

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



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MEETING ANNOUNCEMENT

DATE: Wednesday, November 15, 2006 **EARLY DATE!!**

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 member

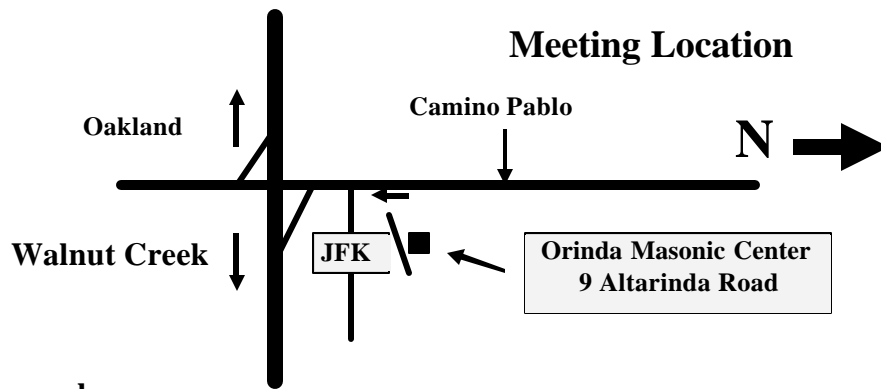
RESERVATIONS: Leave your name and phone number at 925-424-3669 or at danday94@pacbell.net before the meeting.

SPEAKERS: *Dylan H. Rood* Center for Accelerator Mass Spectrometry, LLNL & Department of Earth Science, UC Santa Barbara

Changing Rates and Styles of Crustal Deformation at Timescales of 10 My to 10 Ky

This research seeks to fill a gap in knowledge of rates of crustal deformation in order to define how the crust deforms at different time scales. These data provide a valuable context for interpretation, prediction, and modeling of crustal deformation and assessment of seismic hazards. Overall, our work focuses on the Sierra Nevada Frontal Fault Zone (SNFFZ) in the central eastern Sierra Nevada, California, where numerous moraines, outwash surfaces, and displaced markers extending to at least 10 Ma provide a truly broad spectrum of deformation rates and styles in this transtensional setting. As well, there are data indicating that both elastic (via fault displacement) and inelastic (via both vertical-axis block rotation and folding) strain can be quantified.

The current study centers on defining the locations, magnitude, styles, and rates of Tertiary and Quaternary deformation at time scales of 10 My-10ky in three specific study areas, the Sonora Pass, Bridgeport Basin, and Bodie Hills regions. Rates and styles of deformation have been derived from: i) geologic and geomorphic mapping, ii) paleomagnetic sampling of Tertiary volcanic rocks, iii) GPS and total station surveys of faulted landforms, and iv) detailed chronologies of glacial and alluvial deposits constructed using in-situ cosmogenic radionuclide (CRN) exposure dating techniques. This study will document rates of both focused (on-fault) and distributed (off-fault) deformation at multiple time scales, which will enable us to (1) test the constancy of fault slip rates and (2) quantify off-fault strain.



Biography:

Dylan Rood is a Technical Scholar at the Center for Accelerator Mass Spectrometry (CAMS) at Lawrence Livermore National Laboratory (LLNL; working with Bob Finkel) and a Ph.D. candidate at UC Santa Barbara (working with Doug Burbank). He was recently awarded a Student Employee Graduate Research Fellowship (SEGRF) by LLNL to support the completion of his dissertation and recruit him to work at the Lab.

Dylan was born and raised in Pasadena, California, and received a B.A in Earth and Environmental Science from Wesleyan University in Connecticut. He spent a year studying and doing research at the University of Otago in Dunedin, New Zealand, and has participated in field-based research projects in California, Mexico, Hawaii, Maine, Atlantic Canada, Montana, Puerto Rico, and Montserrat.

Currently, his Ph.D. research addresses the Miocene-to-Recent transtensional evolution of the eastern Sierra Nevada using volcanic stratigraphy, $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology, paleomagnetic data, GPS and total-station surveying, and in-situ cosmogenic radionuclide (CRN) dating techniques. Recently, he received the Glicken Award from the Department of Geological Sciences at UC Santa Barbara for excellence in the field of volcanology, and the Outstanding Graduate Oral Presentation Award from the Geological Society of America for his talk at the Cordilleran Section meeting in San Jose.

