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SDAG MEETING ANNOUNCEMENT

THURSDAY, MARCH 28, 2013

QUATERNARY CALCARENITES OF SAN SALVADOR ISLAND, BAHAMAS, AND JURASSIC SANDSTONES AND HOLOCENE SAND, UNITED STATES: COMPARATIVE EOLIAN SEDIMENTOLOGY

Presented by

Dr. Mario Caputo

Lecturer & Adjunct Professor of Geology

Department of Geological Sciences

San Diego State University

Where: Bali Hai

2230 Shelter Island Dr

San Diego, CA 92106

(619) 222-1181

When: 5:30 pm – Social Hour

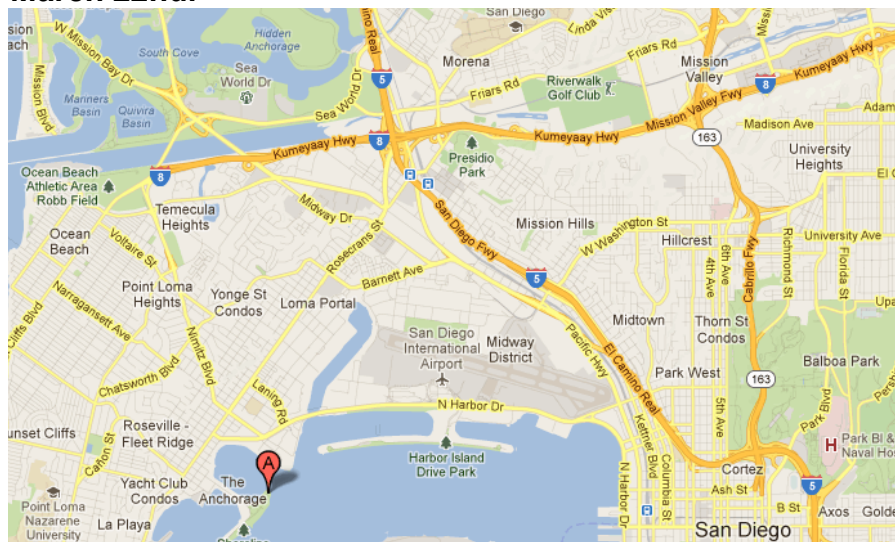
6:30 pm – Dinner

7:30 pm – Program

Dinner: Luau Buffet

Cost: \$35 per person, \$5 discount for members, STUDENTS: \$15. Add \$5 if you did not make a reservation.

Reservations: Make your reservation online at www.sandiegoeologists.org no later than noon, Friday, March 22nd.



**RESERVATIONS CANNOT BE GUARANTEED AFTER FRIDAY AT 12 NOON,
BUT THEY ARE ALWAYS PREFERRED OVER WALK-INS**

SPEAKER ABSTRACT

Dr. Mario Caputo
Lecturer & Adjunct Professor of Geology
Department of Geological Sciences
San Diego State University

Pleistocene and Holocene calcarenites -clastic limestones composed of sand-sized CaCO₃ grains- on San Salvador Island, Bahamas preserve eolian or wind-blown sedimentary structures and textures that are comparable to those preserved in Jurassic eolian quartzarenites of southern Utah and to those found in modern deposits of eolian sand. Outcrop occurrence and bulk sedimentary features suggest a nonmarine, wind-blown coastal setting for the Bahamian calcarenites despite the marine nature of component coated grains akin to ooids and skeletal framework grains. General eolian deposits owe their origin to sedimentation by migrating wind ripples and on dunes by ripple-, grainflow-, and grainfall-processes, which control size, packing, and sorting of framework grains; and porosity, permeability, geometry, and distribution of respective wind-ripple, sandflow, and grainfall strata. Grain textures affect the degree of retention of pore-liquids, which affects the degree of cementing and response to weathering of these strata. Most modern and ancient eolian deposits are composed of fine (0.125-0.250 mm) to medium (0.250-0.500 mm) sand. Although slightly coarser and of higher specific gravity, CaCO₃ sand of eolian calcarenites is rendered mechanically equivalent to quartz sand by intraparticle pores.

