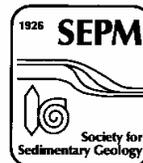


Pacific Sedimentologist

Newsletter of the Pacific Section, SEPM
(Society for Sedimentary Geology)



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Paleotectonic and paleogeographic sketch map of the Cordilleran region 5 mybp at the Miocene/Pliocene boundary (from Dickinson, W. R., 1979, Cenozoic plate tectonic setting of the Cordilleran region in the United States, *in* Armentrout, J. M., Cole, M. R., and TerBest, H., eds., *Cenozoic Paleogeography of the Western United States: Pacific Section, SEPM Pacific Coast Paleogeography Symposium* 3, p. 1-13).

volume 76, issue 1

September, 2004

THE "PACIFIC SEDIMENTOLOGIST" IS BACK with a fresh look. Mario Caputo, current Secretary of the Pacific Section, has assumed the role of permanent newsletter editor. Members can expect paper issues delivered to them 2 to 4 times yearly both by surface mail and email. Also, they will be able to enjoy regular postings of the newsletter on the PS-SEPM website, <http://www.sci.sdsu.edu/pacsepm>.

A MESSAGE FROM PRESIDENT-ELECT, MORGAN SULLIVAN

I will be taking over as President of the Pacific Section, SEPM at the Fall field trip and am really excited about the year ahead. We have much to look forward to starting with the October field trip to the San Andreas Fault as well as the Joint AAPG/SEPM Pacific Section and GSA Cordilleran Section meeting being held in San Jose next year. Be sure and check out our website which has been recently updated for all the current activities.

Last October, Ray Sullivan of San Francisco State (my father) and I led the Fall, 2003 field trip to examine the middle Eocene stratigraphy of the Black Diamond Regional Reserve on the flanks of Mt. Diablo. This trip focused on the sedimentology and stratigraphy of the outcrops of the Domengine Formation which is also a prolific gas reservoir in the Sacramento Basin. These outcrops provide an excellent opportunity to investigate the applications of sequence stratigraphy to reservoir characterization and also to examine the interplay of tectonics and sedimentation. A more thorough report of this trip can be found elsewhere in this letter. The Fall, 2004 field trip

is scheduled for October 9 to 10 and will be lead by Phil Stoffer of the USGS. The trip will focus on the San Andreas Fault through the Santa Cruz Mountains and will visit some of the areas that experienced surface rupture from the 1906 and 1989 earthquakes. The trip is intended to highlight landscape features associated with the active fault system. Interested novices and students of geology, and professionals are all urged to sign up for the field trip. We anticipate lots of arm waving and much lively discussion as we approach the centennial of the 1906 event. Saturday night we will camp upon the San Andreas Fault so we can sleep on the subject overnight. Enclosed is a registration form and more detailed description of the field trip.

I am on the technical committee for next year's joint AAPG/SEPM Pacific Section and GSA Cordilleran Section Meeting and want to let everyone know what is going on there. Currently, the Pacific Section SEPM alone has proposed 6 theme sessions for the meeting on a variety of topics. These theme sessions range from new topics for SEPM such as hydrobiogeochemical cycle of mercury and the

impact of dams to old favorites focusing on tectonics and sedimentation, deepwater turbidites, volcanoclastic strata and fault related diagenesis. There should be something for everyone so lets make this the biggest sectional meeting yet! We also want to get students more involved at the sectional level and are strongly encouraging them to attend. For example, Kenn Ehman (Ridge Inc.), Brian Edwards (USGS) and myself are teaching a pre meeting short course on the applications sequence stratigraphy to aquifer characterization and we are intending it to be free to students. Other short courses and field trips will also be focusing on student involvement and so I challenge everyone to encourage as many students as possible to attend the meeting.

In past years, the Pacific Section has been able to add to its funding base through sales of field trip guidebooks. We would like to publish at least one new guidebook each year and are seeking out appropriate material for the society to publish. Currently we have a grand total of 94 publications by the society and we will be at 95 when we publish the guidebook for the

Fall, 2004 field trip. We also are intending to publish the field trip guides from next year's joint sectional meeting. Number 100 is not far off!

Please remember to renew your membership. Once again, we now have a lifetime membership option that assures your continual support of PS-SEPM. A copy of the "new and improved membership" application is in this newsletter and available on our website.