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

***Don't forget to renew!! To keep your contact information up to date renew by
December 31, 2006***

NCGS 2006 Calendar

Wednesday September 27, 2006

Dr. Doris Sloan, University of California, Berkeley

Dr. John Karachewski, Weiss Associates

Geology of the San Francisco Bay Region – The Story Behind the Book

For details on the UC Press book go to:

<http://www.ucpress.edu/books/pages/9237.html>

Wednesday October 25, 2006

Dr. Richard Stanley, Dr. Russell Graymer,

U.S. Geological Survey, Menlo Park

Subsurface geology, basin evolution, tectonic development, and climatic cyclicity of the Santa Clara Valley area

7:00 pm at Orinda Masonic Center

Wednesday November 15, 2006

Be Aware –EARLY MEETING DATE!!!!

Prelude to a Potential Spring Field Trip

Dylan Rood, Lawrence Livermore National Laboratory and UC Santa Barbara

Changing Rates and Styles of Crustal Deformation at Timescales of 10 My to 10 Ky

7:00 pm at Orinda Masonic Center

As Usual – No December Meeting

Wednesday January 31, 2007

Dr. George Plafker, USGS, Menlo Park.

New evidence for the source of the devastating Banda Aceh tsunami of 2004

7:00 pm at Orinda Masonic Center

Wednesday February 28, 2007

Paul Belasky, Ohlone College, Fremont

*The real “geopoetry,” and the “poets of the soil”:
Geological school of 20th century poetry in St.*

Petersburg, Russia, explores why we are geologists

7:00 pm at Orinda Masonic Center

*March 5-23, 2007 AAPG Distinguished Lecture
(Specific Date TBA)*

Dr. Jean-Laurent Mallet, Ecole Nationale Supérieure de Géologie, Nancy, France,

Integrated earth modeling: From seismic interpretation to flow simulation in reservoirs

Lunch Hour; Chevron, San Ramon

Wednesday March 28, 2007 (tentative)

Jacob Lowenstern, USGS, Menlo Park

Intrusion, deformation, and degassing at the Yellowstone caldera

7:00 pm at Orinda Masonic Center

Wednesday April 25, 2007

Jeff Unruh, UC Davis and William Lettis and Associates

Emplacement and uplift of Mount Diablo

7:00 pm at Orinda Masonic Center

Wednesday May 29, 2007

TBA

7:00 pm at Orinda Masonic Center

Wednesday June 26, 2007

TBA

7:00 pm at Orinda Masonic Center

Upcoming NCGS Field Trips

Insurance issues have delayed implementation of all NCGS field trips. Normally covered under Pacific Section AAPG, the insurance renewal has not been possible. Alternative insurance coverage is being investigated. All dates are as indicated, tentative.

Winter - Spring 2007 *Extraordinary Fluid Pressure Release at Cantua Creek, Dr. Mel Erskine, Consultant*

Spring 2007 *Modern Geophysical Techniques for Site Characterization, Dr. Mitchell Craig, Cal State East Bay*

Spring 2007 *Crustal Deformation of the Eastern Sierra Frontal Fault, Dylan Rood, LLNL and UC Santa Barbara*

For questions regarding, or suggestions for, future field trips, please contact Rob Nelson at: rlngeology@sbcglobal.net

Renew Early So You Won't Miss an Issue of the Newsletter!!

Because the NCGS calendar runs between September and September of a given year, it is once again time to renew your membership. We are also planning on providing an update to the membership directory with revisions and modifications as an insert for the current directory. Because we need a cut-off date for this, members who are not current as of December 31, 2006, will not be included in the directory update. Please renew early so as to not miss an issue, or to miss inclusion in the membership update. To make it easy, please use the renewal form attached to this newsletter!

California Geological Survey Releases Three New Seismic Hazard Zone Maps

On October 18, 2006 the USGS announced that the Official Seismic Hazard Zone Maps of the **Palo Alto, Mt. Sizer**, and revised **Mountain View** quadrangles covering parts of the South San Francisco Bay area were available for viewing and downloading at:


<http://www.conservation.ca.gov/cgs/shzp/>.

What's New in San Francisco Bay Region Geology and Geologic Hazards?

From the "What's New" page of the San Francisco Bay Region Geology (A cooperative project with the California Geological Survey)

(<http://geomaps.wr.usgs.gov/sfgeo/index.html>)

The San Francisco Bay region is home to 7 million people whose lives are intertwined with some of the most complex and active geology in the world. With heightened public awareness about earthquake hazards on the 100th anniversary of the 1906 San Francisco earthquake, the U.S. Geological Survey, in cooperation with the California Geological Survey, is releasing three new maps of the San Francisco Bay Area designed to provide a new look at the geologic history and hazards of the region:

(Note: The following maps below require the Shockwave player to view. You can [download the Shockwave player here](#). )

[Geologic Map](#)

This page shows the distribution of geologic materials and geologic structures that are visible at the Earth's surface, with information about geologic materials, geologic time, fossils, and the geologic history of the San Francisco Bay region.