Similar to today's coastal dunes on parts of San Salvador Island, the history of ancient carbonate dunes was influenced by weather/climate, sediment supply, plants, small island-size, and early lithification. Evolution of the Quaternary dunes may have begun with small coppice or "veggie" dunes that over time coalesced into a juvenile coastal dune ridge and elevated wind terrace, and later into a mature dune ridge; growing in increments bounded by calcareous crusts, plant fossils, and reactivation surfaces. Cross-bed sets < 6 m (20 ft) thick with sandflow foresets 1 cm (0.4 in) to 6 cm (2.5 in) thick in longitudinal or down-current views, plus thin, narrow sandflow lenses enclosed in grainfall laminae in transverse or along-strike views suggest smaller eolian dunes. Some cross-bed sets > 6 m thick and composed mainly of sandflow foresets ≥ 10 cm (4 in) thick indicate larger dunes. Ultimately, diminished sediment supply, wave spray, and rainfall fostered dune stabilization by plants and early subaerial cementation. Consequently, entire dune-forms were preserved. Dune build-up during Pleistocene time on San Salvador was interrupted by deflationary and soil-forming events, which reflect sea-level drop, sediment starvation, and climate shift from arid to moist.

By comparison, ancient quartz-rich eolian systems that evolved in southern Utah and in the greater Colorado Plateau region were fed by streams flowing across the heartland of Jurassic North America from the Appalachian highlands. Favored by high sediment volume, arid climate, sparse vegetation, and great areal extent, large complex dunes migrated long distances in expansive sand seas. Cross-bed sets up to 35 m (115 ft) thick with sandflow foresets > 10 cm (4 in) thick in contact with one another in the absence of grainfall strata reflect larger dunes. Because of erosion that is intrinsic to trains of migrating, climbing bedforms, only strata in lower parts of ancient siliciclastic eolian dunes were preserved by later burial diagenesis. Death of these eolian sand seas by sediment deprivation and deflation was followed by climate change and fluvial and marine flooding, and is recorded either by extensive super bounding surfaces or regional unconformities.

SPEAKER BIO

Mario was an undergraduate student of geology in the early 1970s at then named San Diego State College, where he and fellow students were groomed for BSc degrees by some of the finest geoscientists on the west coast. With a solid foundation in sedimentology built by Pat Abbott, Mario aspired to study Jurassic sedimentary rocks on the Colorado Plateau with Ron Blakey in an MSc program at Northern Arizona University. In the early 1980s after 4 years with Mobil Oil Corporation, Mario resumed formal training in classical geology at the Colorado School of Mines and ultimately at the University of Cincinnati for a PhD degree. In 1993, he resigned his tenure as associate professor of geology at Mississippi State University along with adjunct appointments at the Mississippi University for Women in Columbus, MS and Millsaps College in Jackson, MS to return to California. A four-time recipient of the Outstanding Educator Award during his 18 years at Mt. San Antonio College, he's now retired from full-time teaching but has part-time appointments to teach sedimentary geology again at San Diego State University and at Cal Poly Pomona.

Mario is proud to have served the Rocky Mountain Section SEPM (Society for Sedimentary Geology) as program chair, co-author, and co-editor; the Cordilleran and Rocky Mountain Sections GSA as co-chair of oral and poster sessions; the Utah Geological Association as author and field trip co-leader; and the National Association of Geoscience Teachers as guidebook editor and conference organizer. The Pacific Section SEPM recently acknowledged his 12 years of office in the Society with Honorary Membership and an Outstanding Service award as Managing Editor.

Mario's publications relate to coastal geomorphology of the northern Gulf of Mexico; architecture and paleogeography of Jurassic eolian and marginal marine strata in Utah; petrology of Quaternary eolian limestones of the Bahamas; and paleoecology of Pleistocene invertebrates on marine terraces of Palos Verdes Hills. Co-authored books either published or in progress include Geologic Disasters Laboratory with Dave Best (emeritus Northern Arizona University), an oceanography workbook with David Amiel, and Ancient Landscapes of California with Ron Blakey, a companion volume to Ron's book, Ancient Landscapes of the Colorado Plateau. Papers in preparation focus on tidal architecture of Jurassic strata of southern Utah, and on the contents of this SDAG presentation.

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## SDAG MEETING SCHEDULE - Mark Your Calendars!

