

SAN DIEGO ASSOCIATION OF GEOLOGISTS

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JOINT SDAG-SGCS MEETING ANNOUNCEMENT

WEDNESDAY, June 13, 2012

WHEN LANDSLIDES ARE MISINTERPRETED AS FAULTS

or

Your Fault is My Landslide (sometimes)

Presented by

Mike Hart

Engineering Geologist

Where: **El Adobe de Capistrano**
31891 Camino Capistrano, San Juan Capistrano, CA 92675
(949) 493-1163

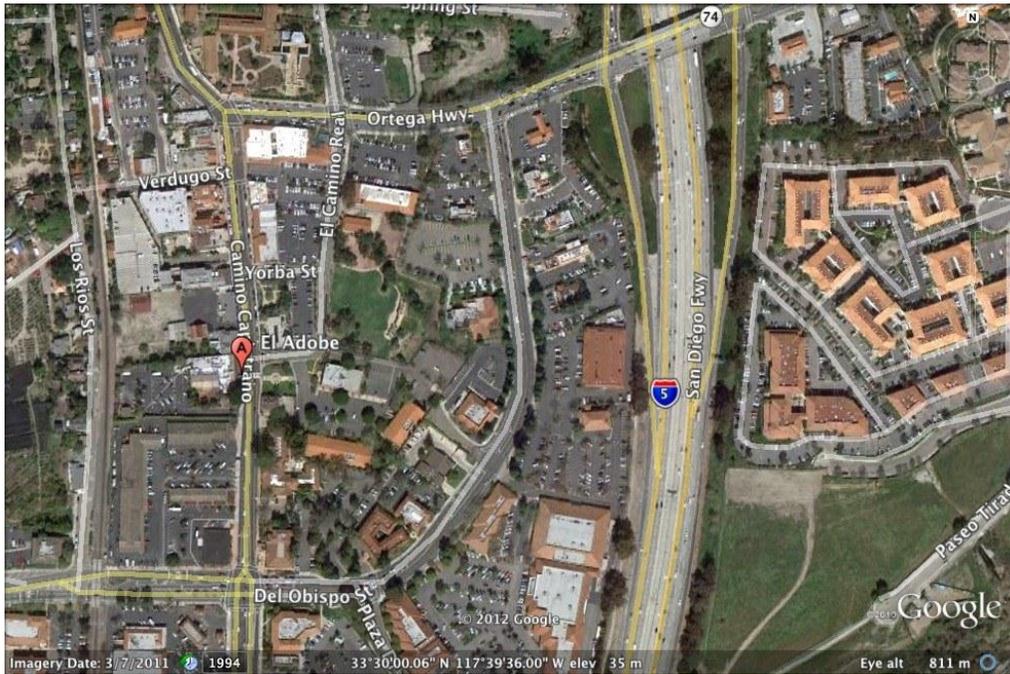
When: 5:30 pm – Social Hour
6:50 pm – Dinner
7:15 pm – Program

Dinner: Mexican Buffet. Coffee and tea are included.

Cost: \$30 per person, \$5 discount for members, STUDENTS: \$20. Add \$5 if you did not make a reservation

Reservations: Make your reservation online at www.sandiegogeologists.org no later than noon, **Monday, June 11th**.

**RESERVATIONS CANNOT BE GUARANTEED AFTER MONDAY AT 12 NOON
BUT THEY ARE ALWAYS PREFERRED OVER WALK-INS.**



SPEAKER ABSTRACT

WHEN LANDSLIDES ARE MISINTERPRETED AS FAULTS

Or, Your Fault is My Landslide (sometimes)

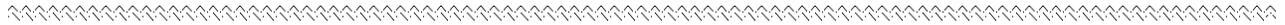
Mike Hart, Engineering Geologist

mwhart@aol.com

Several case studies from the western United States will be presented in which faults are mapped on the basis of geomorphic and structural evidence that is equally likely to indicate landsliding. In some examples faults have obscured evidence of landslides that utilized fault planes as rupture surfaces. In one California example, late Pleistocene or Holocene faults are mapped solely based on linear scarps that are better explained by landsliding. Similarly, both landslides and faults have been proposed to explain prominent scarps and grabens in the Saddle Mountains of Washington. Both faulting and landsliding have been invoked by consultants and reviewers to explain offset Quaternary colluvium in observation pits and linear scarps in a subdivision in central Utah. Several subparallel linear scarps in granitic rock on a ridge top in the southern California desert have also been mapped as faults. Recent studies, however, show that the features more likely indicate incipient landsliding that grades laterally into fully developed landslides. The Hebgen Lake, Montana earthquake of 1959 produced landsliding as well as tectonic ground rupture. It is suggested that an arcuate scarp that formed north of the primary ground rupture zone previously interpreted as a fault was likely produced by reactivation of a 6 mi (9.7 km) wide landslide. A final case study is presented where a combination of normal and thrust faulting mimics landsliding near St. George, Utah. Failure to correctly differentiate between landslides and faults leads to incorrect evaluation of a site's stability as well as incorrect evaluation of seismic hazard and ultimately impacts public health and safety.

