NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

MEETING ANNOUNCEMENT

DATE: **April 29, 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: **Dr. Thomas C. Hanks**,
U.S. Geological Survey, Menlo Park

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

Long before he established himself as the pre-eminent anthropologist of the Navajo (Kluckhohn, 1946), Clyde Kluckhohn had journeyed extensively through the American Southwest, even as a teenager (Kluckhohn, 1927). During the summers of 1927 and 1928, Jim Hanks, the speaker's father, accompanied Kluckhohn, as did Bill Guernon, Nel Hagen, and Lauri Sharp, while all were undergraduates at the University of Wisconsin. Their adventures are recounted in *Beyond the Rainbow* (Kluckhohn, 1933).

Hanks took almost 500 photographs in northern Arizona and southern Utah. These include photographs of the Red Lake Trading Post, Betatakin, Navajo rangeland, individual Navajo people and families, the plateau country from the top of Navajo Mountain, Rainbow Bridge, the Colorado River still free in Glen Canyon, Hole-in-the-Rock from river level and the old Mormon Trail (now beneath Lake Powell), fields of hoo-doo's formed in huge landslides beneath Fifty-Mile Bench, previously unknown Anasazi structures and pictographs just beneath the rim of the Kaiparowits Plateau, cattle grazing on the Kaiparowits Plateau in 1928, lightning strikes in the black of night, and, not surprisingly in this country of sensational scenery, a variety of general scenery pictures. 451 of these pictures may be found in the Colorado Plateau Digital Archives of the Cline Library, Northern Arizona University, Flagstaff, AZ (www.nau.edu/library/speccoll/, search on "Hanks").

Continued on the back…

NCGS 2008 Calendar

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 – **Dr. Thomas C. Hanks**, U.S. Geological Survey, Menlo Park, California,
7:00 pm at Orinda Masonic Center

Wednesday May 27, 2009 **Dinner Meeting!!**
See Attached Reservation Form
Mesozoic Transpression, Transtension, Subduction, and Metallogenesis in Northern and Central California – **Dr. W. Gary Ernst**, Emeritus Professor at Stanford University, Palo Alto, California,
7:00 pm at Orinda Masonic Center

Wednesday June 24, 2009
Cleanup on Aisle 9 - The Long-Lasting Legacy of Nuclear Waste – **Dr. Dave Stonestrom**, U.S. Geological Survey Research Hydrologist, Menlo Park, California,
7:00 pm at Orinda Masonic Center

As Usual – Our Summer Break!

Wednesday September 30, 2009
Bay Area Geoscapes: Geology of the San Francisco Bay Region – Photos That Didn't Make it Into the Book **– Dr. John Karachewski,** Dept. Toxic Substances Control
7:00 pm at Orinda Masonic Center

Upcoming NCGS Field Trips

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. In the mean while there are two upcoming field trips!

May 2, 2008	***Neogene Volcanic Rocks of the Northern San Francisco Bay Area: Timing and Tectonic Implication***, James Allen, Cal. State Univ., East Bay
June 13 & 14 2009	***Gold Country Field Trip***; Ross Smith, Member and Precious Metals Consulting Geologist

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. Coming talks include:

- May 12, 2009: Bill Black, RGp, NorCal Geophysical Consultants and member Board of Registration for Geologists and Geophysicists (BRGG); Geophysical case study and role of BRGG.
- For further meeting details go to: http://www.aegsf.org/

USGS Open House

Exhibits, Live Music, Video Theater
May 16 – 17, 2009
10 a.m. – 4 p.m.