[Quaternary-Active Fault Map](#)

This page shows the distribution of faults in the San Francisco Bay region most likely to generate future earthquakes, with information about active faults and how geologists find them and study them.

[Liquefaction Susceptibility Map](#)

This page shows the distribution of rock and sediment having different vulnerabilities to liquefaction when shaken by earthquakes, together with explanation of the process and examples of its effects.

[San Francisco Bay Region Geology Website](#)

This older website provides access to additional resources, maps, and information about the regional geology of the San Francisco Bay region.

(The Website provides enhanced access to these maps, including additional information, images, downloads, and links).

Astrobiology Primer Available

Do you have an interest in Astrobiology? This link appeared recently on the Stanford Earth Sciences e-bulletin board, and was forwarded thanks to **member Kathleen Burnham**. The new primer is extremely concise and includes updated information including the number of galaxies in the known universe, which is now considered to be in the 100's of billions. The paper will be out in the October issue of Astrobiology. It can be downloaded directly from the publisher (without a subscription) at:

<http://www.liebertonline.com/doi/pdf/10.1089/ast.2006.6.735>

(The full citation is: *Astrobiology Primer*; Astrobiology; October 2006; Lucas Mix, John Armstrong, Avi M. Mandell, Annika C. Mosier, Jason Raymond, Sean N. Raymond, Frank J. Stewart, Kaspar von Braun, and Olga Zhaxybayeva eds.)

Climate Science: Time to Talk

H. Jesse Smith

From "Editors' Choice"

Highlights of the recent literature
October 20 2006, 314 (5798)

Earth's climate is warming, and carbon dioxide emitted from the burning of fossil fuel is very likely to be the major cause. Global temperatures are projected to rise above preindustrial values by 1.5° to 5.8°C by the end of the 21st century. The search is on for ways to slow warming, potentially by large-scale climate geoengineering.

One possible approach to this risky endeavor is to inject sulfate precursors into the stratosphere (see Wigley, Reports, 20 October 2006, p. 452), because sulfate aerosols reflect sunlight and would have a consequent cooling effect. In an attempt to lay the foundation for a more thorough discussion of climate geoengineering options Crutzen discusses the theoretical basis, possible methodologies, and advantages and disadvantages of such a scheme. Five other authors (Cicerone, Kiehl, Bengtsson, MacCracken, and Lawrence) weigh in on the history of such proposals, the practical as well as ethical considerations of various approaches, and how best to evaluate different geoengineering schemes. The authors make it clear that geoengineering climate is a less desirable potential solution to warming than controlling greenhouse emissions, and that only if warming causes sufficiently harmful impacts would geoengineering be a better choice. -- HJS

Clim. Change **77**, 211; 221; 227; 229; 235; 245 (2006).

More from "Editors' Choice"

Ocean Science: Shallow Chills

H. Jesse Smith

Observations show that the world oceans as a whole have been warming for the past 50 years. This result is an important confirmation of global warming inferences based on surface atmospheric temperature measurements, as the oceans have more than a thousand times the heat capacity of the atmosphere. The rise in ocean heat content has not

been spatially or temporally uniform, however, and because most models do not reproduce such unforced variations, their origin remains an open question.

Lyman *et al.* have taken advantage of the rapidly expanding network of Argo autonomous profiling floats to present a global temperature data set for the upper 750 m of the world oceans. The study reveals a large cooling since 2003. These data also have implications beyond the pattern and extent of cooling. For instance, because it is unlikely that so much heat was transferred so quickly to the deeper ocean, the measurements indicate that a whole-ocean cooling has occurred, a phenomenon expected to induce a decrease in sea level due to thermal contraction of the water. Sea level rise has not slowed during the time period, however, suggesting that other factors such as increased rates of glacial melting are more than adequate to compensate for the thermal effect on volume. -HJS
Geophys. Res. Lett. **33**, L18604 (2006).

AGI Mourns the Loss of Dr. Marcus E. Milling (1938-2006)

AGI Senior Advisor and previous Executive Director, Dr. Marcus E. Milling, passed away on October 17, 2006 after a long battle with cancer. Dr. Milling was named the Executive Director of AGI in February of 1992, a position he held until July 31, 2006. During his tenure, he led AGI through a period of strong financial stability and increased membership from 19 to 44 societies. He was a champion for earth science education. Under his influence, AGI became a leader in earth science education with the development of several curriculum projects and the outreach efforts of projects like Earth Science Week. He also spearheaded the undertaking of the Faces of Earth television series that is currently in production. Before he served as Executive Director of AGI, Dr. Milling was an AGI Foundation Trustee and also served on AGI advisory committees.

