

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



Website: [www.ncgeolsoc.org](http://www.ncgeolsoc.org)

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## MEETING ANNOUNCEMENT

**DATE:** May 28, 2008 - **A Dinner Meeting**

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

**TIME:** **Social Hour 6:00 – 7:00 p.m.; Dinner 7:00 – 8:00 p.m.; Presentation 8:00 – Open; Cost: \$20**

**\*\* Reservations are required by May 24, 2008 \*\***  
**We are sorry but we will not be able to accommodate “walk-ins”**

**Speaker: Dr. David Schwartz, U.S. Geological Survey, Menlo Park**

Stepping out of our normal routine, the **Northern California Geological Society** is pleased to announce this *special dinner and evening* with **Dr. David Schwartz**. For this special event, starting one-half hour early, we are planning in typical NCGS style, a Back Forty Texas BBQ dinner consisting of **Pork Ribs and BBQ Chicken, Tossed Green Salad, BBQ Beans, Fresh Corn Cobettes**. For vegetarian dinners deluxe veggie burger will be served in place of BBQ. Desert will include assorted cookies and brownies. Wines will not be from Rosenblum Cellars, but look **promising!**. Please also note that a vegetarian option is available if notified ahead (see attached form).

## ***Past and Future Earthquakes in the San Francisco Bay Area***

The San Francisco Bay Area sits in the boundary between the Pacific and North American plates. Plate boundary stress is released by a complex system of predominantly strike-slip faults. Paleoseismic studies of these indicate that the regional stress can be released in either great earthquakes like 1906 or as a group of smaller (but still large) earthquakes clustered in time. Stress changes associated with the 1906 earthquake resulted in a protective “stress shadow” that suppressed earthquakes in the Bay Area during the 20<sup>th</sup> century. New modeling using the paleoseismic and historical earthquake records and stress changes associated with these earthquakes indicates the stress shadow has dissipated. The recent statewide probability study calculated a 63% chance of one or more magnitude M=6.7 or larger... *Continued on back page...*

# ***NCGS 2008 Calendar***

***Wednesday May 28, 2008 A Dinner Meeting!!***

***Reserve by May 24 – Sorry No Walk Ins***

***Past and Future Earthquakes in the San Francisco Bay Area - Commemorating the 140th Anniversary of the 1868 Hayward Earthquake*** Dr. David Schwartz, Senior Earthquake Geologist, US Geological Survey, Menlo Park – A talk in support of the *1868 Hayward Earthquake Alliance*

**6:00 pm at Orinda Masonic Center**

***Wednesday June 25, 2008***

***Dark holes in Muir's "Range of Light": Insights from southern Sierra Nevada caves and karst*** - Dr. John C. Tinsley, US Geological Survey, Menlo Park  
7:00 pm at Orinda Masonic Center

**As Usual – Our Summer Break!**

***Wednesday September 24, 2008***

***Granites in the Franciscan formation*** – Dr. Rolfe Erickson, California State University, Sonoma  
7:00 pm at Orinda Masonic Center

***Wednesday October 29, 2008***

***The impact of fire on hydrologic systems***  
Dr. Laura Rademacher, Univ. of the Pacific, Stockton  
7:00 pm at Orinda Masonic Center

***Wednesday November 19, 2008 (One Week Early!)***

***Late Pliocene to Recent stratigraphy and tectonics in the Death Valley area, California*** – Dr. John Caskey, San Francisco State University, San Francisco  
7:00 pm at Orinda Masonic Center

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## ***Upcoming NCGS Field Trips***

**June 28, 2008** ***Field Trip to the Wilson Grove & Petaluma Formations, Sonoma County, California;***  
**(Repeat Due to Demand; Wilson Grove II)** **James Allen, MS, PG,** Dept. of Earth and Environmental Science, CSU East Bay and **Peter Holland, CEG,** Vector Engineering

**August 23, 2008** ***Field Trip to the Calaveras Fault in Santa Clara County, California, Dr. Phil Stoffer,*** US Geological Survey and **Dr. Richard Sedlock,** San Jose State University (A part of the **1868 Earthquake Alliance**)

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](mailto:rlngeology@sbcglobal.net)

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## **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. Posted upcoming meetings include the following topics and dates:

- June 10, 2008, Tom Moore, Presidential Address.
- September or October, 2008, Field trip dealing with geology of the Owens Valley (Angela Jayko) and central White-Inyo Range (Gary Ernst).

