

Inland Geological Society

May 2010

Newsletter of the Inland Geological Society

Volume 26 No. 5

This Meeting:

Thursday,
May 6th

Time:

Social: 6:00pm
Dinner: 6:30pm
Lecture: 7:00pm

Location:

LSA Associates
1500 Iowa Ave
Suite 200
Riverside, CA
92507

(Map on Pg.4)

Coming to

Dinner?

Please RSVP:

By Friday 04/30
(951) 782-3295
dlass@
waterboards.ca.gov

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May Speaker:

Eldon Gath

President, Earth Consultants International

The Santa Ana Mountains and the Indenter-Driven Seismotectonics of Southern California's Orange County - a Challenge for Engineering Geologists

Abstract

The Eastern Los Angeles Basin lies at the intersection of the northwest-vergent Peninsular Ranges and the south-vergent Transverse Ranges. The complexity of this interaction is due to the batholithic-cored Santa Ana Mountains block driven northwestward at 5-6 mm/yr along the Elsinore fault and acting as an oblique indenter through the Cretaceous-Eocene stratigraphy and into the Miocene-Holocene sedimentary basins. The indenter model encompasses all of the secondary geomorphic and tectonic features of the Eastern LA Basin, including the dispersed seismicity and the left-lateral M5.4 July 29, 2008 Chino Hills earthquake. This model temporally and kinematically explains the right-lateral slip on the Whittier fault, the accelerated uplift and folding within the Eastern Puente and Chino Hills, the northward decrease of oblique, right-lateral, reverse slip on the Chino fault, the uplift and segmentation of Loma Ridge, the northward deflection of Santiago Creek, and the uplift of the Coyote, Anaheim, and Peralta hills. The model requires a left-lateral shear zone along the western side of the Santa Ana Mountains between the indenter and the sedimentary section, evidence for which lies in a 15 km offset of the Cretaceous Holz Shale contact, a 10 km penetration offset of the Miocene Monterey Formation across the indenter, and left-laterally deflected rivers. The public safety significance of this model is that while many of the faults and folds created by the collision are small seismic sources, the concern for engineering geologists is that they also pose a myriad of potential surface rupture hazards within this densely urbanized region, a hazard that will challenge our

Continued on Page 2

profession's ability to characterize it. With literally thousands of homes already constructed within this collisional zone, and hundreds of small faults and bedding plane shears at risk for future displacements, the coming earthquake could be more destructive than anticipated.

Biography:

Eldon Gath, President of Earth Consultants International, has 30+ years of experience in engineering geologic projects in southern California, and nearly as many years in the various graduate school programs. He is a Past-President of the Association of Engineering Geologists and the South Coast Geological Society. His research into the neotectonics of eastern Los Angeles and Orange counties has included the Whittier fault, Puente Hills, San Joaquin Hills, and Santa Ana Mountains. This presentation integrates all of the geomorphology and geology into a consistent and predictive tectonic model.

RIMS Science and Engineering Fair

The RIMS Science and Engineering Fair was held this past Tuesday, and the IGS fielded a judging team of Patrice Copeland, Rick Rees, Larry Monroe, Mark Doerschlag and Steve Mains. The quality of the projects was quite good and we found two that we awarded \$200 Saving Bonds too. Both of the projects are going on to the State Science Fair in mid May, and we have invited the students give a short presentation to us before our main speaker at our May 6th meeting. Their abstract and biographies are below.

Abstract

The objective is to isolate sources of pollution in the Santa Ana watershed using Nitrogen Isotope Fingerprinting, and develop a better understanding of the Nitrogen Cycle by comparing samples from rain days and the end of the dry season.

Use Various tools to filter, and test the samples, including Mass Spectrometer, Reagents, Freeze-Dryer, Combustion system, Fiber Glass filter, and much more. Use NIST standards to compare and calibrate equipment.