SPEAKER BIO

Mike is a Certified Engineering Geologist in California and has practiced in the southern California area for over 30 years. Mike is a graduate of San Diego State University (M.S., 1972). In 1975 he joined Geocon, Inc. as vice president and principal engineering geologist. Since leaving Geocon in 1992 he has been an independent engineering geology consultant specializing in landsliding and evaluation of fault hazards. Recent publications include papers on landslide failure mechanisms, and identification. Mike is past chairman of the Association of Environmental and Engineering Geologists Landslide Committee, past Chair of the Engineering Geology Division of the Geological Society of America, and a long time member and past president of the San Diego Association of Geologists and South Coast Geological Society.



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!

July 18, 2012	Dr. Mario Caputo, San Diego State University, "Quaternary Limestones of San Salvador Island, Bahamas, and Jurassic Sandstones and Holocene Sand, United States: Comparative Eolian Sedimentology"
August 15, 2012	2012 SDAG Field Trip Preview: Camp Pendleton Cherts
September 19, 2012	TBA



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PRESIDENT'S CORNER

How much money does it take to save a state park? \$60,586.03, to be precise. This is the funding needed to keep Picacho State Recreation Area open for fiscal year 2012-13. The grass-roots organization Friends4Picacho has established an agreement with the Cuyamaca Rancho State Park Interpretive Association (CRSPIA) to operate as the fiscal sponsor, and will formally be known as Cuyamaca Rancho State Park Interpretive Association DBA Friends4Picacho. CRSPIA has over twenty years as a successful 501(c)(3) association. They support the mission of California State Parks through educational and interpretive activities at Cuyamaca Rancho and Palomar Mountain State Parks. Friends4Picacho and CRSPIA are both all-volunteer organizations. Every dollar donated to Friends4Picacho will only be used for Picacho State Recreation Area.

<http://www.friends4picacho.org/donations.html>

By the middle of June, plans will be in place for a fund-raising event to be held in San Diego, including a video presentation and book signing by yours truly. Friends4Picacho is seeking a venue and possible donations for hors d'oeuvres and/or apéritifs. By this month's meeting, plans should be in place, and I'll make an announcement then. Spread the word!

It should be noted that one of the Park's main expenses is diesel fuel for the old, inefficient generators, which in turn power the park infrastructure. If the Park remains open, effort will be focused to research and procure efficient, alternative power sources (solar, anyone?), something the Park has been aware of for some time and has already logged years of research and cost analyses. So the Park knows exactly what they need, and requires just a little more time and funding, maybe some sponsorships. State and Federal agencies (namely, the BLM) do not want the park closed. Closure is a huge, costly undertaking. A cost-sharing program with the BLM is already in place. If a significant portion of the required amount is raised by the "deadline" of July 1, indications are that bulldozers will not be in place as dawn breaks, ready to "remove improvements" at the Park. An exaggeration, sure, but possible down the line.

I went to Picacho last weekend: dropped off copies of *Picacho and the Cargo Muchachos*, and did more research for the Picacho Road log that I will need to incorporate in a 2nd edition (the turnoff for the old railroad route for transporting ore to the riverside mill is not at Railroad Canyon Road, but 0.4 miles south of the park fee station; Railroad Canyon Road intersects the railroad track trace after 1.1 miles from Picacho Road). I rode my buddy's 225 Hp turbo-charged SeaDoo in the River. It does 70 mph, but I chickened out at "only" 45 mph when I rode it. I stopped at the closed Picacho Mine, a place I would have liked to add as a stop on last year's field trip, but had no idea who to contact. On this day, the gate was open, and I met the caretaker. Long-story-short, I got a quick tour of the mine, and saw not only the impressive variegated coloring of the walls of the huge open pit, but the remains of the century-old mill, completely surrounded by modern mine tailings. The previous mine operators and property owners made quite an effort to preserve the structure, weathered 12-inch timbers still bolted to the bedrock. Mind you, the bedrock is gold ore. Generous, indeed. Here's a blurry image of me at the mill, with my book.