Meetings are usually on the 3<sup>rd</sup> Wednesday of the month but may change to accommodate speaker and meeting place schedules. Check here for updates!

|                                                   |                             |
|---------------------------------------------------|-----------------------------|
| THURSDAY, March 28,<br>2013 (FOURTH Thursday)     | Dr. Mario Caputo, SDSU      |
| April 24, 2013<br>(FOURTH Wednesday)              | SDAG Scholarship Recipients |
| May 15 <sup>th</sup> , 2013<br>(Regular Schedule) | Jonathan Goodmacher         |



### 2013 EXECUTIVE COMMITTEE

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# PRESIDENT'S CORNER

Hi Everyone:

Welcome to this month's President's corner.

As many of you know, our February meeting was a rousing success! Over 80 individuals showed up for a great presentation by Al Trujillo about the exciting advancements featured in his new textbook: *Essentials of Oceanography* (Prentice Hall, 2013).

March's meeting is also shaping up to be a great one! Dr. Mario Caputo will be treating us to a discussion about Quaternary Limestones of San Salvador Island, Bahamas, and Jurassic Sandstones and Holocene Sand, United States: Comparative Eolian Sedimentology. This meeting will be held at the beautiful Bali Hai. I hope you can all attend!

We are also looking forward to our traditional student presentation meeting in April. Details to follow!

Have a great month,  
Cari Gomes  
2013 SDAG President



# ANNOUNCEMENTS

**CALL FOR ARTICLES!** SDAG invites members to submit articles on their current research or an interesting project they are working on for publication in the monthly newsletter. The article should be no more than 1 page in length. Photos are welcomed, too! Please submit articles to the SDAG secretary via email.

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**CALL FOR PHOTOS!** SDAG invites members to submit photographs of an interesting geologic feature for publication in a new section of the newsletter – “Photo of the Month”. Please submit your photo along with a caption to the SDAG secretary via email.

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**SDAG MEMEBERS FEATURED IN DEZERT MAGAZINE** Check out the Winter 2013 issue of Dezert Magazine - available online as well as in print - to see articles by SDAG notables Todd Wirths ("Picacho, the Golden Road", page 64) and Diana Lindsay ("Hike Palo Verde Canyon to the Moly Mine", page 80). Go to <http://dezertmagazine.com/dezert-magazine-archives/>

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**SDAG RESEARCH TOOL** A comprehensive listing of all papers published by SDAG, whether as annual field trip guidebooks or special publications, is now available on our website. Entries are sorted by primary author, or chronologically by date of publication, from our first guidebook in 1972 (40 years ago!) to all things Picacho in 2011. These can be accessed or downloaded as .pdf files. They are fully searchable in Adobe Reader or Acrobat, so if you are researching a topic, "tsunami" for example, you can search for that keyword. This listing will be updated as new books are published. Thanks to Greg Peterson and Hargis + Associates, Inc., for making this possible. See the links below:

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## **JOB OPENINGS**

**EXPERIENCED CHEMIST FOR DATA REVIEW** H&P is looking for an experienced analytical chemist for a part time position to review analytical data reports. The position requires a complete understanding of EPA Methods and other regulatory methodology in compliance with Quality Assurance Programs and SOP's to validate and review data for accuracy. Experience and working knowledge of LIMS Systems will also be required. This position is located in our Carlsbad, CA office.

This chemist will perform a comprehensive review of all analytical data generated by the various testing methods in our fixed base and mobile analytical laboratories and will confirm that all quality assurance objectives have been met prior to releasing analytical data to clients and end user of the data to ensure it's quality as well as support all facets of the data review process.

Requirements:

- A Bachelor's Degree in Chemistry.
- Prefer at least 5 year's experience performing data review.
- A working knowledge of EPA Method 8260B, TO-15 and other EPA Methods
- Experience with LIMS system.