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## **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/>.

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## **1868 Hayward Earthquake Alliance**

### **Dare to Prepare Bay Area**

**October 21, 2008**

October 21, 2008 marks the 140th anniversary of the 1868 Hayward earthquake, which was the first great "San Francisco earthquake" and one of the most damaging earthquakes in the nation's history. The 1868 Hayward Earthquake Alliance was formed to help coordinate and promote efforts and activities between organizations throughout the greater San Francisco Bay Area planning to commemorate the earthquake.

No doubt most members are aware of the Alliance, but here is a convenient link: <http://1868alliance.org/> If you have not been to the website you'll find web pages on how to prepare (for your friends and family no doubt), activities and events (for all), news article links (for educational moments), member organizations (including NCGS!), stories, speaker information (line up a speaker), and other resources. It's well designed and worth a visit! And it's where you can find more information on the next item.

**Third Conference on Earthquake  
Hazards in the Eastern San  
Francisco Bay Area  
Science, Hazard, Engineering, and Risk  
California State University, East Bay  
Hayward Campus  
October 22-24, 2008**

This conference will highlight information on Eastern San Francisco Bay Area earthquake hazards that has been developed since 1982 and 1992 conferences. The activities and publications will take advantage of interest generated by the 140<sup>th</sup> anniversary of the 1868 Hayward fault earthquake. In addition to technical sessions, the conference will include a public forum, field trips and tutorials for educators. This conference is an excellent opportunity to help make public and to synthesize the exciting results of earthquake related studies conducted since the last conference in 1992. Please help us spread the word and tell your colleagues. The preliminary technical program and a description of the field trips can be found at:

<http://www.consrv.ca.gov/cgs/News/Pages/sessions.aspx>

There will be four related field trips will be conducted Saturday and Sunday, October 25 to 26. For the field trips go to:

<http://www.consrv.ca.gov/cgs/News/Pages/fieldtrips.aspx>

Abstracts are due August 15, and should be submitted online at:

<http://www.seismosoc.org/meetings/2008/3ebconf/>

For more details see:

[www.consrv.ca.gov/cgs/news/eastbayconference.htm](http://www.consrv.ca.gov/cgs/news/eastbayconference.htm).

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**Just FYI**

**A Field Trip with Eldridge Moores**

**In association with the**

**Common Ground Symposium**

**Sponsored by the Modoc Forum**

**June 4, 2008, Surprise Valley, California**

**“Geology by Day, Story Telling by Night”**

Potentially an interesting note about a one day field trip to be lead by Eldridge Moores, as part of a three day forum put on by the Modoc Forum. The Modoc Forum has responded to several requests for a one-day rate for the geologic field trip, and is offering it at a rate of \$145, including lunch and an evening barbecue.

Pulitzer Prize winning environmental writer Gary Snyder, UC Davis Hydrologist Dr. Graham Fogg, Malcolm Margolin, and Native American Storyteller Darryl Babe Wilson will also be present on other days. For more information please visit their website, [www.modocforum.org](http://www.modocforum.org) or call them at (530) 279-2099.

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**NO CHILD LEFT INSIDE**

**THE 2008 EARTH SCIENCE WEEK THEME**

**American Geological Institute (AGI)**

"No Child Left Inside" will focus the nation on learning about the earth sciences in their natural setting, outside. Schoolchildren across the nation will turn off the TV and step away from their computers to discover the rocks, soil, watersheds, and weather patterns in their community.