I loved last month's presentation by Dr. Beth O'Shea on arsenic in groundwater, but the factors involved in the relationship of arsenic and groundwater were so complex... I wondered how the research could be applied here in San Diego, with its elevated arsenic levels in groundwater here and there (or does it even matter?). This month at our annual joint meeting with SCGS, one of two (that I know) past presidents of both our organizations will be speaking: the esteemed Mike Hart will present "When landslides are interpreted as faults; or, your fault is my landslide (sometimes)." Afterwards, much merrymaking.

Todd Wirths
President



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VOLUNTEERS NEEDED! On Friday, June 8, in the early morning, Mike Buga and Monte Marshall will complete the backfilling of Mike's fault trench on the Clark strand of the San Jacinto Fault. If you would like to volunteer to help, please contact Monte by email: mmurbach@aol.com.

CALL FOR PAPERS – SOUTH COAST GEOLOGICAL SOCIETY For their 2012 Field Trip, the South Coast Geological Society is looking eastward towards the Inland Empire, the San Jacinto Mountains and the Coachella Valley. SCGS is currently seeking papers addressing topics related to geology, tectonics, engineering geology, hydrogeology, hydrology, Quaternary geology, paleontology, environmental issues, geomorphology, and archaeology of the eastern Inland Empire, San Jacinto Mountains, the northern Coachella Valley and surrounding areas. The trip will be conducted in October 2012. In addition to seeking papers that can be included in the Guidebook, SCGS is seeking interesting field trip stops and field trip stop speakers.

If you or someone you know has done or is doing research in the area please contact Jeff Miller via email at jmiller@e2managetech.com or by phone at (916) 747-4847.

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## SEEKING JOB OPPORTUNITIES

**Qualifications Summary and Objective:** I have 14 years experience directing surface water quality monitoring programs with a proven record of excelling in monitoring plan implementation, quality control, public notification and continuous improvement in operational effectiveness and efficiency. I have built and maintained relationships with key staff in academia, industry, and all levels of government in San Diego and California. I have a widely applicable skill set which includes: analytical thinking, communication and writing skills, data analysis and management, inter and intra-agency project coordination, and staff supervision and training. My objective is to obtain a career position with an industry leader where I can contribute my skills to build the success of my employer as well grow professionally. Detailed work experience, education and more at [www.linkedin.com/in/cbclifton2010](http://www.linkedin.com/in/cbclifton2010). Email [cbc2006@cox.net](mailto:cbc2006@cox.net) or 619-964-1776. Contact: Clay Clifton

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**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](mailto:Afyodorova103@gmail.com)

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JOB OPENING!

Environmental firm located in Carlsbad, CA is looking to hire an entry-level geologist (up to 1 - 2 yrs. experience) with drafting skills and some field experience.

Skills/Qualifications:

1. Organized, detail-oriented, and work well under tight deadlines
2. Strong writing skills--grammar, proofreading and communication
3. Computer proficiencies should include Mac, Excel (formulas & charts) and MacDraft
4. Konica Minolta Bizhub scanning and copying

Begin working in June.

Salary to be decided upon.

Contact:

df@desxyz.com

Request for Sponsors: 2012 SDAG/SDGS and 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 at our San Diego Association of Geologists (SDAG). 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

SDAG Field Trip 2012

Waiting for Tsumani: Coastal Hazards, North San Diego County

The 2012 San Diego Association of Geologists annual field trip will examine the coastal hazards and volcanic history of northern coastal San Diego County, California. We will tour San Onofre Nuclear Power Plant and Scripps Pier on Saturday. On Sunday, we will visit Calavera Hill and Agua Hedionda Lagoon.

DATES / ITINERARY: September 8-9, 2012.

Bring everything you need to get a good night's sleep, as well as a folding chair and evening drinking vessel. There are picnic benches in camp. Green-minded? Bring a mess kit, save trash! Please carpool to Guajome Park.

Saturday – Meet at Guajome Park campground at 7:30am, approximately 45 minute drive from San Diego for a continental breakfast. Saturday lunch and snacks provided as well as a BBQ supper feast. Transportation from the park to our stops will be provided. Option for overnight camping at Guajome Park, no additional cost.

Sunday – Continental breakfast, box lunch, and departure. Transportation by private vehicle.

COST: \$140 per person. Discount for SDAG members and students. Fee includes guidebook, campground fee, five meals, snacks, and beverages. Fees are non-refundable. All ages welcome.

FOR ADDITIONAL INFO: Contact SDAG VP Cari Gomes at cq7783@yahoo.com.