He received a B.S. from Lamar University and a M.S. and Ph.D. from the University of Iowa. Dr. Milling's professional career began as a research geologist with Exxon in 1968. He remained at Exxon until 1980 holding the title of District

Geologist. From Exxon he went to ARCO Oil and Gas as a general manager and later gained the title of Manager, Geological Exploration Staff. In 1987, he joined the University of Texas at Austin as the Associate Director of the Bureau of Economic Geology where he coordinated their oil and gas industry consortia programs.

Throughout his career Dr. Milling has received numerous honors and awards including the American Institute of Professional Geologists Ben H. Parker Memorial Medal (1997), the Association of American State Geologists Pick & Gavel Award (2005), and the American Association of Petroleum Geologists Special Award (2007). He was actively involved with issues in the geoscience community and served on many society committees. He was known for his exceptional work in advancing both the Institute and the geoscience community. (From the AGI website)

Member Don Lewis adds: In the early nineties, Earth science societies were withdrawing from AGI because of its perceived lack of value. At the low point, when Marcus arrived, there were only 25 or so member societies. This grew steadily to the current 44 societies, thanks to Marcus's leadership and the resulting, ever expanding, beneficial role of AGI in the Earth Science community.

AGI is the leader in reform-based Earth science curriculum publishing, having produced a high school and two middle school texts in the last few years. They have an excellent website supporting K-12 Earth science education and are a leading proponent of the teaching of evolution. Earth Science Week, now in its ninth year, has become a major teaching event.

The publications program has updated and expanded. Geotimes has become a widely circulated advertisement for the profession. The Environmental series of booklets has been very successful.

Under Marcus's leadership, AGI's role in public policy formulation has greatly expanded. He probably has contributed more than most professionals to increasing public perception of the Earth science profession.

A Fossil Bee from Early Cretaceous Burmese Amber **G. O. Poinar, Jr.¹ and B. N. Danforth^{2*}** **Science**

The bee fossil record is fragmentary, making it difficult to accurately estimate the antiquity of bee-mediated pollination. A bee fossil [*Melittosphex burmensis* (new species), *Melittosphex* (new family)] is described from Early Cretaceous Burmese amber (~100 million years before the present). The fossil provides insights into the morphology of the earliest bees and provides a new minimum date for the antiquity of bees and bee-mediated pollination.

¹ Department of Zoology, Oregon State University, Corvallis, OR 97331-2907, USA.

² Department of Entomology, Cornell University, Ithaca, NY 14853-0901, USA.

Three new items from the UC Museum of Paleontology

From the UCMP website:

1. A 2007 UCMP short course is now scheduled:

The Implications of Evolution: Evidence & Application

Saturday, February 10, 2007

For more information and to access a registration form visit:

<http://www.ucmp.berkeley.edu/museum/events/shortcourse2007/index.html>

2. Did you know that you can subscribe to the UCMP Understanding Evolution website? Go to <http://evolution.berkeley.edu/evolibrary/subscribe/index.php> and every month you will receive an email message containing the latest updates to the Understanding Evolution website.

3. And finally, the UCMP website has been redesigned see it at: <http://www.ucmp.berkeley.edu/>

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



NORTHERN CALIFORNIA GEOLOGICAL SOCIETY and AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

K-12 EARTH SCIENCE TEACHER OF THE YEAR AWARD

\$750 Northern California Geological Society
\$500 Pacific Section AAPG
\$5,000 National AAPG

Call for Nominations for the Year 2006 - 2007 NCGS Competition

The Northern California Geological Society (NCGS) is pleased to announce that it will accept applications from candidates in the Northern California region for the Year 2006 - 2007 competition for the Earth Science Teacher of the Year Award. The \$750 NCGS award is intended to recognize pre-college earth science programs already in place, and to encourage their organization in districts where they have not been fully developed. Nominations of qualified K-12 teacher candidates are solicited from teachers, school administrators, teacher outreach programs, and other interested parties.

The NCGS awardee's application will be submitted to a regional competition sponsored by the American Association of Petroleum Geologists (AAPG) Pacific Section. The Pacific Section winner will receive a \$500 award at the joint national and Pacific Section regional meeting in Long Beach, California in April 2007, plus up to \$250 toward meeting expenses. The regional winner's project will be submitted to AAPG headquarters for the national contest. The national winner will receive an expense-paid trip to attend the joint national and Pacific Section AAPG meeting in Long Beach, California in April 2007 to receive the national award.