My experience in Industry and teaching has shown me that the area of Geology that SEPM represents is undergoing marked changes in its application and importance in solving stratigraphic problems. It is an exciting time as we apply and emphasize the use of new and current technologies in such areas such as facies analysis, and reservoir and aquifer characterization. There are new opportunities for us and we hope that our Society will grow and meet these challenges. Hope to see you in October at the Fall field trip and/or next Spring at the sectional meeting in San Jose.

Morgan Sullivan
President-Elect

CALL FOR CONTRIBUTIONS

In the past, the *Pacific Sedimentologist* featured a section called, "Ripples From Universities," which has been renamed, "Ripples From Campuses," to reflect the growing involvement in PS-SEPM by members from community colleges and 4-year colleges. In the spirit of the same tradition, correspondents from colleges and universities in the Pacific Section can share highlights from their geoscience departments with the Pacific Section community. Please submit your news and highlights for "Ripples From Campuses" for future issues to:

Mario V. Caputo by electronic mail via: mvcaputo@earthlink.net (on subject line, please type: Ripples From Campuses)

Please send documents as "attached" files composed in Microsoft Word. Contents should also include: 1) full name of correspondent, 2) title or rank of correspondent in geoscience department, 3) full postal address of geoscience department, and 4) email address and telephone number of correspondent.

PACIFIC SECTION SEPM CONVENES WITH PACIFIC SECTION AAPG IN BAKERSFIELD

The '04 annual meeting of the Pacific Section AAPG and affiliated societies (SEPM, SEG, DEG) was held in Bakersfield May 9 – 12 at the Holiday Inn Select. This was a terrific venue that provided excellent facilities and a relaxing and festive atmosphere. Meeting attendance was rather light (approximately 400 registrants), but those in attendance were treated to an outstanding technical program augmented by several field trips, short courses, and a special presentation on the latest Mars findings. PS-SEPM had a strong presence at the meeting and sponsored sessions on paleontology and sedimentology/stratigraphy. President-elect Morgan Sullivan, Cal-State

University, Chico did our section proud by being presented with the A. I. Levorsen Award for the best paper delivered at the '03 Long Beach meeting.

It was a treat for me to see so many friends who dropped by the PS-SEPM publications booth, and I look forward to seeing you at the '04 Fall Field trip October 8—10 and at the '05 combined meeting with Cordilleran Section GSA in San Jose next May. Have a great summer as we look forward to an exciting and eventful year ahead.

John Cooper
Treasurer/Managing Editor

PS-SEPM FALL FIELD TRIP, OCTOBER 8-10, 2004

Geology of the San Andreas Fault in the Santa Cruz Mountains

The Pacific Section, Society for Sedimentary Geology (SEPM) Fall, 2004 field trip (Oct. 8-10) will focus on the San Andreas Fault through the Santa Cruz Mountains. Some areas to be visited experienced surface rupture from the 1906 and 1989 earthquakes. The trip is intended to highlight landscape features associated with the active fault system. In addition stops were chosen to examine rocks and terranes typical of both sides of the fault; many of the locations are of highly scenic character associated with a variety of mountain habitats ranging from grasslands, chaparral, oak and evergreen forests, and redwoods. Interested novices and students of geology, and professionals are all urged to sign up for the field trip (**SEE REGISTRATION FORM ON LAST SHEET OF NEWSLETTER**). Lively discussion and arm waving are expected! Field guides will be available for registered participants. The cost of the field trip registration is:

- \$10.00 for students
- \$22.00 for non-student PS-SEPM members
- \$25.00 for non-student non-members

Participants (campers) may wish to plan to arrive on Friday evening (October 8th), depending on your travel distance, at the Sanborn Park. Expect to arrive by 6:00 p.m. if possible, otherwise flashlights will be necessary to set up camp (see camping information below).

Sanborn Park is located 1 mile south of the intersection of Highway 9 and Sanborn Road. Sanborn Road is 2.5 miles south of the Highway 9 intersection in downtown Saratoga, CA, and 4.2 miles south of the Saratoga Road exit on Highway 85 in Cupertino (San Jose).