It's time for the triennial U.S.G.S. Open House. This year the theme is ***2009 – Year of Science.*** The USGS Campus located at 345 Middlefield Road, Menlo Park, CA
For more information go to: http://openhouse.wr.usgs.gov/

NEW INSIGHTS IN HISTORIC AREAS

Pacific Sections AAPG – SEPM Annual Convention

May 2 – 6, 2009; Ventura, California

Message from the Program Chair: Recent increases in the price for crude oil and our need for increased domestic energy production have opened the door for using new techniques to produce more from older historic areas. This was the inspiration for our Convention theme, **"New Insights in Historic Areas"**, which easily extends to all areas of the geosciences. For more details, email addresses for all chairs, chair affiliations, and more, please go to:
http://www.csun.edu/~hcgeo007/psaapgconvheader.htm

AAPG Annual Convention

June 9 – 10, 2009; Denver, Colorado

Don't forget about this opportunity as well! Many details are available, but more will come. Go to http://www.aapg.org/denver/index.cfm for details!

Current Events

Update on Last Months Rockfall Talk from Greg Stock

In last month's meeting (March 25) Yosemite National Park Geologist Dr. Greg Stock presented ***New Tools for Understanding and Mitigating Rockfall Hazards in Yosemite National Park.*** Three days later on March 28 the Valley provided further emphasis of the need for Greg's work. In Greg's words (as posted the "SuperTopo Climbers Forum)...

"A very large rock fall occurred from Ahwiyah Point near Half Dome at 5:26 am on the morning of March 28. The rock fall originated near the summit of Ahwiyah Point and fell roughly 1800 feet to the floor of Tenaya Canyon, striking ledges along the way. Debris extended well out into Tenaya Canyon, knocking down hundreds of trees and burying the southern portion of the Mirror Lake loop trail. Reminiscent of the 1996 Happy Isles rock fall, there appears to have been a small airblast associated with impact on the valley floor. Fortunately, due to the event occurring in the early morning, there were no injuries. The impact generated ground shaking that was recorded by numerous seismometers across California, registering as the equivalent of a local magnitude 2.5 earthquake:
http://quake.wr.usgs.gov/recenteqs/Quakes/nc40233925.htm

The volume of the Ahwiyah Point rock fall is still being determined, but it was clearly one of the largest rock falls in the past decade; for perspective this rock fall was many times the size of the recent October 2008 rock falls behind Curry Village. Numerous smaller rock falls have occurred from Ahwiyah Point since the initial failure, and the southern portion of the Mirror Lake loop trail remains closed until further notice."

On a later post Greg reports: "The cumulative volume of the Ahwiyah Point rock fall(s) was about 43,000 cubic meters, or about 114,000 metric tons. This makes this rock fall larger than the 1996 Happy Isles event. In fact, it is the largest event since the Middle Brother rock fall of March 10, 1987. For perspective, though, the 1987 Middle Brother rock fall was about 600,000 cubic meters in volume, or about 1.6 million metric tons, roughly 14 times larger than the recent Ahwiyah Point rock fall. There were several other notable rock falls in that decade (1980-1989), including the 1980 Yosemite Falls Trail rock fall (volume 1,500 cubic meters, 3 fatalities, 7 injuries), the 1980-81 Elephant Rock rock fall (volume 24,000 cubic meters), and the 1982 Cookie Cliff rock slide (volume 100,000 cubic meters). In terms of both rock-fall volume and the number of rock fall-related injuries/fatalities, the period 1980-1989 was much more significant than the period 2000-2009 has been."

For some **really spectacular photos** you can use the following link posted by Greg to the xRez Extreme Resolution photos that were taken (and highlighted by Greg during his talk) at:

http://www.xrez.com/gallery/yosemite/xRez_yose.html

For some additional "Gigapan Camera" views use:

http://share.gigapan.org/viewGigapan.php?id=20475

And for the on-line conversation go to:
http://www.supertopo.com/climbing/thread.html?topic_id=821292&msg=837747#msg837747

This Week in SCIENCE
November 28 2008, 322 (5906)
Acid Baths

Ocean acidification contributes to the erosion of calcium-based biosynthetic structures like coral reefs, but we have little evidence of the effects of acidification on highly calcium-dependent organisms in fresh waters. **Jeziorski *et al.*** examined the sediment records of calcium-reinforced freshwater crustaceans living in the soft-water (low pH) lakes of the Canadian Shield. During the 1970s these lakes suffered particularly from industrial acid rain. Even though the pH of many of these lakes has recovered, populations of small daphniid crustaceans have become depleted as water calcium levels continue to decline. Daphniids are keystone prey species, thus their loss predicts consequences to freshwater food webs in eastern Canada and, for similar reasons, probably also in many other parts of the Northern Hemisphere.