The delta value of N15 decreased over rain days, and Nitrogen amount went up. Also a correlation was found between the amount of nitrogen and the delta N15 value. Hidden Valley and Prado both fell in the range indicating sewage water. City Creek was within natural limits as was Sycamore Creek, which could result in a presence of fertilizer or a natural source. Rancho Jurupa Park was the Outlier, and its odd results could perhaps be explained by its exclusion from flowing water.

To further this project it would be beneficial to analyze the samples for Delta O18 and use the cross reference graph to better pinpoint the sources of pollution.

Catherine Dang

Catherine Dang, 16 years old currently attending Centennial High School. She has been in the International Baccalaureate program since the seventh grade and is working on completing the program. Catherine has been playing tennis for six years now, playing for her school's varsity tennis team since her freshman year. She loves to spend time with her family and has invested herself into the organization of Future Business Leaders of America, currently serves as the State Vice President. In her free time she enjoys cooking, tennis, and shopping.

Janki Kaneria

Janki Kaneria is 16 years old and a Junior at Centennial High School. She has been in the International Baccalaureate program since the 7th grade. She is President of both the Red Cross chapter and Future Business Leaders of America (FBLA) chapter at school, as well as Vice President of Programs for the Inland section team for FBLA. She has worked with Santa Ana Waterkeepers to develop educational games about pollution and bio-degradation of various pollutants. She is a four time Science Fair County Competitor. She likes visiting national parks and traveling.

In addition, the two-time gold winner of the 2009 and 2010 RIMS Science and Engineering Fairs will give a short presentation of his research at the next meeting. His abstract and biography is below.

Abstract and Biography

Joseph Peter Monaghan, age 13, is a 7th grader at St. Adelaide Catholic School in Highland, California. Until grade 3, he lived in Temecula, California. From an early age he has been very interested in building things, particularly with LEGOs. He has an extensive collection of hot wheels model cars. He is quite interested in the properties of soil. He is also very interested in the effects of earthquakes and in how to prevent injuries and deaths due to earthquake damage. Joseph is a Boy Scout. He loves the outdoors. He enjoys camping, biking, and fishing and he is an expert skier who can ski any trail in the local mountains.

Last year, with research on the Internet, and help from his mom, Joseph designed and built a shake table which he used to determine the best way to prevent damage to buildings. He tested the effects of a tuned-mass damper and a base isolator on building sway. His project won a gold medal at the four county RIMS science and engineering fair and he competed at the 2009 California state science fair.

This year, he built on what he learned and, using the same shake table he had built, tested the stability of different soils in a simulated earthquake. He videotaped containers of soil with a simulated building on top. He then viewed in slow-motion, frame by frame, the sway of the building on each soil type during the simulated earthquake. He recorded the sway and how long the building stayed up. He tested nine different soil types including bedrock, soil, sand, clay, gravel and mixtures. His project won a gold medal at the four county RIMS science and engineering fair. He was also honored by the Inland Geological Society with a \$100 savings bond for his project. He will be competing May 18th at the 2010 California state science fair.

Employment Opportunities Available

Sr PE Geotechnical Engineer local Riverside area. Client is looking for someone that would like to be a Principal. This position entails Management, Business Development, Solid Geotechnical Skills and must be local. Client has a stable business but is looking for a key person to help grow when this slump stops. Contact Bob Calamita of Execu-Tech at 904-262-9974 or bcalamita@execu-tech.biz.

Sr PG Geologist local firm in the Riverside area. Client is looking for a PG that knows the Southern California area very well, Cal Trans experience would be a big plus because they have some caltrans projects going on. Contact Bob Calamita of Execu-Tech at 904-262-9974 or bcalamita@execu-tech.biz.

