

Inland Geological Society

Newsletter of the Inland Geological Society

Volume 35 No. 7

September 2019

Next Meeting:
Wednesday,
September 4th

Time:
Social: 6:00pm
Dinner and
Presentation:
7:00pm

Location:
Jurupa Mountains
Discovery Center
7621 Granite Hill Dr.
Jurupa Valley, CA
92509

Coming to
Dinner?
Please RSVP
by 9/2
rsvp.igs@gmail.com

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September Speaker:

Bryan Castillo

Main Talk:

**Ages of prehistoric earthquakes on the Banning Strand of the San Andreas Fault,
near North Palm Springs, California**

Abstract:

The southernmost section of the San Andreas Fault (SAF) is the only section of that fault that has not ruptured in the last 200 years. It is not known whether this long quiescent period reflects a long average recurrence interval for this portion of the fault or whether the current interseismic interval is longer than average. Near Indio, the SAF splits into 3 strands; limited paleoseismic work has been conducted on the Mission Creek and Garnet Hill strands and the Banning strand has no available age control for any surface-rupturing prehistoric earthquakes. We studied a paleoseismic trench that was excavated across the Banning strand by Petra Geosciences (33.9172°, -116.538°). The trench exposed a ~40 m-wide fault zone in interbedded alluvial sand and gravel, coarse-grained debris flow deposits, and clay-silt deposits. We present the first paleoseismic record for the Banning strand of the southern SAF. The most recent event occurred between 730 and 950 cal BP, potentially coincident with rupture of the San Gorgonio Pass Fault Zone. We interpret that five earthquakes have occurred since 3.3-2.5 ka and eight earthquakes have likely occurred since 7.1-5.7 ka. It is possible that additional events may have occurred without being recognized, especially in the deeper section the stratigraphy, which was not fully exposed across the fault zone. We calculate an average recurrence interval of 380 - 640 yrs based on four complete earthquake cycles between earthquakes 1 and 5. The average recurrence interval is thus equivalent to or less than the elapsed time since the most recent event on the Banning strand. The recurrence interval is similar to that of the San Gorgonio Pass Fault Zone (450-1850 years) but longer than that for the Mission Creek strand (~220 years).

Biography:

- M.S. Geology California State University, San Bernardino
- B.S. Geophysics California State University, Northridge
- Currently an Adjunct Professor at Cal State San Bernardino. Currently working on applying to PhD programs, Installation of Creep meters following the Ridgecrest earthquake sequence and publishing my masters thesis work.

Side talk:

(also by Byran Castillo)

We report sub-cm triggered slip and afterslip from eighteen creepmeters in the epicentral region and at distances of up to 450 km from the Ridgecrest earthquake sequence. Eleven extensometers 300-450 km south and NE of the July 2019 Mw6.4 and Mw7.1 Ridgecrest earthquakes sampled 20 μm to 4.3 mm of triggered slip at one sample per minute during the passage of surface waves. At all locations triggered slip for the Mw7.1 mainshock exceeded slip triggered by the Mw6.4 foreshock. In most cases slip was complete between 1 minute samples, but at three sites slip persisted for 2-10 ten minutes following initial triggering. Triggered slip also occurred on numerous unmapped faults in the mezzocentral area and on the Garlock Fault to the south but seven creepmeters installed 2-10 days after the earthquakes recorded negligible afterslip. Slip across the western and southern ends of the main ruptures slowed from 20 $\mu\text{m}/\text{day}$ to 10 $\mu\text{m}/\text{day}$ two weeks after the mainshock with an exponential decay constant of 16 ± 1 days, comparable to the decay in mezzocentral aftershock energy release for the same interval. Slip rates on triggered surface fractures of the Garlock fault were initially less than 5 $\mu\text{m}/\text{day}$ with decaying rate.

