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SDAG MEETING ANNOUNCEMENT

Wednesday, February 18th, 2026

6:00 pm - Social Hour | 7:00 pm - Dinner | 8:00 pm – Program

LOCATION:

Sufi Mediterranean Cuisine

5915 Balboa Ave
San Diego, CA 92111

SPEAKER:

Norrie Robbins

TOPIC:

**"From Precambrian Iron Formation to Terraforming Mars —
the JIMES Expedition to Santorini"**

DINNER: Mediterranean Buffet with Vegetarian options

COST: Member \$55.00 | Non-Member \$65.00 | Student \$25.00

RESERVATIONS:

Make & Pay your reservation online through the SDAG website,
before **6PM WEDNESDAY, February 11th**

Please note, all meeting reservations require online pre-payment due to venue costs, venue contracts, and loss of money due to no shows. Refunds cannot be processed after the registration deadline.



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Meet Our | Speaker & Topic



Dr. Eleanora (Norrie) Robbins is a geologist who started her geology career with the Tanganyika Geological Survey as a Peace Corps Volunteer in Dodoma. She then worked for the US Geological Survey as an economic geologist and palynologist (fossil pollen grains) for 34 years in Washington, DC, Denver, CO, and Reston, VA. Retired from the Federal Government, she became adjunct faculty at SDSU, a 15-year-long activity that involved mostly mentoring students while she did her own research on geomicrobiology.

Presently she is formally retired and searching for the next exciting adventure.

ELEANORA (NORRIE) ROBBINS, PHD.

ABSTRACT:

“From Precambrian Iron Formation to Terraforming Mars—the JIMES Expedition to Santorini. By Eleanora (Norrie) Robbins, PhD (USGS-retired; SDSU-retired)”

Working on living iron bacteria and the proto-minerals that they precipitate, I got curious about Precambrian Iron Formation. One variety called Banded Iron Formation is alternating layers of hematite, magnetite, and silica (chert). Stan Tyler (Univ. Wisconsin) taught his students that he thought iron bacteria precipitated Iron Formation. His student Gene LaBerge (Univ. Wisconsin) thought the silica was precipitated by silica algae.

Thinking like a paleoecologist, I asked the whereabouts of a purported modern analog for Iron Formation. Gerhard Amstutz (Univ. Heidelberg) said: Santorini!. So I needed to get to Santorini and collect samples in the famous iron embayments and hot springs of the little volcanoes in the ancient caldera. The literature showed that researchers go there in the summer. Realizing that biological communities usually change as weather conditions change across a year, I wanted samples monthly for a year which could help to interpret banding.

To solve this ended up involving: Santorini high school students, their science teacher, a National Geographic photographer, the head of the Santorini Boatman’s Union, my entire family, an aerospace physiologist who wanted to be Greece’s first astronaut, a Greek Supreme Court Judge, the chief engineer of the cable car company, a NASA microbiologist, the Santorini Air Force, an algologist at the Univ. Guam, my colleagues at the USGS (a geologist, two geochemists, and a mineralogist), as well as astronauts from America, Japan, and Russia.

The students collected fresh flocculate samples monthly near the hot springs in two iron embayments and mailed them to my lab in Reston, VA. They also immersed microscope slides in the water for epilithic bacteria and algae to attach over the span of each month. I discovered that the iron bacteria and siliceous algae indeed switched abundances as the seasons unfolded. The cyanobacteria and tube-dwelling diatoms provided useful models for secreting oxygen to help our coauthor Chrysoula Kourtidou Papadeli think about terraforming Mars. The iron bacteria precipitated two-line ferrihydrite which dehydrated into goethite in the bottom muds, discovered our coauthor Gordon Nord. The cold winter Bora winds emptied out one of the iron embayments leaving a carpet of pumice.