At the national level, the AAPG Foundation presents an annual \$5,000 award to a K-12 teacher for *Excellence in the Teaching of Natural Resources in the Earth Science*. The award recognizes balanced incorporation of natural resource extraction and environmental sustainability concepts in pre-college Earth science curricula. It includes \$2,500 to the teacher's school for the winning teacher's use, and \$2,500 for the teacher's personal use.

The deadline for application submittal by candidates for the \$750 NCGS award is Friday, February 2, 2007.

Interested candidates or nominators can request Application Information and an Entrant Application Form, or submit an application, by contacting:

John Stockwell, Chair, K-12 Geoscience Education Committee

Northern California Geological Society

1807 San Lorenzo Avenue

Berkeley, California 94707-1840

Tel: (510) 526-1646

e-mail: kugeln@peoplepc.com

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

K-12 GEOSCIENCE TEACHING AWARD

\$500 Northern California Geological Society

Call for Applications for the Year 2006 - 2007 NCGS Competition

The Northern California Geological Society (NCGS) invites applications from candidates in the Northern California region for the Year 2006-2007 competition for the K-12 Geoscience Teaching Award. Applications may be submitted by any teacher regardless of experience.

Applications reflecting teaching of units addressed to any of the earth or environmental sciences, including but not limited to mineralogy, petrology, economic geology, geomorphology, paleontology, hydrology, and planetary geology are invited from physical science, earth science, and geology teachers.

*The deadline for application submittal by candidates for the \$500 NCGS award is Friday, January 19, 2007.
The application process is simple and straight forward.*

The winner will receive a \$500 award at a Northern California Geological Society meeting in Orinda in late February 2006.

Interested candidates can request Application Information and an Entrant Application Form or submit an application by contacting:

John Stockwell, Chair, K-12 Geoscience Education Committee

Northern California Geological Society

1807 San Lorenzo Avenue

Berkeley, California 94707-1840

Tel: (510) 526-1646

e-mail: kugeln@peoplepc.com

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



2007 GRADUATE SCHOLARSHIP ANNOUNCEMENT – MS & PhD DEGREES

The Northern California Geological Society is pleased to announce the availability of a scholarship to help support graduate-level student research in geology during the year 2007.

- **\$750 will be awarded to students working toward the MS degree**
- **\$1,000 will be awarded to students working toward the PhD degree**

These scholarships will be awarded competitively, based upon our review of submitted summaries of proposed research. Funds are intended to support field and laboratory components of research programs. The research must be scheduled for completion during the 2007 calendar year. Winners will be invited to speak about or otherwise present their research at a regular evening NCGS meeting in Orinda, California.

Application Procedure

Candidates may apply by forwarding a signed cover letter on department letterhead requesting the award, accompanied by a brief (no more than 2 page) summary of the proposed research topic. The letter must include candidate contact information (both departmental and home mailing address, telephone, and e-mail).

The bottom of the candidate letter must bear the note:

“Degree Program _____, Approved by _____, (Print) _____, Title _____,
Telephone _____, E-mail _____. Date _____.”

with the signature and printed name/title/telephone/e-mail of a department chairperson or thesis advisor, to show that the recipient has departmental approval to receive the award. An application form is not required.

Please submit the letter and proposal to:

Phillip Garbutt

Chair, NCGS Scholarship Committee

6372 Boone Drive

Castro Valley, CA 94552-5077

Voice: (510) 885-3440 or (510) 581-9098 (evening)

Fax: (510) 885-2526

e-mail: phillip.garbutt@csueastbay.edu or plgarbutt@comcast.net

no later than January 31, 2007. Awards will be made by February 28, 2007.

Issue date: September 11, 2006

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



2006-2007 Renewal Form

Please fill out this form and attach your check made out to NCGS.

Mail to:

Phil Reed
NCGS Treasurer
488 Chaucer Circle
San Ramon, CA 94583-2542

Dues		
	Regular (\$15)	\$ _____
	Student (\$ 5)	\$ _____
Contribution		
	Scholarship	\$ _____
	Teacher Award	\$ _____
Total		\$ _____

Please provide the following information:

Name: _____

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I would like to receive the monthly newsletter via: E-mail _____ Regular mail _____

I can help with:

Programs _____ Field Trips _____ Newsletter _____ Web Site _____

K-12 Programs _____ Scholarships _____ AAPG Delegate _____ Membership _____

Please complete the following *only* if there are changes since last year:

Address _____

City, State, Zip _____

Phone: Home (____) _____ Work (____) _____ Fax (____) _____

Employer _____ Job Title _____

For further information: <http://www.ncgeolsoc.org>