**Check out IGS's Facebook Page at
<https://www.facebook.com/groups/InlandGeo/>**

ANNOUNCEMENTS AND EVENTS:

BPELSG Announcement:

On November 30, 2018 the California 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.

Please visit our webpage to view the Initial Statement of Reasons and the proposed text. https://www.bpelsg.ca.gov/about_us/rulemaking.shtml Comments from you are very important. Comments regarding suggested changes as well as comments indicating areas of agreement are equally important to the process. Instructions for providing comments are included with the public notice.

AEG 2019 Annual Meeting



The Association of Environmental & Engineering Geologists 2019 Annual Meeting invites you to the 67th Annual Meeting in Asheville, North Carolina September 17-22, 2019. For complete meeting details and to register, please visit www.aegannualmeeting.org.



DINNER MEETING – Thursday, September 12, 2019

“Bulk Solids Handling 101”

PRESENTED BY: Carrie Hartford, Technical Sales Manager and Senior Project Engineer, Jenike & Johanson, Inc.

TIME: 6:00 pm Social
7:00 pm Dinner and Presentation

LOCATION: Dave & Buster's Conference Room
4821 Mills Circle
Ontario, CA 91764

HOSTED BY: SoCal Section of SME



COST: RSVP - Professional \$35, Students \$10
At door - Professional \$40, Students \$20

RSVP: Nicolette Grill @ ironmtn2012@gmail.com
by Tuesday, September 3, 2019

ABSTRACT: If you are in the mining and mineral processing (M&MP) business, you are really in the business of bulk solids flow. As raw solids, ore and its derivatives are some of the most challenging bulk solids to handle in a controlled manner. This often overlooked, critical design challenge is reflected in former SME President (2014) John Marsden's career-inspired Top Ten Things All Mining and Metallurgical Graduates Should Know. In 2016, Dr. Marsden rated knowing how to design a transfer chute as his #1 tip for graduates. In this talk, Carrie will discuss the basics of bulk solids handling, common pitfalls in design, and ways to overcome flow issues or prevent them. Many examples and case studies will be used in the discussion, covering topics such as stockpiles, silos/bins/hoppers, and transfer chutes.



BIOGRAPHY: Carrie Hartford, Technical Sales Manager and Senior Project Engineer, has been with Jenike & Johanson for over a decade designing bins, silos, feeders, and transfer chutes to solve challenging material handling problems for clients in all industries. She teaches courses, writes papers and gives technical presentations all over the world regarding the science of bulk solids handling and storage. She holds a Mechanical Engineering degree from UC Santa Barbara, MBA from Azusa Pacific University, and a California Professional Engineers license in mechanical engineering. Carrie is based out of San Luis Obispo, California. Previously she established Jenike & Johanson's office in Perth, Australia.

UPCOMING MEETINGS:

Please mark your calendars for the following upcoming meetings of the SoCal Section of SME.
(Due to seasonal venue costs, we do not plan to have a December meeting.)

Date	Event	Location	Speaker	Sponsors
October 10, 2019	Dinner Meeting	Dave and Busters, Ontario, CA	TBD	TBD
November 14, 2019	Holiday Party	Dave and Busters, Ontario, CA	TBD	TBD

Plan ahead for the **Geological Society of Nevada's** 2020 Symposium, *Vision for Discovery: Geology and Ore Deposits of the Basin and Range*, scheduled for May 12-24, 2020, at the Nugget Casino Resort in Sparks, Nevada. Abstract submittal will open soon! For more information, visit the organization's website at <http://www.gsnv.org/2020-symposium/>.

Dear Colleagues:

I am pleased to announce the completions of the Fall 2018 Cooperative Well Measuring Program.

This season we have requested data from 81 water agencies from the Upper Santa Ana, San Jacinto and western Whitewater River Watersheds.

5,198 wells are in the spreadsheet
2,447 are considered "active"
2,751 are considered "closed" and assumed abandoned

I received 1,423 reported water levels (excluding a good number reported as dry)

A large number of these wells (active and closed) have data back to 1993 on this spreadsheet and data back to the Spring 1964 is available in interesting formats.