Our observations triggered coauthors physicist Arthur Iberall (dad) and volcanic geochemist Moto Sato to develop a model for life’s origin on Earth in iron-rich hot spring water bubbling up through pumice, thus an inverted but natural fractionating column, and precipitating formaldehyde. Volcanic formaldehyde could form membranes around bubbles and entrain iron. Entrained iron could switch between reduced and oxidized, thereby acting as little onboard engines. As for the plastic accumulating in the Palea Kameni embayment that one student discovered in the summer, the Bora winds in winter emptied it out into the Aegean Sea thereby wiping out any possibility of annual deposition in the most famous iron embayment where tourists frolic and geologists attempt to core.

PRESIDENT'S CORNER

Hello SDAG Members

Whew! We had the first meeting of the year under our belt. It was such an exciting event, very well attended and went off without a hitch. Thanks to the current officers, past officers and presidents for all of their guidance and assistance with preparation and setup. It truly takes a village to run this organization, and I could not be prouder of the fantastic folks that we work with.

Ali Fattah with the City of San Diego gave a captivating presentation on the proposed revisions to local amendments to Chapter 18 of the California Building Code, including updates to exemptions from geotechnical investigation requirements. These changes reflect current development trends and recent updates to state law. His presentation provides a lot of opportunities for questions and answers. Thanks to John Teasley for recording the presentation so if you missed the talk, you could look up the video on our website. Thanks again to Ali for his effort and time!

It is also time to renew your SDAG membership. If you have not already, please consider becoming a sponsor—sponsorship includes your annual membership and provides critical support for our programs and funds our scholarships. And please consider being a sponsor, just \$100 gives you annual membership and recognition on the website and newsletter. Please sign up now.

As many of you know, Kip Herring passed away in December. I had the privilege of attending his memorial service on January 24 th at the Lakeside Polo Club. It was very well attended by SDSU faculty and students. We received this very nice thank you from Monique Atkins, one of Kips Daughters, via Sue Tanges:

“Thank you Sue for forwarding this very thorough and thoughtful review of my dad’s time with SDSU written by Dr. Kimbrough. My family knew he was always proud of his students, noting how hard they worked and how much they accomplished. As a family, we laughed how one of his students referred to his lectures as “story time with Kip” because that was definitely our childhood. Thank you for coming out to the service and please thank the other SDSU representatives that showed up. It really meant a lot to our family, as it brought a face(s) to something my dad talked about often.”

Coming up on February 18 th , Dr. Eleanora (Norrie) Robbins retired will be giving us a presentation titled: “From Precambrian Iron Formation to Terraforming Mars—the JIMES Expedition to Santorini.” Her abstract is provided further on in the Newsletter. I am super excited about this presentation given that I had previously visited Santoria and looking forward to learning more about that fantastic spot.

Also, as I write this, we have a One Stop Wonder by Monte Murbach and Dr. Ann Bykerk- Kauffman on January 31. They will be going over the research her students have done at

Canyon sin Nombre in this area including the adjacent Coyote Mountains and will be going over her draft geologic map. We will report on that in the next newsletter.

I look forward to seeing you at the February 18th meeting—be sure to mark your calendar and register in advance via PayPal.

Finally, if you have an interesting topic or would like to present in 2026, please reach out to me at mike@sandiegogeologicalsociety.org. We are working on filling our speaker slots and would love to hear from you.

Cheers
Mike Palmer
2026 SDAG President



2026 Upcoming Meetings

DATE	SPEAKERS & TOPICS
March 18 th	Josh Goodwin with BPELSG speaking on “Understanding Geology Licensure in California: PG, CEG, CHg, and PGp; How to apply, serve as a reference, and avoid common violations.”
April 15 th	Student Research Presentations by Scholarship Recipients
May 20 th	Danny Sims, PHD, Controlled Thermal Resources: “X-ray diffraction and seismic reflection data constraints on geothermal mineral brine reservoir modelling, Salton Sea Geothermal Field, Imperial Valley, California.”
June 17 th	Joint meeting with South Coast Geological Society
July 15 th	Rick Halsey of the CA Chaparral Institute: Title TBA
August 19 th	Monte Marshal: Title TBA
September 16 th	No Meeting: Annual Field Trip
October 21 st	We Danskin, USGS retired speaking on “Geology and Water Resources of the San Diego – Tijuana Area”
November 18 th	Joint meeting with AEG Inland Empire Section
December 16 th	Annual Holiday Meeting at San Diego History Museum with Tom Demere as Speaker

