

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



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MEETING ANNOUNCEMENT

DATE: January 28, 2009

LOCATION: Orinda Masonic Center, 9 Altarinda Rd., Orinda

TIME: 6:30 p.m. social; 7:00 p.m. talk (no dinner) **Cost:**
\$5 per regular member; \$1 per student or K – 12
teachers

SPEAKER: Vicki Langenheim
U.S. Geological Survey, Menlo Park

Geophysical vignettes from the wine country: implications for the northward continuation of the East Bay fault system

Geophysical studies in the northern San Francisco Bay area unveil the three-dimensional geometry of basins and faults east of the San Andreas Fault beneath Napa and Sonoma Valleys, San Pablo Bay, and the Santa Rosa Plain. The relatively flat valley floors hide a complex basement surface that has implications for fault and basin evolution as well as seismic-hazard and ground-water studies in the area. Basin effects may have contributed to significant damage caused by the 1906 San Francisco and 1969 Santa Rosa earthquakes in downtown Santa Rosa and to damage from the 2000 Yountville earthquake in the city of Napa. Analysis of geophysical data suggests these valleys conceal basins that were formed by several sometimes-superposed mechanisms. Geophysical data also place constraints on where 175 km of right-lateral displacement can be parsed north of San Francisco Bay from the East Bay fault system.

Biography:

Vicki Langenheim is a research geophysicist with the U.S. Geological Survey in Menlo Park, Calif., specializing in the application of gravity and magnetic methods to assessment of seismic hazards and groundwater resources throughout the western U.S. She received a bachelor of science degree in geophysics from Stanford University and a master's degree in geology from University of California, Berkeley.

NCGS 2008 Calendar

Wednesday January 28, 2009

Geophysical vignettes from the wine country: implications for the northward continuation of the East Bay fault system – **Vicki Langenheim**, U.S. Geological Survey, Menlo Park, California
7:00 pm at Orinda Masonic Center

Wednesday February 25, 2009

Mammoths, Meteorites, and Supernovae - **Dr. Richard B. Firestone**, Lawrence Berkeley National Laboratory, (Note: Dr. Firestone is co-author of “Cycle of Cosmic Catastrophes – See: <http://www.innertraditions.com/Product.jmdx?action=displayDetail&id=2139&searchString=1-59143-061-5> or <http://www.amazon.com/Cycle-Cosmic-Catastrophes-Stone-Age-Changed/dp/1591430615>)
7:00 pm at Orinda Masonic Center

Wednesday March 25, 2009

Rockfall Hazards in Yosemite National Park
Greg Stock, Park Geologist at Yosemite National Park

Wednesday April 29, 2009

The Travels of Clyde Kluckhohn and the Photographs of James Hanks, 1927-1928: Repeat Photography, Virtual Repeat Photography, and Earth Surface Change in the Photographic Era - **Thomas C. Hanks**, U.S. Geological Survey, Menlo Park, California

Wednesday May 27, 2009

Mesozoic Transpression, Transtension, Subduction, and Metallogenesis in Northern and Central California – **Dr. W. Gary Ernst**, Emeritus Professor at Stanford University, Palo Alto, California

Wednesday June 24, 2009

Cleanup on Aisle 9 - The Long-Lasting Legacy of Nuclear Waste - **Dave Stonestrom**, U.S. Geological Survey Research Hydrologist, Menlo Park, California

Upcoming NCGS Field Trips

Rob is working on several potential field trips, not ready for prime time. However, do you have a place you've wanted to visit for the geology? Let us know. We're definitely interested in ideas. For those suggestions, or for questions regarding, field

trips, please contact Rob Nelson at: rlngeology@sbcglobal.net.

Peninsula Geologic Society Upcoming meetings

For an updated list of meetings, abstracts, and field trips go to <http://www.diggles.com/pgs/>. The PGS has also posted guidebooks for downloading, as well as photographs from recent field trips at this web address. Please check the website for current details.

Association of Engineering Geologists San Francisco Section Upcoming meetings

Meeting locations have been rotating between San Francisco, the East Bay, and the South Bay. For further meeting details go to: <http://www.aegsf.org/>.

Four Students Awarded \$500 NCGS Undergraduate Scholarships

The Northern California Geological Society Scholarship Committee is pleased to announce the award of four 2008-2009 NCGS Undergraduate Scholarships of \$500 each. The awardees are:

- Chad Carlson, California State University, Fresno; *Re-dating of andesitic and basaltic flows in and around the confluences of the North, Middle and South Forks of the San Joaquin River using Argon/Argon analysis*; advisor Dr. John Wakabayashi.
- Lisa Jacob, University of California, Davis; *Salinity Changes in an Estuary-Using the Geochemistry of Benthic Foraminiferal Shells to Develop a Ba/Ca Relationship for Tomales Bay, CA*; advisor Ann D. Russell.
- Luke Martin, Southern Oregon University; *Determining Provenance of Rock Fragments Within Conglomerates of the Payne Cliffs Formation (Eocene), Southwestern Oregon and Northern California*; advisor Bill Elliott.
- Daniel McCuan, California State University, Bakersfield; *Developing the Methods and Techniques for Radiometric Dating using*

Laser-Ablation Inductively-Coupled-Plasma Mass-Spectrometry (LA-ICP/MS); advisor Dirk Baron.