"The best earth science classroom, any geoscientist will tell you, is the outdoors," says Ann E. Benbow, AGI Director of Education and Outreach. "We're encouraging students, teachers, and everyone interested in earth science to learn by experiencing it firsthand during Earth Science Week 2008. That means hiking over and digging into the Earth, taking water samples, making cloud observations, and more."

This year marks the 10th anniversary of Earth Science Week. Since the beginning, the event has grown dramatically, enabling more students to focus on the many aspects of the earth sciences and the various careers within the field.

AGI leads Earth Science Week annually in cooperation with its sponsors and the geosciences community as a service to the public. Each year, community groups, educators, and interested citizens organize celebratory events. Earth Science Week offers the public opportunities to discover the earth sciences and engage in responsible stewardship of the Earth. Earth Science Week is supported by the U.S. Geological Survey, the AAPG Foundation, and many other geoscience organizations.

To learn more about this week, ways to become involved; including newsletters, local events, and classroom activities, please go to the Earth Science Week website at:

<http://www.earthsciweek.org> or

<http://www.agiweb.org/direct/>.

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



## NCGS DINNER IN COMMEMORATION OF 140<sup>th</sup> ANNIVERSARY OF THE 1868 HAYWARD EARTHQUAKE

*Past and Future Earthquakes in the San Francisco Bay Area*

Wednesday May 28, 2008

Speaker: Dr. David Schwartz, U.S. Geological Survey, Menlo Park

6:00 pm at Orinda Masonic Center

(Reservations are required by May 24, 2008)

We are sorry but we will not be able to accommodate "walk-ins"

Stepping out of our normal routine, the Northern California Geological Society is pleased to announce this *special dinner and evening* with **Dr. David Schwartz**. Come listen to Dr. Schwartz on the history of earthquakes in the San Francisco Bay Area and what are the chances in the next 30 years. For this special event, planned for our normal monthly meeting date, but starting one-half hour early, we are planning in typical NCGS style, a Back Forty Texas BBQ dinner consisting of **Pork Ribs and BBQ Chicken, Tossed Green Salad, BBQ Beans, Fresh Corn Cobettes.** For vegetarian dinners deluxe veggie burger will be served in place of BBQ. Desert will include assorted cookies and brownies. Wines from Rosenblum Cellars of Alameda. Please also note that a vegetarian option is available if notified ahead (see attached form).

**Abstract: *The History of Earthquakes in the San Francisco Bay Area***

Dr. Schwartz will describe the timing of prehistoric earthquakes in the San Francisco Bay Area for the past 2000 years, showing that at some times earthquakes appeared to occur closely together in time. Dr. Schwartz will discuss the chances for future earthquakes in the Bay Area during the next 30 years.

**Biography:** A leading earthquake geologist at the U.S. Geological Survey, Dr. David Schwartz is credited with having pushed forward the newly developing fields of earthquake geology and paleoseismology (the study of prehistorical seismic events). One of his major contributions is the characteristic earthquake recurrence model, which has become a cornerstone of many seismic hazard analyses.

Dr. Schwartz formerly headed the San Francisco Bay Area Earthquake Hazard Project and he co-chaired the Working Group on California Earthquake Probabilities that issued the 2003 Bay Area 30-year earthquake forecast. In addition, Dr. Schwartz served as the regional Coordinator for the USGS Northern California Earthquake Hazard Program. Dr. Schwartz traveled extensively outside the U.S. looking at the ground cracking produced by large earthquakes around the world. He has described the Hayward Fault as a tectonic time bomb.