**The Saturday field trip
(October 9th: 9am to 5pm)**

The field trip "conference" will officially begin on Saturday morning at 9:00 am - participants should plan to gather near the Sanborn Park Campground restroom area (there is ample parking in a lot just below the campground area). The field trip will start with a 2.5 mile moderate hike at Sanborn Park in the morning; picnic lunch will be at the park (bring your own), then afternoon stops will be along Skyline Boulevard (Highway 35) in the Mid Peninsula Open Space Preserve. A final optional stop will be at the Savannah-Chanelle

For more information, contact: Phil Stoffer

email: pstoffer@usgs.gov
telephone: (650)329-5028

mailing address: **Western Earth Surface Processes Team
U.S. Geological Survey
345 Middlefield Road, MS-973
Menlo Park, CA 94025**

Vineyards wine tasting room (built right on the fault).

**The Sunday field trip
(October 10th: 9:00 am to 5:00pm)**

The Sunday field trip will visit geologic and fault-related features in the Sierra Azul Open Space Preserve and park lands around Lexington Reservoir and on Loma Prieta Peak and the surrounding area. The field trip will begin at 9:00 am at the Lexington Reservoir Dam boat dock parking area on Alma Bridge Road (next to the dam) - Alma Bridge road is accessible via Highway 17 North. (Southbound drivers will have to exit at Bear Creek Road and cross the overpass to return south to Alma Bridge Road - an approximate 25 minute drive from Sanborn Park via Highway 9 through Los Gatos.)

Optional Monday (Columbus Day: October 11th) self-guided field trips will be included in the field guide, including a trip to the San Andreas and Calaveras faults in the Hollister/San Juan Bautista area.

Participants can camp at Sanborn Park (limited space has been reserved). Contact Phil Stoffer (pstoffer@usgs.gov) to reserve campsite space. Campsites cost \$22 for 2 nights and can hold up to 6 people (2 car parking spaces are available for each walk-in campsite). Reserved sites will be given out on a first come-first serve basis (call Phil Stoffer to reserve a campsite at 650-329-5028). Van carpooling is recommended. Additional camping and RV space is available through the park reservation system - see <http://www.parkhere.org> for reservation information and contacts. In addition, inexpensive indoor overnight accommodations are available at the Sanborn American Youth Hostel in the park (phone 408-741-0166).

Participants should be prepared to provide their own meals, particularly breakfast, lunch and snacks. A variety of restaurants and coffee shops are available in downtown Saratoga approximately 3 miles from the Sanborn Park camping area. Plan on carpooling! Vans are encouraged (no buses). Day use fees of the county parks is \$4 per vehicle. Although ample parking is available at most stops, there are no guarantees that space will be available.

**JOHN COOPER
RECEIVES THE A. EUGENE FRITSCHÉ LIFETIME ACHIEVEMENT AWARD
FROM PACIFIC SECTION SEPM**

It was at the summer, 2002 officer's meeting of the Pacific Section SEPM at CSU Fullerton that Bill Bilodeau (President), Frank Corsetti (Vice President) and Mario Caputo (Secretary) conspired over lunch to nominate John Cooper, stratigrapher, sedimentologist, and professor emeritus at CSU Fullerton, as the next recipient of the A. Eugene Fritsche Lifetime Achievement Award. Being the most prestigious honor conferred by the Pacific section, it recognizes decades of diligent, committed service to the society, to students, and to the geological community as a whole through field trips, teaching, research, publications, and offices held. The idea to create such an award was inspired by the retirement of Gene Fritsche from the Department of Geological Sciences, CSU Northridge in 2001 as a perpetual tribute to his work on Miocene sedimentology of central and southern California, and his many contributions to the society. Gene was the first recipient of the Pacific Section's Lifetime Achievement Award. It was given to him on April 9, 2001 at the end of his Miocene field trip preview that he presented at the annual meeting of the Pacific Section, AAPG held jointly with the Cordilleran Section, GSA in Universal City. On this special occasion, it was declared that the award would be known thereafter as the A. Eugene Fritsche Lifetime Achievement Award. John is now the second recipient.

