

CGS Monthly Meeting

Tuesday December 18, 2007

(NEW LOCATION)

Biedermann Hall at Sacred Heart Church - 10800 Henderson Road, Ventura, CA 93004

Tectonic Geomorphic and Paleoseismic Investigations for the Panama Canal Expansion Project

by:

Tom Rockwell and Eldon Gath
Earth Consultants International

Opened for ship traffic on August 14, 1914, the Panama Canal is one of the great wonders of the modern Era and allows for ship traffic between the Pacific and Atlantic shipping lanes without having to make the arduous trip around the southern end of South America. However, the size of trans-ocean ships has increased tremendously, and many do not fit through the existing locks. Consequently, the Autoridad del Canal de Panamá (Panama Canal Authority, or ACP) has begun the process of modernizing and expanding the Canal to accommodate the increased transit demands and larger sizes of the newest post-Panamamax ships. As part of that process, we have been studying the faults of Panamá for almost four years, under contract to the ACP. Prior to our work, no active faults were recognized in Central Panama, although excavations for the canal in the past have exposed numerous faults and plenty of other evidence of crustal deformation. The results of our new work have caused a total paradigm shift in the perception of seismic hazard for one of the most important commercial structures in the world.

MEETING INFO: 3RD TUESDAY OF EVERY MONTH (DARK IN JULY & AUGUST)

BIEDERMANN HALL AT SACRED HEART CHURCH

10800 Henderson Road Ventura, CA 93004

(See the MAP at the end of this Newsletter for directions.)

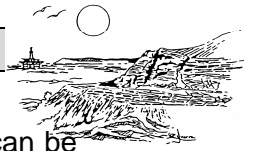
Reservation Deadline: 4:00 PM on THURSDAY before the meeting.

E-mail Reservations to: Christine White at cwhite@dcorllc.com or visit the CGS website

*****Please specify your dinner choice: Tri-Tip, BBQ Chicken or Vegetarian Lasagna,**

Social Happy Hour - 6:00 p.m., Dinner - 7:00 p.m., Speaker – 8:00 p.m.

\$18 – With Reservation, \$20 - Without Reservation, \$ 10 - For Students and K-12 Teachers



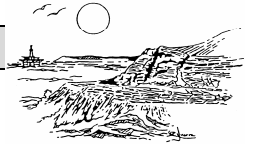
Our studies began with an effort to map tectonic geomorphic features along the faults that can be obviously seen from DEMs and airborne imagery. This was immediately followed by a field recon phase for the several hundred square kilometers centered on the Panama Canal, much of it in dense rain forest. Based on their geomorphic expression alone, it was clear that many of these faults had Holocene activity, and probably with non-trivial rates.

Following the geomorphic assessment, we completed paleoseismic investigations for the Gatún, Limón, and Pedro Miguel faults, including 3-dimensional trenching to resolve slip in the most recent events. Based on these trenching studies, we have developed slip rates, recurrence intervals, slip per event, and the timing and displacement for the last two-three events for all three faults. These results are being incorporated into the seismic design calculations for the new Canal Expansion structures, and for the retrofit of the existing structures. Our presentation will cover the gamut of studies that are being conducted for the Canal Expansion, as well as provide an overview of the expansion project itself.

Tom Rockwell, PhD, is a Senior Partner of Earth Consultants International and has been a Professor at San Diego State University for the past 25 years. He served as the head geologist for the Southern California Earthquake Center for 8 years, has served on numerous State and Federal funding panels, and has published over 400 papers, journals articles, book chapters, and guidebooks over the past 28 years. Rockwell is an expert on the tectonics and earthquake hazards of southern California and Baja California, has conducted extensive trenching programs to date earthquakes on faults in the western U.S., Middle East and Asia, and routinely uses soil stratigraphy and geomorphology combined with various radiometric dating techniques to assess rates of fault activity, determine recency of faulting, and date past earthquakes. His research focuses on understanding earthquake occurrence in time and space. Current projects include the characterization of fault systems behavior by understanding patterns of past recurrence of large earthquakes on faults in southern California, northern Mexico, Argentina, Portugal, Mongolia, India, Turkey, Israel, and of course, Panama. This work includes resolving information on slip per event, as it relates to understanding the controls on segmentation and rupture termination. He has also worked extensively on the affects of tectonism on the landscape, and the use of geomorphology to constrain rates and timing of tectonic events. Included in this latter aspect is detailed mapping and dating of marine terraces along the west coast of North America and assessment of paleosea level during the late Quaternary.