\*\*\*\*\* Dinner Logistics \*\*\*\*\*

Meeting Details: Social Hour: 6:00 – 7:00 pm; Dinner: 7:00 – 8:00 pm Presentation: 8:00 – open

**Time:** May 28, 2008, 6:00 pm, Orinda Masonic Center 9 Altarinda Road, Orinda, CA. **Cost: \$20/person**

\*\*\*\*\*REGISTRATION FORM (Dr. David Schwartz Dinner) \*\*\*\*\*

Name: \_\_\_\_\_ E-mail: \_\_\_\_\_

Address: \_\_\_\_\_ Phone (day): \_\_\_\_\_ Phone (evening): \_\_\_\_\_

Dinner: Regular: \_\_\_\_\_ Vegetarian: \_\_\_\_\_ (Please check one) Check Amount: \_\_\_\_\_

Please mail a check made out to NCGS to: **Tridib Guha, 5016 Gloucester Lane, Martinez, CA 94553**

Questions: e-mail: [tridibguha@sbcglobal.net](mailto:tridibguha@sbcglobal.net) Phone: (925) 370-0685 (evening) (925) 363-1999 (day)

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



By Popular Demand!

## THE SECOND NCGS FIELD TRIP TO THE WILSON GROVE & PETALUMA FORMATIONS, SONOMA COUNTY, CA Saturday June 28, 2008

**Leaders: James Allen, MS, PG, Dept. of Earth and Environmental Science, CSU East Bay  
Peter Holland, CEG, Vector Engineering**

The Petaluma Formation, located in Sonoma County, California, is a Late Miocene to Late Pliocene nonmarine formation with important, recently identified marine interbeds. The formation is located in Sonoma County, California. The formation was originally divided into two members. After further study, we have divided the formation into three informal members based on lithology. The “lower” member is predominantly shale with both nonmarine and newly discovered marine microfauna. This member is prone to sliding. The “middle” member is predominantly conglomerate derived from Franciscan sources, the upper member is conglomerate derived, in part, from the Monterey Group of the East Bay area. Understanding of the three members allows for stratigraphic correlation in areas of poor exposure, such as in core data from the Santa Rosa valley. Other fluvial, conglomeratic formations in the North Bay are the volcanoclastic Huichica and Glen Ellen formations, both younger than the Petaluma. The Petaluma intertongues with the coeval Wilson Grove Formation to the west and both, as a continuous through-going fluvial- to marine system, have been offset from units with identical age, lithologies and source rocks east of the Hayward fault.

The Petaluma Formation has been the focus of geologists’ attention for over a century. In the early part of last century, oil was discovered in structural traps east of Adobe Road and there are still active oil seeps in that area, for example at Lynch Creek. Some ranchers near the oil field area have reported hydrocarbon abundance in their groundwater wells, forcing them to abandon the water wells. There are also a number of natural gas wells in the Cotati Gas Field within the paleo-shoreline area where the Wilson Grove is interbedded with the Petaluma. There have been numerous nonmarine and marine microfossil, invertebrate and vertebrate fossils recovered from both the Wilson Grove and Petaluma formations as well. Marine microfauna in the “lower” shale of the Petaluma potentially may shed light on sources of oil. Diatomite analysis reveals new information about the “upper” member of the Petaluma.

The interbedded nature between the Petaluma and Wilson Grove formations has been difficult to understand by previous researchers. This is due in large part to poor exposures. Also, the Wilson Grove formation is largely flat lying with relatively minor deformation affecting it, while the Petaluma Formation has been highly folded and faulted and is overlain in many places by equally deformed Sonoma Volcanics and underlain by Donnell Ranch Volcanics. The geographical location the Petaluma Formation roughly coincides with the major strike-slip fault system in the North Bay, which has led others to erroneously believe that the Petaluma is an older, more deformed formation relative to the Wilson Grove. New paleontological and radiometric data helps to further constrain stratigraphic relationships between both formations.

Some items we will address on the field trip will be the “type” lithology and stratigraphy of the Petaluma Formation in the Cotati area. From there, we will determine stratigraphic position of spotty outcrops exposed between Cotati, Sonoma Mountain and Sonoma Valley based on the “type” section in Cotati. Items to discuss will be strike-slip displacement, source rocks and location of active faulting.