This Week in SCIENCE
January 30 2009, 323 (5914)
Slow Creep and Other Movements

Recently, slow creep, along with a series of small shudders or tremors has been recognized in several major subduction zones, including in Japan and Cascadia in the Pacific Northwest of North America, which produce the largest earthquakes. The origin and effect of these tremors on earthquake hazards has not been clear, and accurately locating them is critical for inferring mechanism. **La Rocca *et al.*** (p. 620) describe a technique for accurately locating these micro-quakes based on a comparison of arrivals times of different wave types from the tremors. Using this approach, the Cascadia quakes were shown to cluster along the main subduction fault.

This Week in SCIENCE
February 6 2009, 323 (5915)
Legacy of Mass Extinctions

Mass extinctions restructure taxonomic composition of biota on a global scale. However, their legacy, in terms of subsequent patterns of evolutionary diversification, is poorly understood. **Krug *et al.*** investigated how the end-Cretaceous (KT) mass extinction altered temporal spatial diversification dynamics. Marine bivalves provide excellent fossil records and a well-documented modern biogeography. Long-term shifts in the rate of species origination were identified for the cohort of bivalve genera residing in modern oceans, which show a clear and sustained increase in diversification following the KT event. For bivalves, virtually all of the world's bioprovinces today bear the signature of the KT mass extinction despite the climatic, tectonic, and biotic events of the intervening 65 million years.

This Week in SCIENCE
February 13 2009, 323 (5916)
The Farside of the Moon

Because the Moon presents a constant face toward the Earth, we have much more information on its nearside than its farside. Indeed obtaining accurate gravity and topographic data on the farside have been difficult because spacecraft are hidden from Earth and are thus difficult to track. The geology of the farside of the Moon is different from the nearside. Results from the Japanese Kaguya (SELENE) spacecraft enhance our understanding of the of the Moon's evolution and, in particular, of the farside. SELENE includes a separate relay spacecraft to provide accurate tracking data on the farside. Using this setup, Namiki et al. provide an improved gravity map of the Moon, which shows a marked difference between the nearside and farside. In combination with a high-resolution lunar topographic map by Araki et al. the data indicate that the Moon has a rigid crust, particularly on the farside. Detailed imaging of volcanic deposits and craters by Haruyama et al. (published online 6 November) shows that volcanism apparently continued for longer on the farside than the nearside. Ono et al. describe how radar signals from SELENE have penetrated some of the flows on the nearside and may be mapping hiatuses. Together, these data help clarify the volcanic history of the Moon. SELENE is the first of several spacecraft now orbiting or scheduled to arrive at the Moon this year, and these results set the stage for a renewed focus on lunar evolution.
CREDIT: ARAKI ET AL.

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

NCGS FIELD TRIP

The Geology of Sonoma Mountain
Sonoma County, California
Saturday May 2, 2009
Field Trip Leaders:

James Allen and Dr. Luther Strayer, CSU East Bay, *Dept. of Earth and Environmental Sciences*
Peter Holland, *Vector Engineering, Inc*
Ron Rubin, *AMEC Geomatrix*