More details on these research topics will be included in future newsletters.

GEOPHYSICS: Soft Vibrations

Editors' Choice:

Highlights of the recent literature

December 5 2008

Microseisms--the continuous, low-amplitude background vibrations in the solid Earth observed between earthquakes--are generated by ocean waves. Most microseism studies have concentrated on the vibrations transmitted as surface (*S*) waves, and have concluded that they originate in shallow coastal regions, but relatively little is known about microseisms that propagate as body (*P*) waves. Gerstoft *et al.* show that body waves measured at an array of sites in southern California are generated by distant storms in several distinct regions of the Northern and Southern Hemispheres, where the ocean is deep, and that they propagate through Earth's mantle and core. In addition to identifying source regions, these *P* waves can provide information about deep Earth structure along paths not usually sampled by global tomographic studies, because the earthquakes used in those analyses occur mostly along plate boundaries rather than in the open ocean. -- **HJS**

Geophys. Res. Lett., 10.1029 (2008).

GEOLOGY: Volcanic Vetting

Editors' Choice:

Highlights of the recent literature

December 19 2008

Two major extinctions, at the end of the Permian and end of the Cretaceous, appear to have been coincident with massive volcanic eruptions, of the Siberian and Deccan flood basalts respectively. Two studies provide tighter constraints on these associations, the duration of these events, and their potential climatic consequences. Reichow *et al.* provide new Ar-Ar dates on the main eruption of the Siberian flood basalts. The data imply that the eruptions occurred in less than 2 million years, and perhaps a few hundred thousand years, beginning shortly before the extinction (about 250 million years ago) and extending into it. Chenet *et*

al. analyzed paleomagnetic data through individual flows in the upper part of the thick Deccan sequence. Their data show that many separate flows have the same paleomagnetic direction, implying that they erupted together in a time shorter than the inferred drift of the orientation of Earth's magnetic field. Four thick packages of flows may have each erupted in as little as a few decades, and the 1200-m section sampled, containing some soil layers, may have formed in less than 100,000 years. Such rates would have emitted copious amounts of sulfur dioxide. -**BH**

Earth Planet. Sci. Lett. 10.1016 (2008)

Martian Rhythmic Rocks

This Week in SCIENCE

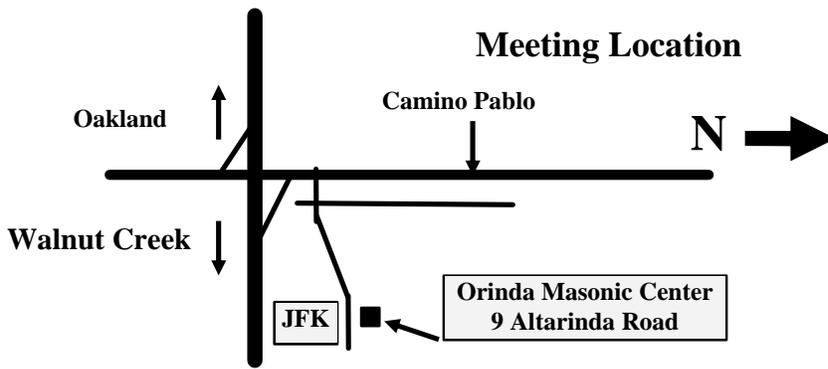
December 5 2008

Mars has been known to have some layered sedimentary rocks. With the camera on the Mars Reconnaissance Orbiter, Lewis *et al.* (p. [1532](#)) have constructed stereo images of layered rocks exposed on the floors of several large craters and are now able to measure the thicknesses of individual beds at a resolution of about 1 meter. The layering is rhythmic, containing several cycles over 10 meters, organized into larger units, which implies that deposition was cyclic. It is possible that variations in Mars's orbit yielded climatic variations and thereby cyclical deposition, as seen in some sedimentary rocks on Earth.

Paternal Parenting

This Week in SCIENCE; December 19 2008

Paternal care of eggs and hatchlings is a common feature of birds. This breeding system has not been thought of as being of ancient origin in birds, but instead has been thought to be a derived feature. However, Varricchio *et al.* (p. [1826](#); see the Perspective by [Prum](#)) present data that support the hypothesis that this breeding system arose in theropod dinosaur ancestors of birds, before the origin of birds and flight. Fossil data on clutch sizes and bone histology show that several groups of Cretaceous dinosaurs share features in common with modern birds that use male-only care systems, suggesting that paternal care has a deep evolutionary history in the vertebrate phylum.



Please Note – A Final Notice!!
If you have not renewed your NCGS membership recently, it is three months overdue.
Please renew if you have not.
Many Thanks.

Northern California Geological Society
c/o Mark Detterman
3197 Cromwell Place
Hayward, CA 94542-1209

Would you like to receive the NCGS newsletter by e-mail? If you are not already doing so, and would like to, please contact **Dan Day** at danday94@pacbell.net to sign up for this free service.