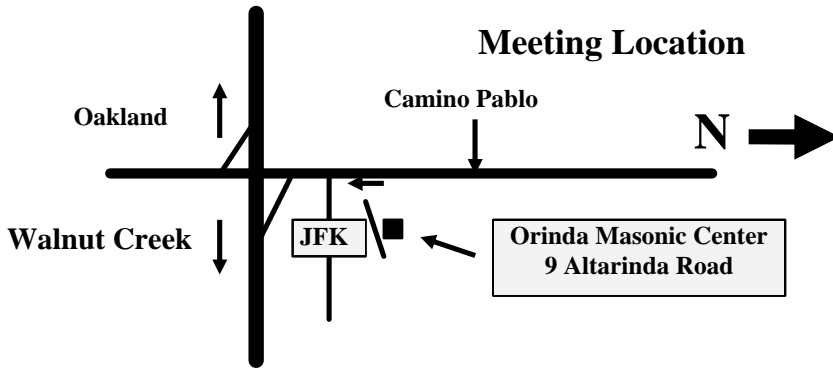
\*\*\*\*\***Field Trip Logistics**\*\*\*\*\*

**THIS FIELD TRIP WILL BE LIMITED TO 30 PEOPLE. Time & Departure: 8:30 A.M. Sharp! Cost: \$25/person**

We will meet at the **Southbound** Park and Ride lot at Highway 101 and Rohnert Park Expressway, in Rohnert Park. Take the Rohnert Park Expressway exit. There are northbound and southbound lots; go to the smaller lot on the **west** side of Highway 101. We will try to consolidate into as few cars as possible and **leave at 8:30 sharp**. Bring boots; the first exposure is about a 1/4 mile hike across a grassy hillside. We should finish by 4:00 PM. **Call me on my cell phone at 707-548-3268 if you have any problems.**

\*\*\*\*\***Registration Form (Wilson Grove & Petaluma Formation Field Trip)**\*\*\*\*\*

Name: \_\_\_\_\_ E-mail: \_\_\_\_\_ Address: \_\_\_\_\_  
Phone (day): \_\_\_\_\_ Phone (evening): \_\_\_\_\_ Lunch: Regular: \_\_\_\_\_ Vegetarian: \_\_\_\_\_ (Please check one)  
Check Amount: \_\_\_\_\_ Please mail a check made out to **NCGS to: Rob Nelson, 269 College View Drive, Rohnert Park, CA 94928;** **Carpooling is suggested for this fieldtrip. Parking onsite is very limited. Please let us know if you can provide a van and NCGS can reimburse your gasoline expenses.**  
Questions: e-mail: [rlngeology@sbcglobal.net](mailto:rlngeology@sbcglobal.net) Phone: (707) 795-8090 (evening) (707) 548-3268 (day)



earthquakes in the Bay Area by 2036. The location, size, and likelihood of these next Bay Area earthquakes will be discussed.

**Biography:** **Dr. David Swartz** received his BA and MA in geology from Queens College of the City University of NY (1966, 1973). In 1976 he received a PhD in geology from the State University of NY at Binghamton. In 1973 he joined Woodward-Clyde Consultants in Oakland/San Francisco, and the USGS in 1985. A leading earthquake geologist at the U.S. Geological Survey, Dr. David Schwartz is credited with having pushed forward the newly developing fields of earthquake geology and paleoseismology (the study of prehistorical seismic events). One of his major contributions is the characteristic earthquake recurrence model, which has become a cornerstone of many seismic hazard analyses. Dr. Schwartz formerly headed the San Francisco Bay Area Earthquake Hazard Project (1997 – 2007) and co-chaired the Working Group on California Earthquake Probabilities that issued the 2003 Bay Area 30-year earthquake forecast. In addition, Dr. Schwartz served as the regional Coordinator for the USGS Northern California Earthquake Hazard Program (1997 – 2003). Dr. Schwartz traveled extensively outside the U.S. looking at the ground cracking produced by large earthquakes around the world. He has described the Hayward Fault as a tectonic time bomb.

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*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](mailto:danday94@pacbell.net) to sign up for this free service.