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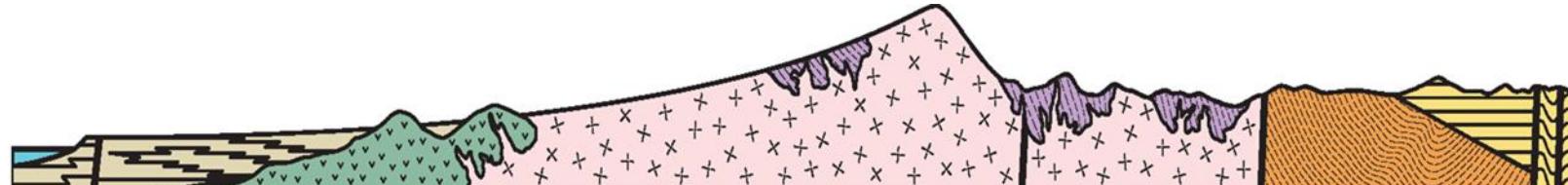
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Speakers For 2026 Meetings

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to speak at an upcoming meeting
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SAVE THE DATE

UPCOMING FIELD TRIPS



SDAG ANNUAL FIELD TRIP

Exploring Cerro Gordo in the
White Mountains and Owen's valley area

PACIFIC SECTION SEPM FIELD TRIP | 25-26 APRIL 2026

Trip leaders: Pat Abbott with co-leaders Ron Kies & Bill Bartling



Saturday, April 25

Examine all phases of a SUBMARINE FAN in beach cliff exposures of Late Cretaceous (Campanian) strata in La Jolla and Pacific Beach, California. We will “wade through” Cretaceous 1) tidal-channel deposits, 2) see dramatic deepening from 1m to 1km deep water, then take close-up looks at 3) basin plain, 4) outer submarine fan, 5) mid-fan, and 6) inner-fan valley strata.



Sunday, April 26

Walk below 100m high cliffs along Torrey Pines Beach in La Jolla. Examine Eocene lagoonal and tidal-flat deposits that are cut by the north wall of an Eocene SUBMARINE CANYON. Continue walking south and see the lateral coarsening of sediment infill as a prograding alluvial fan delivered ever-coarser sediments into a widening submarine canyon. Added bonus of Paleocene/Eocene Thermal Maximum strata.

SDAG | January Meeting Recap



Our January meeting kicked off the year with an informative and much-appreciated presentation from Ali Fattah with the City of San Diego. We were grateful to have Ali walk us through the upcoming revisions to the local amendments to Chapter 18 of the California Building Code, including updates to exemptions from geotechnical investigation requirements.

The session offered a valuable chance to ask questions directly, better understand the City's approach to the changes, and participate in an open, thoughtful discussion on evolving regulations. Ali's time and insight were truly appreciated and made for an engaging start to the year!



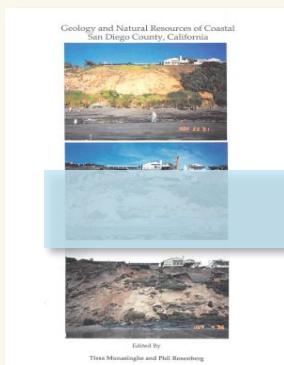
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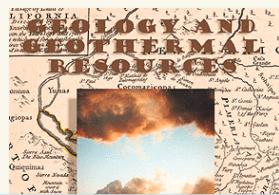
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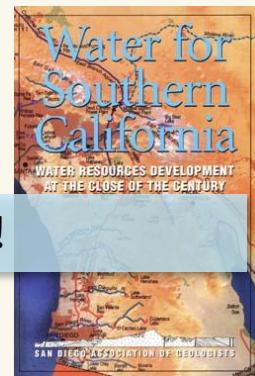
FIELD TRIP GUIDES & RESEARCH REPORTS