Eldon Gath - President of Earth Consultants International - BS University of Minnesota, PhD candidate at UC Irvine, with almost 30 years of experience in engineering geology in southern California and increasingly, over the last 10 years, international experience. He was President of the Association of Engineering Geologists in 1997-98, was active in the Southern California Earthquake Center for many years, and has served on numerous professional practice committees at local, state, and national levels. For the past several years, he has been trying to complete a PhD dissertation on the neotectonic evolution of The OC, while still commuting to Panama every couple of months.

RESERVATIONS: E-mail Christine White at cwhite@dcorllc.com, phone 805-535-2074 or visit the CGS website by the Thursday before the meeting at 4 pm. Please include name and menu choice (Tri Tip, Chicken, or Vegetarian Lasagna) for each person attending. If you don't make a reservation, it's possible there will not be a meal available for you the day of the meeting.

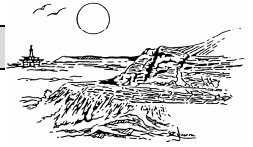
**MARK YOUR CALENDAR:****• Upcoming CGS meetings:**

January 15, 2008: John Schwalbach, Aera Energy - "Stratigraphic and Structural Controls on Fracture Distributions: Examples from California Basins"

February 19, 2008: Ray Ingersoll, UCLA - TBA

UPCOMING EVENTS:

- Santa Barbara Geologists Monthly Luncheon: December 13, 2007 11:00 am for Social Hour, 12:00 noon for Lunch. The title of talk is to be announced. Contact Laura at 805-684-1638 by 12:00 Noon on the Wednesday before the meeting to RSVP.
- SPE Western Regional and Pacific Section AAPG Joint Meeting: "Adding Reserves Through Collaboration, Innovation and Technology Transfer" March 31-April 2, 2008 in Bakersfield, CA. Abstract Deadline is November 30, 2007. Contact Allen Waggoner at jwaggnr@wziinc.com or www.PSAAPG.org for more information.
- 2008 Desert Symposium Field Trip: April 19-21, 2008, "Development of the Colorado River and its entry into the Salton Trough." The field trip will explore geographic extent of the Bouse Formation and contrast fresh water deposits with deposits containing marine fossils. Examine sediments at Anza-Borrego that indicate when the Colorado River entered the Salton Trough. Drive from eastern Mojave Desert pinon-juniper plateaus to the Sonoran vegetation of the Colorado Desert. Contact wpresch@fullerton.edu more information.
- The Statewide Golden Bear Gem & Mineral Show: 69th Annual Show of the California Federation of Mineralogical Societies. Admission: \$5 adults, \$4 Seniors (60+), \$3 students, Kids under 12 free with paid adult
Location: Seaside Park, Ventura County Fairgrounds, 10 W. Harbor Blvd, Ventura, CA (just off the 101 Freeway). Dates & Times: Fri., June 27 - Sun., June 29, 2008 (10 AM - 5 PM each day)
Contact Person: Bural LaRue, Show Chair, (909) 874-5664, bplarue@earthlink.net or www.cfmsinc.org
Features: over 100 gem, mineral, rock, fossil & jewelry exhibits, including exhibits entered into statewide competition; 50 dealers; demonstrations of jewelry making; informative speakers; door prizes & silent auctions; kids activities; and the official State Gemstone, State Fossil, State Rock, and State Mineral on display. This is informally known as "the Super Bowl" of California gem shows!
- Upcoming Events at the California Oil Museum (Contact Debbie Bereki at 805-933-0096 for more information):
 1. Fault Workshop on January 28, 2008 from 4:30 - 6:30 pm. This workshop is designed for teachers and geologists who visit classrooms. Participants will take part in classroom oriented hands-on activities and will receive related materials for classroom use.
 2. THAR SHE BLOWS!!! A HOT SPOT MAKING VOLCANIC ISLANDS by Dr. Robert Gray, February 28, 2008. Enjoy this talk and dinner at the California Oil Museum.
 3. Could you (as Jurassic Park would lead you to believe) successfully transplant terrestrial dinosaurs into the present day? MAMMALS and NON-FLYING DINOSAURS: A tale of ecosystem evolution in



