



# San Joaquin Geological Society

**Date:** Tuesday, January 8, 2019

**Time:** 6:00 PM Social Hour  
7:00 PM Dinner  
8:00 PM Lecture

**Place:** American Legion Hall  
2020 H Street, Bakersfield, CA 93302

**PSAAPG Members**  
\$25 with reservation  
\$30 without reservation

**Non PSAAPG Members**  
\$30 with reservation

**Full-time Students with ID:**  
\$10

**\* RSVP \***

**By: noon Monday,  
January 7, 2019**

Register online:  
<http://www.SanJoaquinGeologicalSociety.org/>

Pay online or at the door

**SJGS WEBSITE**

<http://www.SanJoaquinGeologicalSociety.org/>

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## Voyages to the Bottom of the Seas: New Microfaunal and Microgeochemical Methods to Evaluate Paleoenvironments

*Presented by: Anthony Rathburn, California State University, Bakersfield*

**Abstract:** Interpreting records of organic-rich and oxygen-poor conditions remains one of the most challenging and exciting aspects marine research. Much of what we know about changes in ancient oceans comes from microfossil records. Understanding geologic and biologic records of marine environmental change requires a thorough understanding of the relationships between modern micro-organisms and the environments they live in. Benthic (seafloor-dwelling) foraminifera are among the most abundant organisms in the deep-sea, and fossil representatives are used extensively to assess environmental conditions. Dr. Rathburn's research includes investigations of the ecology and biogeochemistry of methane seep microfauna, examination of microfaunal assemblages, and characterization of the relationships of microfaunal morphology and abundance with oxygen availability and productivity. Recent, funded work also includes involving CSUB students in hands-on research experiences at sea and in the lab. Together, these interdisciplinary investigations yield new approaches that have relevance to a broad array of applications, from modern analogs for organic-rich source rocks to quantitative oxygen proxies to methane gas origins to interpretations of paleoceanographic conditions.

**Biography:** Anthony Rathburn, CSUB Professor of Geology, Chair of the Department of Geological Sciences and Director of the California Well Sample Repository, recently arrived at CSUB. He has previously received a number of teaching and research awards, and has a long history of student mentoring, educational outreach and field and lab research funded by NSF (Marine Geology and Geophysics, Polar Programs, Biological Oceanography, and Improving Undergraduate STEM Education) and NOAA (National Undersea Research Program). Dr. Rathburn has spent decades studying the micropaleontology (primarily benthic foraminifera), ecology, geology and biogeochemistry of marine environments along the Pacific margin and elsewhere. He has conducted invited micropaleontology workshops/courses on foraminifera in Australia, Brazil, Chile and Peru, and has been a visiting research fellow in Australia, the United Kingdom and Germany. His research projects include those that use modern analogs to develop proxies that can be applied to the fossil record of paleoenvironmental change. Dr. Rathburn and his students have participated on research expeditions around the globe, including voyages off Alaska, Antarctica, Australia, Costa Rica, Chile, Peru, and Venice Italy, as well as California and Oregon. Some of these expeditions included the use of manned submersibles that carry scientists to the seafloor (up to 4500m) to sample and explore deep-sea environments such as methane seeps and organic-rich, oxygen-poor environments.

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