geologic Maps Foundation's (GMF) efforts during 2017 (as of 11/20/2017)

Aliso Canyon Gas Storage Field, site of the largest methane leak in US history, and the fault hazard:

- 1) **Capstone publication for 2017:** Article in the journal **Science** discussing the Santa Susana fault hazard at the field and quality of scientific effort: http://geologicmapsfoundation.org/resources/Science_3Nov2017_EvaluatingFaultLinesinAliso_v358_issue6363_p601.pdf
- 2) OpEd in LA Daily News discussing fault hazard at field and quality of scientific effort: http://geologicmapsfoundation.org/resources/OpEd_LA_Daily_News_06Aug2017.pdf
- 3) Presentations given to three professional geologic societies, Fault displacement hazards at Aliso Canyon and Honor Rancho natural gas storage fields, southern California:
 - 9/11/2017, South Coast Geological Society, Santa Ana, CA, http://southcoastgeo.org/?page_id=12
 - 10/17/2017, Coast Geological Society, Ventura, CA, <http://www.coastgeologicalsociety.org/home.html>
<https://www.facebook.com/coastgeologicalsociety/>
 - 11/14/2017, San Joaquin Geological Society, Bakersfield, CA, <http://sanjoaquingeologicalsociety.org/current-abstract/>
- 4) Comments to DOGGR (Division of Oil, Gas, & Geothermal Resources, California Department of Conservation) regarding Supplement to SoCalGas' Storage Risk Management Plan #2, (10/11/2016), and shown as Attachment B to Letter from Southern California Gas to DOGGR and CPUC, dated November 1, 2016, http://geologicmapsfoundation.org/resources/GMF_Comment_to_Risk_Management_Plan_2_06Feb2017_Final.pdf
- 5) Comments to PHMSA (Pipeline and Hazard Materials Safety Administration, U.S. Department of Transportation) on the Interim Final Rules (IFR) for interstate and intrastate gas storage fields: Inclusion of the earthquake fault displacement hazard and risk management into IFR, dated February 8, 2017, http://geologicmapsfoundation.org/resources/Comments_to_IFR_08Feb2017.pdf

Rohingya Refugee Crisis:

- 1) Provided GIS geologic mapping of Chittagong Hills, Bangladesh to Groundwater Relief (<http://groundwater-relief.org/>) for providing clean water at 3 refugee camps in Ukhia and Teknaf Peninsula area of Bangladesh.

Active Fund Raiser for GMF:

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Field Trips: The Geologic Maps Foundation sponsored and led seven professional society field trips in 2016 & 2017:

- 1) Geologic field trip to the Mojave National Preserve, California, 2016:
<http://geologicmapsfoundation.org/resources/Geology%20of%20the%20Mojave%20National%20Desert%20Preserve%2023Sept2016.pdf>
- 2) Structural Geology and Oil Field Traps of the Western and Southern Margins of the San Joaquin Basin, California, 2016:
<http://geologicmapsfoundation.org/resources/PS%20AAPG%202016%20Structure%20of%20WSSJB%20guidebook.pdf>
- 3) Structural transect along Highway 33, Ventura to the Cuyama Badlands, California (April 2, 2017):
http://geologicmapsfoundation.org/resources/Structural_transect_along_Highway_33-02Apr2017_final.pdf
- 4) Santa Rosa Island Geology Field Trip (August, 2017):
<http://geologicmapsfoundation.org/trips-santarosaisland-82017.html>
- 5) Geologic field trip to the Eastern Mojave Desert, California, 2017
- 6) Santa Cruz Island Geology Field Trip (November, 2017)

Please share our efforts with any interested party or organization.

Much appreciated,

Thom
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