the Mesozoic and Cenozoic by Dr. Bruce Tiffney, April 10, 2008. Enjoy this talk and dinner at the California Oil Museum.

ANNOUNCEMENTS:

- Moorpark College is looking for someone to teach Physical Geology Lab Class on Thursday afternoons from 2:30 - 5:30 pm in Spring 2008. They are also hiring part time instructors for Fall 2008. Application may be completed online at www.vcccd.edu.

NOTE: If you're a college instructor with publishers' sample textbooks and lab books stacking up in your office, here's a wonderful solution for recycling them. **Debbie Bereki**, who is the Museum Educator at the California Oil Museum, is doing outreach work with teachers. She has found that giving sample college textbooks to K-12 teachers can make an immediate positive impact on the quality their teaching. She has started a program called '**Textbooks For Teachers**' and asks for your help. Please bring your basic sample textbooks (published since 2000) and lab books to the CGS meeting and Debbie will make sure they get to K-12 teachers. For info, contact her at dbereki@ci.santa-paula.ca.us

Interesting Website: A geological perspective on Climate change / Global warming:
<http://www.scotese.com/climate.htm>

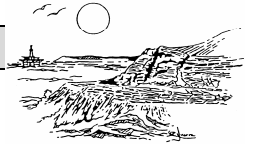
CGS MEMBERSHIP: CGS membership is through Pacific Section AAPG.
Be sure to select **Coast Geological Society** as your local affiliated society.
To join CGS, please go to: www.psaapg.org/member.html

CGS OFFICERS DIRECTORY:

President: **Bob Ballog**, Hueneme HS 805-498-6294/805-402-1173, president@coastgeologicalsociety.org
Past Pres: **John Minch**, SB Museum of Natural History. 805-682-4711 x137, ppresident@coastgeologicalsociety.org
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Secretary: **Christine White**, DCOR, LLC 805-535-2074, secretary@coastgeologicalsociety.org

NOTICES

1. *No-Cost* Employment Announcements (Help Wanted & Job Wanted) are available on our website! Also, business card ads and employment ads available in the newsletter! Contact secretary@coastgeologicalsociety.org
2. If you forward the email notice to another party, cc: secretary@coastgeologicalsociety.org in the email, we will put your party on the monthly notification list. There is no cost to receive CGS email notifications.
3. Buy your raffle tickets! Money generated goes toward scholarships, field trips, etc., to promote the advancement of Geosciences. Check the CGS supported activities on our website (3 Tickets for \$1).
4. Always needed: **Sponsors for our meetings!** Sponsors get a beautiful colored banner hung at the meeting, and the opportunity to distribute their literature and introduce their businesses, as well as the satisfaction of having supported a great organization! Sponsorships are \$300 per meeting and may be shared between two individual sources. Contact vicepresident@coastgeologicalsociety.org for info.



MEETING PLACE: MAP AND DRIVING DIRECTIONS

Meetings are held at the Sacred Heart Church, Biedermann Hall, 10800 Henderson Road, Ventura, CA 93004.

The location is off Hwy 126 at the Wells Road/Route 118 Exit. Click on the map below for a more detailed view and directions