Sonoma Mountain in Sonoma County is largely composed of the late Miocene to Pliocene Sonoma Volcanics and interbedded sedimentary units. The Sonoma Volcanics are the largest of several Neogene volcanic fields in the San Francisco Bay Area which young in age to north. These volcanics fields include the Quien Sabe Volcanics, Berkeley Hills Volcanics, the Tolay Volcanics, Sonoma Volcanics, Burdell Mountain Volcanics, and the Clear Lake Volcanics, which are interpreted to be the product of mantle upwelling behind a slab window recording the passage of the Mendocino Triple Junction. This trip will consist of visiting locations within the Sonoma Volcanics on the Sonoma Mountain area to inspect various volcanic and poorly mapped sedimentary units which make up the framework geology of the mountain. Lithology, stratigraphy, slope stability and regional offset along strike-slip faults in the area will be discussed. In an ongoing effort to map the geology of Sonoma Mountain in the detail needed, several challenges arise: The mountain is riddled with numerous faults including the active Rodgers Creek fault, lateral facies changes of poorly mapped sedimentary units, and landslide complexes often hampering mapping. Continuing radiometric age dating, paleontology, and accurate landslide identification greatly aid in bedrock mapping of Sonoma Mountain and our understanding of the geology along the Rodgers Creek fault. This trip compliments the February 23, 2008 NCGS trip by the leaders.

What field trip to wine country goes without samples, so apparently we'll enjoy some products from the fine Far Niente Winery establishment, namely Dolce. Thank us later!

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

THIS FIELD TRIP WILL BE LIMITED TO 30 PEOPLE. Cost: $25.00

Map of meeting area: May 2, 9:00 AM: Sonoma State University, parking lot F. From northbound Highway 101, take the Sierra Avenue exit eastward. Sierra Avenue changes to East Cotati Avenue, continue east about 2 miles to Sonoma State University.

Registration*

Registration Form for The Geology of Sonoma Mountain, Sonoma County, California, 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. Please let us know if you can provide a van and the NCGS can reimburse your gasoline expenses.

Questions: e-mail: rlngeology@sbcglobal.net Phone: (707) 795-8090 (evening); (707) 548-3268 (day)

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

NCGS FIELD TRIP

Gold Country Field Trip

Saturday June 13 & 14, 2009

Leader: Ross Smith, Precious Metals Consulting Geologist

This will be an easy two-day ramble (mostly driving) along Highway 49 through the historic Gold Country of California from Placerville to Mariposa. The spring is a beautiful time to see this magnificent countryside of our Golden State, replete with green hills, running streams, wildflowers, and superb rock exposures.

Because of the strange social policies of this State, there are no remaining working gold mines. However, there are certain sites where we can view the internal workings of a real gold mine, and these are well documented and generally adequately guided. Some have a modest fee. On day one we will do an underground tour of the Gold Bug mine in Placerville, and a surface tour of the Kennedy Mine in Jackson. As we proceed along Highway 49 we will view the great Melones Fault, also known as the Mother Lode, at a number of locations. We will see numerous gold sites, towns, and historical residues. Just south of Angels Camp we will pull into the Glory Hole Recreation area where we will camp. There is small fee of $18 ($9 for seniors) for use of this California State Recreation Area. Hot showers, fire pits, etc. Quite a pleasant place. The NCGS will put on a barbeque dinner. Bring your own breakfast.

On day two we will start early. We will view the Carson Hill gold mine (now an operating rock quarry—a good story here!); the New Melones reservoir (fault-defined), the Columbia limestone placer deposits near Sonora; the Table Mountain (with numerous drift mines—now abandoned) and (from a distance) the open-pit Harvard Mine near Jamestown; the Moccasin Creek placer tailings (miles of them); an abandoned Mariposite quarry (good collecting point for this California mineral); and the abandoned Virginia Mine (careful-open shafts) near Coulterville. We will continue along Highway 49, looking at various exposures and abandoned mine remains. Time permitting we will walk about ¾ of a mile along an old haul road to view the remains of the Josephine Mine. Around mid-day we arrive at the California State Mineralogy Museum near Mariposa. After lunch in town, we may visit the old Stamp Mill in town. We then go west on Highway 140 to the Dial Rock Shop. Gold panning for those interested, lots of rocks to buy and view, and good exposures along the highway. Then return to Danville (2 hours).