We're looking for an **Environmental Technical Services Director** on behalf of one of our most respected clients; a well established west coast environmental consulting firm with a strong national practice. The position is for a well experienced and solid technical leader who can undertake work in support of CEQA / NEPA related projects (EIR, EIS, etc.). This Technical Services Director would be charged with overseeing a professional staff of roughly 10 working on a wide range of environmental compliance related projects throughout the San Francisco Bay Area and Northern California. The ideal person would have at least 10+ years of experience in managing and facilitating compliance for water, infrastructure and related projects. Their responsibilities would include managing and directing personnel with a wide variety of technical expertise generally related to hydrogeology, geology, hydrology, hazardous waste, flood control, and water resources. Previous experience and history directing project related efforts is a must, especially overseeing project management, budgeting, client relations, and personnel management on technical projects. Key to this would be providing technical leadership and guidance on NEPA/CEQA compliance, environmental analysis, constraints, and preparing EIR/EIS documentation and reports. With that in mind though, the organization is more concerned with finding the right individual with technical skill set. So general understanding of CEQA or NEPA with a hydrogeology or geology background would be the key. Not necessarily a track record of successful CEQA undertaking; though that would be ideal. They are willing to invest the time into the right individual to get them up to speed. In addition, this person must have a proven track record directing numerous small and large (\$1M+) projects in scope. A degree in Hydrogeology, Hydrology, Geology, Environmental Science or a related discipline is required with advanced educational credentials a plus to consideration. For serious and confidential consideration, please contact Frank D. De Safey of Sequence Systems for inquiries at 916-782-6900 x204. Please send resumes electronically to fdesafey@sequencestaffing.com.

Upcoming Meetings/Events

Rock & Gem Shows—Various locations

Various rock and mineral shows will be throughout So. California. To find one near you, visit www.rockngem.com/showdates.asp

SME—SoCal Section Field Trip



Dinah & Doug Shumway will be hosting a tour of several gold mining facilities located in the Cortez Valley area near Eureka & Elko, NV. The field trip will be on **Thursday, May 27, 2010 — Sunday, May 31, 2010.**

For more info., visit www.smenet.org/

2010 GSA Cordilleran Section and Pacific Section AAPG Joint Annual Meeting



The cordilleran section of the GSA and the Pacific Section of the AAPG will be holding their Joint Annual Meeting on **May 27-29, 2010** at the Anaheim Marriott in Anaheim, CA. For more info., visit www.geosociety.org/

South Coast Geological Society meeting



South Coast Geological Society will be having their monthly meeting on **Monday, May 3, 2010** at the Doubletree Club Hotel in Santa Ana, CA. For more info., visit www.southcoastgeo.org

South Coast Geological Society field trip



South Coast Geological Society will be having their 36th weekend field trip on **Friday, June 18, 2010** through **Sunday, June 20, 2010** to explore the San Gabriel mountains from Mt. Baldy through Cajon Pass, San Andreas Fault Zone and Mor-

mon Rocks to the northern slopes of East San Gabriel Mountains. The deadline to register is Wednesday, May 5th, 2010. For more info., please contact Boris Zaprianoff by phone at (949) 699-2777 or (949) 436-3444 or by email at bzaprianoff@yahoo.com.

IGS Meeting Schedule

June 2, 2010 (Wednesday)

Dr. Prem Saint, CSU Fullerton, retired
Paleohydrology of the 5000-year old Indus Valley Archeological Sites in the North-West Indian Subcontinent

July 1, 2010 (Thursday)

Dr. Susan Hubbard, Lawrence Berkeley Nat'l Lab
GSA Birdsall-Dreiss 2010 Distinguished Lecturer
Toward X-Ray Vision: Geophysical Signatures of Complex Subsurface Processes

August 4, 2010 (Wednesday)

TBA

September 2, 2010 (Thursday)

TBA

October 6, 2010 (Wednesday)

Dr. Elizabeth Cochran, UC Riverside
TBA

November 4, 2010 (Thursday)

TBA

WANTED:

Speakers for upcoming meetings!

We are looking to fill our schedule for the remainder of this year's meetings!

Students: Are you doing research for your bachelor's or graduate degree?
Would you like to practice your presentation before your defense?

If you (or someone you know) would like to speak at an IGS meeting or have any suggestions, please contact Greg Middleton or Steve Mains.

IGS MEETING LOCATION:

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