

June 2019



LOS ANGELES BASIN GEOLOGICAL SOCIETY MEETING ANNOUNCEMENT

June 27 (Thursday) – 11:30 AM

Dr. Joe Carlin

Assistant Professor, Department of Geological Sciences, CSUF

CONTINENTAL SHELF SEDIMENTATION OVER A VARIETY OF GEOLOGICALLY SHORT TIME SCALES

Abstract

Continental shelf environments are uniquely situated to capture some of the most dynamic processes on Earth, including climatic variability, extreme events, and anthropogenic modifications to coastal systems. Understanding how these processes have affected sediment delivery and accumulation on the shelf in the past may provide insight into potential future changes. To address this we have been investigating shelf sedimentation within Monterey Bay, California over the past 5 years. Sediment cores were collected from locations throughout the bay to capture both the modern and Holocene sedimentological record using grain size analysis, X-ray fluorescence (XRF), and sediment chronologies determined from ^{210}Pb , ^{137}Cs , and ^{14}C . The results showed variability in sediment texture (grain size) and composition (from XRF) over time. For longer time scales (centuries), much of this variability can be tied to longer-term climate cycles. For example, for the time of the warm and dry Medieval Climate Anomaly (MCA) there are increases in terrestrial elemental proxies relative to marine proxies but low sand content. During the cooler and wetter Little Ice Age (LIA), marine proxies and the sand content increases. These results suggest increased runoff from land during wet periods delivers coarser sediment and nutrients to the ocean, driving primary productivity blooms. During dry periods, primary productivity and runoff may be limited, yet the results suggest that during these periods sediment may be increasingly supplied from coastal erosion rather than rivers. The shift in sediment supply from rivers to coastal erosion is especially evident in the modern era after the 1970s, as the geologic record captured changes occurring over decades as sand content increased in deposits throughout the bay. This period followed construction of most coastal river dams, which reduced coarse sediment fluxes to the beaches, with

coastal erosion accelerating throughout the bay. We interpret this shift in sedimentation as being the combined result of mid-Twentieth Century dam construction, which limited fluvial supply to the coast, with a shift in the Pacific Decadal Oscillation (PDO) toward a wetter, stormier period. With beaches being sediment-limited, erosion accelerated and some of this eroded material was transported across the shelf into deeper waters. Within these centennial and decadal shifts, extreme events, which likely occurred over the course of days, are also preserved as unique deposits.

Dr. Carlin's work demonstrates the usefulness of continental shelf stratigraphy to record a variety of environmental changes across a variety of geologic time scales. His work highlights how recent deposits bear the imprint of natural processes modulated by human activities.

Speaker's Biography

Dr. Carlin received his Ph.D. in oceanography from Texas A&M University in 2013. He is presently an Assistant Professor in the Department of Geological Sciences at California State University, Fullerton. His work is focused on recent sedimentation within coastal and shallow marine environments. He has special interest in sediment fluxes to coastal and marine environments and how marine processes alter the sediments prior to their preservation within the sedimentary record.

Through their work involving recent and short-term time scales that range from individual events to centuries, Dr. Carlin and his students endeavor to better understand how human activities, coupled with climate change, have altered sedimentary processes within coastal and shallow marine systems.

***Please join the LABGS to see
Dr. Carlin's presentation!***

Meeting Time, Place, Cost, and Reservations

When:

Thursday, June 27, 2019

Meeting Agenda

Lunch Served: 11:30 AM to 11:45PM
Announcements: 11:45 AM to 12:00 PM
Guest Speaker: 12:00 PM to 12:45 PM
Questions/Close: 12:45 PM to 1:00 PM

Place:

The Grand at Willow Street Conference Center located at 4101 East Willow Street, Long Beach, CA (562-426-0555). Take Lakewood Boulevard south from the San Diego Freeway (I-405), turn west onto Willow Street, and turn right onto Grand Avenue at the sign for the Center. Park for free in the multi-level garage structure.

Cost:

Lunch and Speaker: \$30.00 with reservations
\$40.00 without reservations
Retired: \$25.00
Student: \$10.00

PAYMENTS IN CASH OR CHECK ONLY

Meeting Reservations:

We encourage you to make your reservations using the LABGS web site, at www.labgs.org

Or, call Wanjiru Njuguna at (818) 739-9154 or email her at wanjiru.njuguna@gmail.com.

**Reservations must be made by:
10:00 AM Tuesday June 25th**

to receive reservations discount price indicated above

(this will be strictly adhered to)

But, as always, walk-ins are welcome!

**OUR WEB SITE ADDRESS:
www.labgs.org**

LABGS Board Contact Information:

President: Bert Vogler

(949) 585-3103

hvogler@kleinfelder.com

VP & Programs: Nate Busch

(714) 667-2300

nbusch@eecenvironmental.com

Treasurer: Francine Cason

(562)-756-0270

fcason5@gmail.com

Secretary: Wanjiru Njuguna

(818) 739-9154

wanjiru.njuguna@gmail.com

Scholarships: Karla Tucker

(714) 658-0474

ktr2@aol.com

Special Projects: Bill Long

(213) 448-2841

wtlgeoscience@gmail.com

Webmaster: Wanjiru Njuguna

(818) 739-9154

wanjiru.njuguna@gmail.com

ANNOUNCEMENTS:

The LABGS has expanded our meeting raffles. We would appreciate raffle prize donations! *Please bring donation items to the next meeting.*

Do you know if your PSAAPG/LABGS membership is current?

If you don't know, and want to, check via the PSAAPG website:

<http://www.psaapg.info/cloud/miscellaneous/dues.php>

Please inform a LABGS Board member if you have a pertinent announcement.