For those who cannot do the two days, or do not wish to camp, they could return to Danville directly from Angels Camp at the end of the first day. For those who hate camping, there are several pleasant motels in Angels Camp—only about 4 miles from our campsite. Our guide is an active commercial gold prospector, a member of the NCGS, and a peripatetic wanderer. He holds a BS in Engineering, with a minor in Geology, and a MS in Geophysics. He spent 30 years in international oil exploration, and for the last 10 years has been a consulting and practicing geologist in precious metals. He will give brief explanations on gold origin, occurrence, and recovery from his modest store of knowledge.

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

THIS FIELD TRIP WILL BE LIMITED TO 30 PEOPLE. **Cost**: **$50/person**

Time & Departure: Depart precisely at 8:00 am from Danville Park and Ride (Sycamore Valley Road at I-680) June 13, 2009. Alternatively, or if late, meet us at the Gold Bug Park (aka Bedford Park) in Placerville at 10:30. Call me on my cell phone at 707-548-3268 if you have any problems.

**********REGISTRATION FORM (Gold Country Field Trip) **********

Name:_____ E-mail:_____

Address:_____ Phone (day): _____Phone (evening):_____

Lunch and Dinner: 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. Please let us know if you can provide a van and NCGS can reimburse your gasoline expenses. Questions: e-mail: rlngeology@sbcglobal.net Phone: (707) 795-8090 (evening) (707) 548-3268 (day).

NORTHERN CALIFORNIA GEOLOGICAL SOCIETY

NCGS DINNER MEETING

"*Mesozoic Transpression, Transtension, Subduction, and Metallogenesis in Northern and Central California*"

Wednesday May 27, 2009

Speaker: Dr. W. Gary Ernst, Stanford University

6:00 pm at Orinda Masonic Center (please note earlier starting time)

Reservations required by May 21, 2009;

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

For this special event, the NCGS is planning a **Back Forty Texas BBQ dinner consisting of Pork Ribs and BBQ Chicken, Tossed Green Salad, BBQ Beans, and Fresh Corn Cobettes. For vegetarians a deluxe veggie burger will replace the BBQ meal. Dessert includes assorted cookies and brownies. Wine (90^+ pts.) will be served.**

Abstract: This presentation will describe Middle Paleozoic to Middle Jurassic mafic-ultramafic (seafloor) accreted terranes in the Klamath Mountains and the Sierra Foothills, and associated fine-grained terrigenous strata derived from accreted continental-margin belts. Oceanic terranes sutured the continental margin reflect 230 m.y. of margin-parallel slip involving strike-slip oblique tension and compression. Quartzofeldspathic sediments and high grade metamorphics are rare. Magmas liberated few volatiles, hence coeval hydrothermal ore deposits and granites are also rare. In contrast, nearly head-on Cretaceous subduction of the Farallon Plate generated the massive Klamath-Sierra Nevada volcanic-plutonic arc, driven by dewatering of eastward descending oceanic crust. Immature Great Valley forearc sediments and Franciscan trench deposits eroded from the arc record 70 m.y. of rapid crustal growth. Gold-bearing solutions rising from subduction-driven magma genesis zones, cooling plutons, and heated wall rocks were mobilized during arc growth. Gold-bearing quartz veins precipitated where hydrous CO_2-bearing fluids encountered major geochemical discontinuities in the wall rocks. Intense redistribution of oceanic and continental allochthons occurred during the Middle Paleozoic-Middle Jurassic suturing events, but involved little net continental growth or metallogenesis. In contrast, voluminous continental crust and ore genesis accompanied the Cretaceous head-on subduction of oceanic lithosphere.