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## **SEEKING JOB OPPORTUNITIES**

**Qualifications Summary and Objective:** I have 14 years experience directing surface water quality monitoring programs with a proven record of excelling in monitoring plan implementation, quality control, public notification and continuous improvement in operational effectiveness and efficiency. I have built and maintained relationships with key staff in academia, industry, and all levels of government in San Diego and California. I have a widely applicable skill set which includes: analytical thinking, communication and writing skills, data analysis and management, inter and intra-agency project coordination, and staff supervision and training. My objective is to obtain a career position with an industry leader where I can contribute my skills to build the success of my employer as well grow professionally. Detailed work experience, education and more at [www.linkedin.com/in/cbclifton2010](http://www.linkedin.com/in/cbclifton2010). Email [cbc2006@cox.net](mailto:cbc2006@cox.net) or 619-964-1776.

Contact: Clay Clifton

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**ENGINEERING GEOLOGIST-** California PG, MS Geology, over 13 years of applied geotechnical experience, proficient in geotechnical investigations, hazard evaluations, geophysical surveys, construction management and quality control, engineering analyses, special interest in earthquake-hazard and seismic design related applications, strong problem-solving and organizational skills. Detailed resume upon request: Anna, 201-407-7461, [Afyodorova103@gmail.com](mailto:Afyodorova103@gmail.com)

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**ENTRY-LEVEL ENVIRONMENTAL SCIENTIST** - I am a recent UCSB graduate with a double major in Environmental Studies (BS) and Geology (BS, Earth Systems emphasis) who is looking to begin a career in environmental consulting. I have prior lab experience in both professional and academic settings. I am looking to establish myself with a passionate and hard working environmental firm in the San Diego region. For further information about my credentials and work experience please contact Georgi Chertkov at [georgichertkov@gmail.com](mailto:georgichertkov@gmail.com) or call me at 505-412-3107.

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One Stop Wonder Led by Don Vaughn and Mike Hart

February 23, 2013

The latest One Stop Wonder was held on Saturday February 23 to view the type sections of the Cabrillo and Point Loma Formations described and named by Mike Kennedy and George Moore (Kennedy and Moore, 1971). The field trip participants saw some spectacular geology and viewed the amazing sea-cliffs at the tip of Pt. Loma; a view that is closed to the general public. In addition, we saw a nearly complete section through the marine and terrestrial sediments overlying the Bird Rock terrace as well as the shoreline angles of the Bird Rock and Nestor terraces (Marine isotope stages 5a and 5e). We began the traverse of the Pt. Loma Formation in the lower thinly-bedded section that consists of alternating fine yellow-brown sandstone and gray clay shale and finished east of the modern Coast Guard Lighthouse in massively-bedded dark gray siltstone. Evidence of submarine slumping (localized contorted bedding) was also observed in the cliffs and extensive modern abrasion platform. In the type locality the Pt. Loma Formation as described in Kennedy and Moore's 1971 paper is over 300 m thick including that portion of this unit exposed below sea-level to the west. From the beach we could see the conformable contact with the overlying Cabrillo Formation. This late Cretaceous unit consists of massive medium-grained sandstone and cobble conglomerate with several siltstone layers. Here at its type locality The Cabrillo Formation is 81 m thick. Further north near False Point this unit attains a thickness of 170 m. We thank the Cabrillo National Monument Supervisor Keith Lombardo and Rangers Jason Richards and Amanda Gossard for allowing us permission to visit the closed area. We also thank Rangers Emily Floyd, Deborah Sherman, and Bonnie Phelps for driving the group to the tidepool parking lot. If not for them ferrying us to the parking lot in their vans we would have had a long walk down to the trail head because of the lack of parking.



The sea cliff at the tip of Pt. Loma. Geologists for scale: Greg Farrand, Rob Hawk, Don Vaughn, Pat Abbott, Monte Marshall, Larry Busch.

Kennedy, M.P. and Moore, G., 1971, Stratigraphic relations of upper Cretaceous and Eocene Formations of San Diego Coastal area, California, AAPG, vol. 55, no. 5, pp. 709-722.



The Feb. 23 field trip participants. Those identifiable rt. to left; Rob Hawk, Rupert Adams, George Morgan, Mike Hart, Jennifer Morton, Bill Elliott, Pat Abbott, Dave Bloom, Bryan Miller-Hicks, Larry Busch, Don Vaughn, Monte Murbach, Diane Murbach, Norrie Robbins, Sarah Siren, Rangers Deborah Sherman, Emily Floyd, and Bonnie Phelps.

Photo by Bill Griswold, Cabrillo National Monument Artist-In-Residence.

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