During the week of May 19-24, 2003, the Pacific Section, AAPG, and affiliated societies, including the Pacific Section, SEPM, convened in Long Beach, California for the traditional annual program of oral and poster sessions and field trips. On May 22nd, the oral

session organized by Stan Finney (CSU Long Beach) and entitled, "*Contributions to Great Basin Lower Paleozoic Stratigraphy: A Symposium in Honor of John Cooper;*" gave tribute to John Cooper's years of work in the southern Great Basin of California and Nevada. This convocation of friends, students, and colleagues who reflected on their collaborative work with John included: Stan Finney, Chris Fedo, Fred Sundberg, Oli Lehnert, Britt Leatham, Robert Ripperdan, Martin Keller, and Jeri Young. Fred (1970s), Chris (1980s), and Jeri (1990s) were John's students during his 3 decades of teaching and all three students went on to earn PhDs. At the end of the symposium, Gene Fritsche, long-time friend and colleague of John's, offered a jovial account of people, places, and events in the career of John Cooper, and ultimately presented to him the A. E. Fritsche Lifetime Achievement Award from the Pacific Section, SEPM. It was a momentous occasion for John. The award is a plaque with the following engraving: *In recognition of his many years of dedicated service, leadership, commitment, energy, creativity, inspiration, and scientific contributions to the Society. A complete transcript of the citation with colored images presented to John Cooper by Gene Fritsche can be viewed on the Pacific Section, SEPM website,*

<http://www.sci.sdsu.edu/pacsepm>.

HIGHLIGHTS FROM THE PS-SEPM FALL FIELD TRIP, 2003

**A Sequence Stratigraphic Interpretation of the Domingine Formation
Black Diamond Mines Regional Preserve**

Field trip leaders were Morgan Sullivan (California State University, Chico) and Ray Sullivan (San Francisco State University). East Bay Regional Parks District mining expert, Rick Yarborough, joined the group for the underground portion of the trip. Morgan and Ray Sullivan gave a brief introduction to local geology focusing on a discussion of the sedimentary features used to denote various paleoenvironmental interpretations of sedimentary deposits. After Morgan completed his description of various nearshore marine

environments and the sedimentary features that distinguish each, it was time to tour the mine to see the features exposed in the tunnel walls. The underground mine excursion clearly illustrated sedimentary features exposed in the drift walls that allowed one to construct a paleoenvironmental model of Eocene conditions at Black Diamond Mines. The sedimentary structures observed in the strata included mud-draped sigmoidal crossbedding, ripple marks, and abundant *Ophiomorpha* trace fossils. The stacking sequence and three-dimensional

arrangement of sedimentary units are consistent with a fluvial/ estuarine environment fluctuating between high-energy tidal conditions and relatively still-water slack periods that allowed fine muddy layers to deposit atop the sandier bed forms. Although much of the Domengine Fm displays features akin to both estuarine and barrier bar-beach environments, these estuarine incised coastal valleys were themselves situated perpendicular to the regional coastline trend.

The Domengine Formation flanking Mount Diablo can be traced eastward into the subsurface, where it forms a substantial gas reservoir in the southern Sacramento basin. It lies unconformably on older rock, and when traced westward, it truncates progressively older lower Tertiary formations until it rests on Upper Cretaceous rocks. The lower Tertiary strata in this area comprise a series of transgressive-regressive cycles. Units include nearshore sandstones, deep water marine mudstones, and slope turbidites. The Domengine has been interpreted by previous investigators as lagoonal and barrier-beach strata deposited on a north-south trending shoreline. Ray's and Morgan's work, however, which integrates outcrop and subsurface data, indicates a northeast-southwest trending series of incised estuarine valleys oriented almost perpendicular to the prior model as the likely depositional environment. This interpretation has a critical effect on location of potential petroleum reservoirs in the subsurface Sacramento Valley.

After lunch, a caravan of vehicles headed eastward across the Preserve to examine many outcrop features that had been seen earlier in the mine. The Domengine at Black Diamond Mines represents the lower of two sequences that constitute the formation. Sequence 2, missing at the mines, occurs in the subsurface to the east. The group drove up the road from Somerville to Nortonville to the east, passing Rose Hill cemetery, and descending the ridge to the next valley at the mouth of Coal Canyon. Following this canyon to the south, the contact (transgressive surface 1) between the upper (marine shales) and lower members of the Domengine can be seen. Channelized

fluvial/tidal sandstones of the lower member are exposed at the canyon mouth, and the Clark coal vein crops out about 70 feet below this contact. At this regionally correlative surface between the two members, retrogradationally offshore marine shales and lower shoreface sandstones of the upper member overlie the aggradationally stacked fluvial/estuarine sandstones of the lower member. This contact marks the base of the transgressive systems tract. The leaders took the group to a nearby outcrop that showed the contact between the Domengine and the overlying Nortonville Shale, which forms the valley between the Domengine ridges and the more resistant sandy layers of the ridge-forming Markley Formation to the south. The Domengine-Norton contact marks another major flooding event (transgressive surface 2) and a rapid return to bathyal conditions in the area. This contact also an unconformity since another lowstand fluvial/estuarine based sequence is present below the Nortonville Shale in the Sacramento Valley.