Biography: W. Gary Ernst received his B. A. in Geology from Carleton College (1953), M. S. in Geology from the University of Minnesota (1955), and Ph. D. in Geochemistry from The Johns Hopkins University (1959). After fellowships at the Geophysical Laboratory, he joined the UCLA faculty in 1960. Ernst was Geology chair (1970-74), Earth and Space Sciences chair (1978-82), and director of the UCLA Institute of Geophysics & Planetary Physics (1987-89). He was Dean of the Stanford University School of Earth Sciences from 1989 to 1994 and named the Ben Page Professor in 1999. Ernst went emeritus in 2004. He is a member of the National Academy of Sciences, American Academy of Arts & Sciences, and American Philosophical Society. Ernst served as president of the Mineralogical Society of America (1980-81) and the Geological Society of America (1985-86). He received the MSA Award (1969), the Geological Society of Japan Medal (1998), the Penrose Medal of the GSA (2004), the Roebling Medal of the MSA (2006), and the Legendary Geoscientist Award of the American Geological Institute (2008). He is author of seven books and research memoirs, editor or co-editor of 19 others, and author or co-author of over 270 scientific papers. His interests include physical chemistry of rocks and minerals; Phanerozoic interactions of lithospheric plates and orogenic belts, in central Asia, the Circum-Pacific and the western Alps; early Precambrian petrotectonic evolution; high- and ultrahigh-pressure subduction-zone metamorphism and tectonics; geobotany, remote sensing; and geology and human health.

********** **Dinner Logistics** **********

Meeting Agenda: Social Hour: 6:00 pm Dinner: 7:00 pm Presentation: 8:00

Time: May 27, 2009, at 6:00 pm, Orinda Masonic Center 9 Altarinda Road, Orinda, CA **Cost: $20/person**

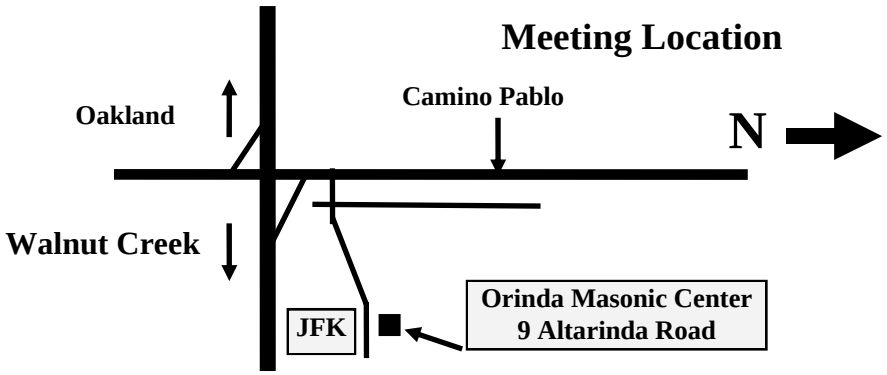
**********REGISTRATION FORM (Dr. W. Gary Ernst Dinner) **********

Name: E-mail: _____ Phone (day): Phone (cell) _____

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 Phone: (925) 370-0685 (evening) (925) 363-1999 (day)



Using the 1927 and 1928 photographs as the baseline, this presentation will emphasize the ecologic, geologic, and hydrologic changes evident in repeat photographs taken in 2003-2006 on that part of the Colorado Plateau traversed by the Kluckhohn trips of 1927 and 1928. This presentation will also feature the use of "virtual repeat photography" developed by J. Luke Blair, also of the U.S. Geological Survey, to locate Hanks' camera stations with modern computational methods operating on 10-m resolution DEMs.

Biography: Thomas C. Hanks, one of three sons of James J. Hanks, graduated from Princeton University in 1966 (B.S.E.) and from the California Institute of Technology in 1972 (Ph.D.). He has been Research Geophysicist at the U.S. Geological Survey since 1974. According to Wikipedia, Dr. Hanks is a seismologist and a member of many geological societies, and has authored dozens of scholarly papers in strong-motion seismology and tectonic geomorphology.

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.