[Geology And Natural Resources Of Coastal San Diego County, CA \(1996\)](#)



[Geology And Geothermal Resources Of The Imperial And Mexicali Valleys \(1998\)](#)

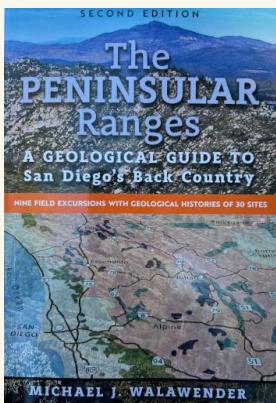


[WATER FOR SOUTHERN CALIFORNIA: Water Resources Development \(1999\)](#)

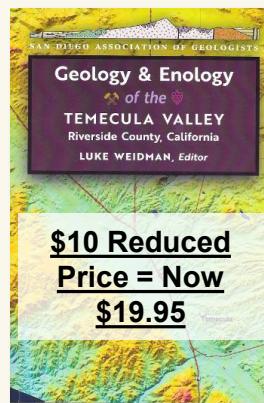
Now available as eBooks!



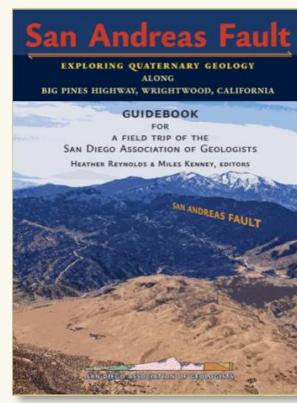
[Geology & Enology of the Temecula Valley Riverside County, California 2nd Edition](#)



[The Peninsular Ranges: A Geological Guide to San Diego's Back Country 2nd Edition](#)



[Geology & Enology of the Temecula Valley Riverside County, California 2nd Edition](#)



[San Andreas Fault: Exploring Quaternary Geology Along the Big Pines Highway, Wrightwood, CA](#)

FREE GUIDES AVAILABLE FOR DOWNLOAD

- [1972 Otay Mesa](#)
- [1977 SW San Diego](#)
- [1978 Coronado Islands, BC](#)
- [1979 San Diego Region](#)
- [1987 Julian Gold](#)
- [1981 Geologic Investigations of the San Diego Coastal Plain](#)
- [1982 Geologic Studies in San Diego](#)
- [1985 Eocene in San Diego](#)
- [1989 Fault Features: La Jolla - Ensenada](#)

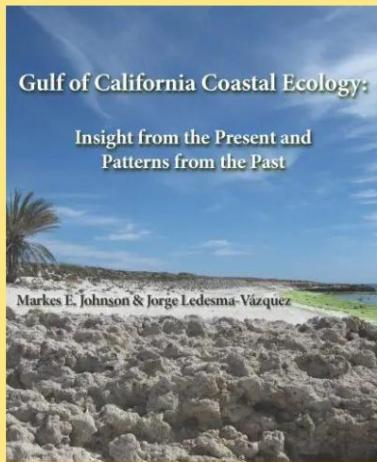


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Gulf of California Coastal Ecology