If you would like a copy of this year's report, I am holding the subscription fee at \$150 for this season's work.

Many of you know I am now semi-retired, points to anyone who can find Grenada California, so your continued support of this semi-annual report keeps me willing to keep slugging thru pages of water levels in various formats :)

If you have any questions, please give me a call!

THANKS!

Steven E. Mains
Watermaster Support Services

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P.O. Box 250
Grenada, CA 96038

Visit the
Jurupa Mountains Discovery Center
7621 Granite Hill Drive, Jurupa Valley, California 92509
951.685.5818

The Jurupa Mountains Discovery Center hosts the Ruth and Sam Kirkby Earth Science Museum, which houses a unique collection of exhibits including the Crestmore Quarry, fluorescent minerals, Indian artifacts, mining exhibits, petrified wood, sea shells, dinosaur exhibits, fossils, rocks and minerals, and many more.

The onsite Granite Hill Nursery stocks a large variety of cacti and succulents, and the gardens showcase mature and unique species over several acres. A collection of butterfly gardens is under construction as part of ongoing Eagle Scout Service Projects. The Center also provides hands-on educational kits for educators, houses a critter corner in the gift shop, and hosts themed toddler times on Friday afternoons.

The Center is always looking for volunteers to assist in the many on-going activities from light construction work to assisting with tours and programs. This is a worthwhile and fulfilling opportunity for scientifically-minded individuals of all ranks, from students through working professionals to retirees. This service will look great on your resume! Please contact Executive Director Wes Andree at 951/685-5818 or director@jmdc.org for further details.

Visit the website at <https://jmdc.org> to learn more about the Jurupa Mountains Discovery Center!



Upcoming Meetings/Events

Inland Geological Society

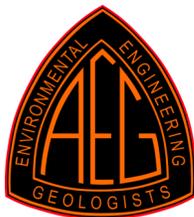
In 2019, the Inland Geological Society will meet the first Tuesday or Wednesday of each month. The next meeting is scheduled for Tuesday, Oct. 1st For more information, visit our website at www.inlandgeo.org.

South Coast Geological Society



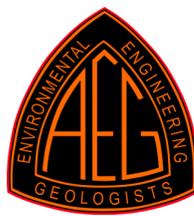
Monthly dinner meetings are typically the first Monday of each month. For more information, visit the association website at www.southcoastgeo.org.

AEG—Southern California Chapter



The AEG — Southern California Chapter typically meets the second Wednesday of each month at Victorio's Ristorante in North Hollywood. For more information, visit the association website at www.aegsc.org.

AEG—Inland Empire Chapter



The AEG — Inland Empire Chapter typically meets the third Wednesday of each month at Pinnacle Peak Steakhouse, 2533 S. La Cadena Drive, Colton. For more information, visit the association website at www.aegsc.org/chapters/inlandempire.

Rock & Gem Shows—various locations

Various rock and mineral shows will be held throughout southern California. To find one near you, visit www.rockngem.com, then select the Show Dates tab.

San Diego Association of Geologists



Meetings are usually held the third Wednesday evening of each month. For more information, visit the association website at www.sandiegogeologists.org.

Los Angeles Basin Geological Society

Monthly lunch meetings are typically the 4th Thursday of each month from 11:30 am to 1:00 pm at the Willow Street Conference Center, 4101 E. Willow Street, Long Beach. The January meeting has not been announced yet. For more information, visit the association

website at www.labgs.org.



Get Your IGS Coffee Mug!

IGS coffee mugs are available at the monthly meetings for \$10. Get yours at the upcoming meeting!



IGS MEETING LOCATION:
Jurupa Mountains Discovery Center
 7621 Granite Hill Drive
 Jurupa Valley, California 92509



IGS OFFICERS

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