Due to limited time, the field trip ended at the western end of the preserve where Ray and Morgan discussed the exposed unconformity between fluvial conglomerates of the basal Domengine and the underlying lower Eocene Meganos "C" shale. The Black Diamond vein and a complete section of lower member of the Domengine are present in a ridge above. The field trip concluded with a regional overview of the Eocene succession in the Sacramento Basin and a discussion of the significance of the reinterpretation of the Domengine Formation as fluvial/estuarine incised valley lowstand deposits.

Copies of the field trip guidebook, *Reservoir Characterization and Sequence Stratigraphy of the Domengine Formation, Black Diamond Mines Regional Preserve, Northern California* by Sullivan, Sullivan, and Waters, are available for purchase from Pacific Section SEPM through the managing editor, John Cooper (e-mail: jcooper@fullerton.edu).

Morgan Sullivan, President-Elect

MEMBERSHIP DRIVE

Help maintain the vitality of your society by renewing your membership and/or distributing copies of the membership form (**provided on the last sheet of this newsletter**) to colleagues and students who have an interest in sedimentary geology. The form is also available on the PS-SEPM website:

<http://www.sci.sdsu.edu/pacsepm>.

Regular membership dues:

\$ 7.50 for a 1-year professional membership

\$20.00 for a 3-year professional membership

\$ 5.00 for a 1-year student membership

**NEW!****Lifetime membership dues:**

\$150.00 for age group 20-40 years

\$100.00 for age group 40-60 years

\$ 50.00 for age group 60 years and older

The above rates are quite reasonable when you consider the benefits of belonging to Pacific Section SEPM: 1) membership in a premier geological society, 2) annual field trips, and 3) discounts on superbly done field-trip guidebooks and special publications addressing sedimentologic-stratigraphic aspects of the Pacific region of the United States. Your membership dues help support the operation of the California Well Data Repository (for borehole logs, cores, cuttings, microfossils, and other data) in Bakersfield.

The year printed to the right of your name on the address label of this newsletter indicates the year up to which you have paid membership dues. If the year is 2004 or older, please remit dues in the category of your choice, either a 1 year membership for students, 1- or 3-year membership for professionals, or lifetime membership for professionals. Honorary Members are, of course, exempt. Please send your membership renewal by **October 31st** to:

John Cooper
Department of Geological Sciences
California State University, Fullerton
Fullerton CA 92834-6850

PLEASE UPDATE YOUR EMAIL ADDRESS WHEN YOU RENEW.

**VISIT THE PS-SEPM WEBSITE OFTEN FOR NEWS, ANNOUNCEMENTS,
 AND PUBLICATIONS.
 BOOKMARK IT FOR QUICK AND READY REFERENCE.**

<http://www.sci.sdsu.edu/pacsepm>

Registration Form
Pacific Section SEPM Fall Field Trip 2004
October 9—10, San Andreas Fault, Santa Cruz Mountains

Please fill out one form **per person**. **Required** registration fee includes field guidebook and basic charge for students and non-students. Camping option available for additional price.

Name _____

Address _____

Phone: _____; e-mail _____

Registration fee (**required**):

Member PS-SEPM/non-student: **\$22.00** _____

Non-member PS-SEPM/non-student: **\$25.00** _____

Student: **\$10.00** _____

Optional: Campground fee (\$3.00/night X number of nights) _____

Total: Make **check** (no cash or credit cards) payable to: PS-SEPM _____

Mail this form and check made out to PS-SEPM **by no later than September 25, 2004**

Mail to: John Cooper
Department of Geological Sciences
California State University, Fullerton
Fullerton CA 92834-6850

Be sure to check PS-SEPM website <http://www.sci.sdsu.edu/pacsepm>
for field trip details

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