ISBN: 9781941384183

\$19.95

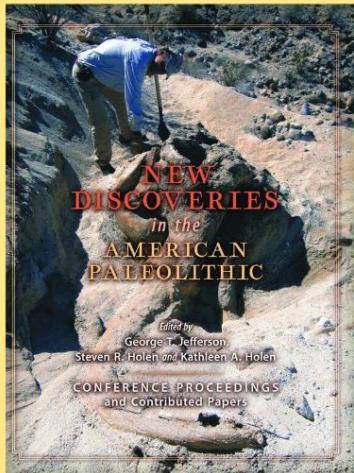
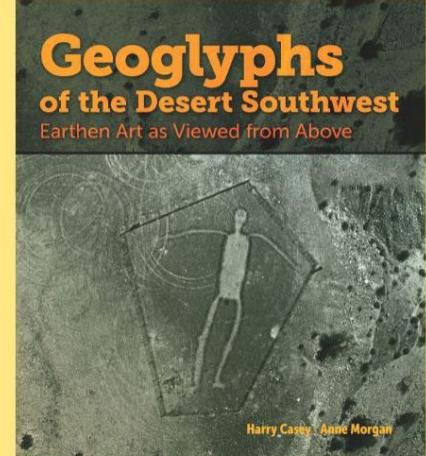
The Sea of Cortés has a rich ecosystem that has survived and thrived for over 12 million years, in some ways shifting dramatically and remaining almost unchanged in others. That extensive natural history is carefully documented and explored by this handbook, making connections and providing a broad but thorough overview of the geography, geology, and ecology of the area. Readers of all knowledge levels will be able to use it as an invaluable resource when exploring the coastline of the Gulf of California.

Geoglyphs of the Desert Southwest

ISBN: 9781941384503

\$19.95

The American southwest has one of the largest concentrations of geoglyphs in the world, outside of the Nazca Lines in Peru. These ancient works of art are often made at such a large scale that they are all but invisible unless viewed from above. In the 1970s, photographer Harry Casey, along with archaeology professor Jay von Werlhof and his students, embarked on a quest to find and record these awe-inspiring sites before human activity could damage them anymore.



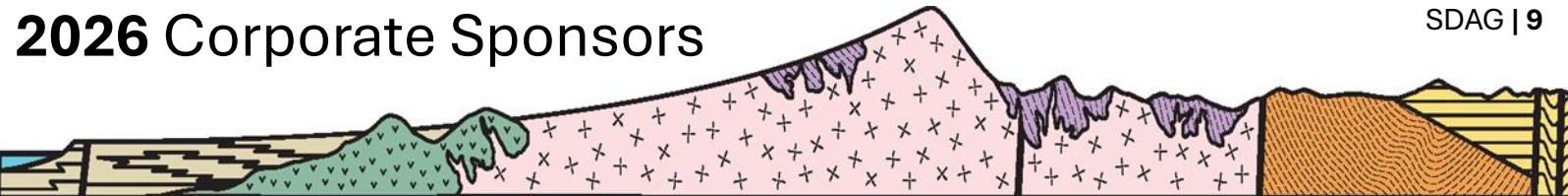
New Discoveries in the American Paleolithic

ISBN: 9781941384640

\$29.95

The common assumption is that humans began populating the Americas around 16,000 years ago, but recent discoveries have thrown that number into question. Evidence has surfaced that the true timeline may have been hundreds, or even thousands of years earlier still.

This book is a compilation of papers and proceedings from a conference held in January of 2019 about this exact subject; all together, this book presents compelling evidence that throws into question everything we currently know about the timeline of humanity in the Americas.



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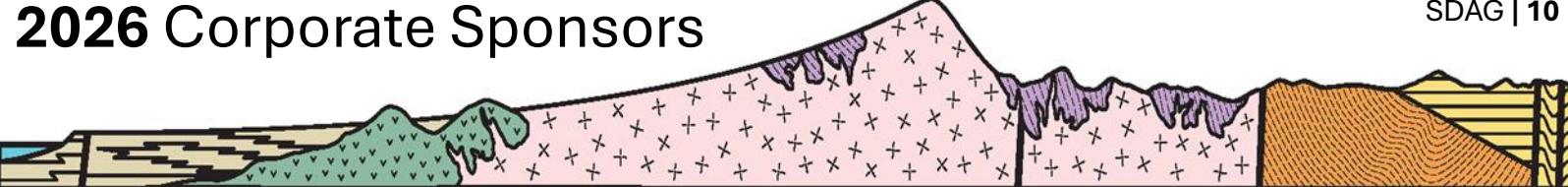
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