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2012 SDAG FIELD TRIP REGISTRATION FORM

TODAY'S DATE: _____, 2012

Name(s): _____

Address: _____

City/State/Zip: _____

Phone(s): _____

Email: _____

TOTAL NUMBER AND FEE FOR YOUR PARTY

MAIL FORM AND CHECK (payable to SDAG) TO:

___ \$140/ea. Non-members: \$ _____

SDAG
663 S. Rancho Santa Fe #124
San Marcos, CA 92078

___ \$120/ea. SDAG member* discount: \$ _____

Member spouse cost w/o field trip guidebook

___ \$ 60/ea. Students (1st 10) \$ _____

TOTAL ENCLOSED: \$ _____

San Diego Geological Society, Inc. and San Diego Association of Geologists

General Release and Save Harmless Waiver

The undersigned is advised that dangers and hazards may include but are not limited to uneven ground, steep trails, poison oak, heat and cold stress, poisonous reptiles and insects, open flames, uncertain and possible extreme weather conditions, mad dogs, floods, earthquakes, tsunamis, radiation exposure, sun burn, and landslides on the San Diego Association of Geologists field trip planned for September 8-9, 2012, and does hereby assume any and all risks involved in connection with the field trip and does hereby save and hold harmless San Diego Geological Society, Inc., its board of directors, its committees including the San Diego Association of Geologists and its officers and members, and other participants, all claims, losses and damages (including attorney's fees and any costs involved because of said claims) on account of injury, death, property damage, and inconvenience or loss of money due to delay that may arise, by reason of my participation in the field trip. I understand that I am responsible for carrying my own medical and liability insurance.

Signature

Date

SDAG Members Visit Clark (dry) Lake for One Stop Wonder

May 12, 2012 - San Diego Association of Geologist's One Stop Wonder. Fault Trench exposing Clark Strand of San Jacinto fault, Clark (dry) Lake, Anza-Borrego Desert State Park.

On a warm (OK, Very Warm), sunny day, we got to visit a trench which exposes up to 10 earthquake events. The trip leader was Monte Murbach, past President of SDAG. Twelve hardy souls converged on Clark Lake and walked about a half mile to the trench site. The party consisted of six representatives from Anza-Borrego State Park and six SDAG members. As noted below, this trenching project is the Thesis project of Mike Buga from SDSU. Mike's Thesis advisor is Professor Tom Rockwell. Thanks to Tony Carrasco from the SDSU Geology Department, we had a very large print of a photo mosaic demonstrating Mike's interpretations of 10 earthquake events. In the field we were able to put our hands on the fault lines and compare them with the interpretations on the poster - which lead to great discussions, in particular for people not familiar with faulting and trench investigations. The dialogue included: how to locate a fault trace on the ground surface; tools used in fault investigations including aerial photography, LIDAR, geologic maps, mapping of lineaments, luck..., etc.; trenching and fault line interpretation (on trench walls) and age dating techniques; why trench in a lake bed?; why this particular site could only be excavated by hand shovels and no mechanical equipment (designated Wilderness); and why does the trench need to be backfilled? After the discussion, those that stuck around, and had shovels, helped start the backfilling process (required by the Park's permit) which lasted a couple hours until it got too hot. The backfilling continued the next day for a few hours until it also got too hot... Sooo- there is a little bit of backfilling to complete... **During the early morning hours of June 8 (Friday) Monte Murbach and Mike Buga and anyone else willing to help will complete the backfilling process, leveling the site to complete the permit requirements. If you would like to help, please let Monte know via email: mmurbach@aol.com.**

The following is Mike Buga's Thesis Abstract:

We present results from a new paleoseismic trench site on the Clark strand of the San Jacinto Fault Zone in Clark Lake, western Salton Trough, southern California. The trench results suggest that most late Holocene slip along the Clark fault at Clark Lake is localized within a narrow zone as per the absence of faults in the southern two trenches. We have identified up to 10 past surface ruptures that have occurred in the last 2,600 years. Using interseismic periods, we calculate an average recurrence interval (RI) of 227 ± 114 years. This corresponds well to the Hog Lake RI of 235 ± 116 years for major ruptures. The two most recent events are likely the November 22, 1800 and ca 1550 earthquakes, and correlate to events 2 and 3 at Hog Lake, ~50 km to the NW, based on mapping of small geomorphic offsets along the Clark fault. The next three events, E3 to E5, correlate to a cluster of events, E-4 to E-8, at Hog Lake. There are two events at Hog Lake that we do not see at Clark Lake, E-5 and E-7, suggesting that some of the ruptures in the Hog Lake cluster correspond to rupture of the northern part of the zone, similar to what occurred in the 1918 M6.9 earthquake. These observations suggest that the entire Clark fault fails together in some large earthquakes (Mw7.3) whereas the northern Clark fault may fail more frequently in M6.5-6.9 earthquakes, as occurred in 1899 and 1918.

See Mike's Thesis Defense:

http://www.geology.sdsu.edu/people/students/theses/spring2012/michael_buga.html

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