



## SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

### *SDAG MEETING ANNOUNCEMENT*

*WEDNESDAY FEB/17th/2021*

*6:00 PM - Happy Hour*

*7:00 PM - Meeting Begins*

*\*\*\* VIRTUAL MEETING \*\*\**

**Join Zoom Meeting**

[https://us02web.zoom.us/j/  
85798184239?](https://us02web.zoom.us/j/85798184239?)

[pwd=SHI4S3FIRTVVV1hQM0p  
JekZ1MUxZdz09](https://us02web.zoom.us/j/85798184239?pwd=SHI4S3FIRTVVV1hQM0pJekZ1MUxZdz09)

**Meeting ID: 857 9818 4239**

**Passcode: 461844**

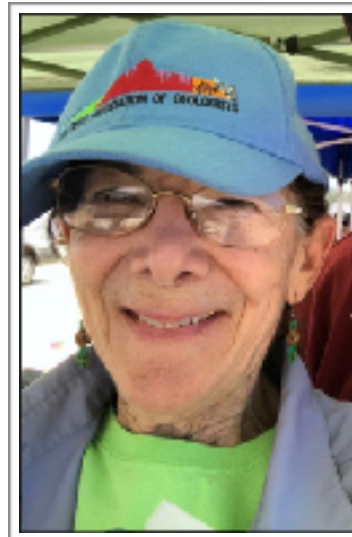
#### **NOTE:**

**The same link will be used  
for all 2021 meetings  
Hosted by SDAG**

#### **TITLE:**

**Origin of Our Redbeds  
Pigmentation by Chembiotic Oxidation of Detrital  
Magnetite in Red Brown Pleistocene Terrace  
Sandstones, San Diego, CA.**

**BY:**



**Eleanora (Norrie) Robbins, PhD**  
USGS - Retired / SDSU - Retired



## SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

### ABSTRACT

Along the coastline of San Diego County are 20 named Pleistocene marine terraces. Red brown Pleistocene sandstone overlies them all. These colorful uplifted sandstones are mapped as “paralic,” being former beaches. Several of the former beaches are associated with former beach ridges. Analyzed microscopically for this research were the accessible red brown terrace sandstones and former beach ridges, and for comparison, sediments from modern beaches, rivers, beach ridges. Soil concretions were collected from 10 terraces and their beach ridges, and the weathering products of magnetite-bearing rocks in the modern watersheds were analyzed.

All of these Pleistocene sandstones and modern sediments contained magnetite, ilmenite, quartz, and other accessory minerals. Transmitted and reflected light microscopy revealed that most magnetite grains in the sandstones were coated with the iron oxide minerals goethite, lepidocrocite, and ferrihydrite. Ilmenite grains were often coated with leucoxene. Quartz grains were coated with goethite, ferrihydrite, and Mn oxide minerals; crystalline hematite was present but rare.

My geomicrobiology study focused primarily on the microbial communities colonizing the quartz grains and catalyzing the precipitation of the Fe- and Mn-oxide minerals. Some of the bacteria that create these oxide biofilms are quite distinct microscopically (*Leptothrix discophora* holdfasts, *Siderocapsa*-like capsules). Others are undistinguished rods, coccobacilli, and cocci.

The sequence, timing, and post depositional environments that produced these pigmenting minerals are not obvious and need study. Weathering/oxidation was needed to produce the minerals coating magnetite; reduction and then oxidation were needed for the bacteria producing biofilms on quartz; and oxidation (with salinity? burial?) was needed to create hematite. Additionally, did acidification from the oxidation events dissolve evidence of former beach shells except where the red brown sandstone lies directly on calcareous Friars Fm? Acidic soil easily could have supported conifer forests during the Pleistocene.

Miller and Folk (my hero!) reported in 1955 that all redbeds contain detrital magnetite and ilmenite. My study shows that they were spot on for the Pleistocene redbeds in San Diego County.



## SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

### SPEAKER BIO

### *Our Very Own Eleanora (Norrie) Robbins !!!*

Norrie is an economic geologist, paleo-palynologist, and geomicrobiologist. Her degrees are from Ohio State, Univ. Arizona, and Penn State. Her work life included 2 years as a Peace Corps Volunteer with the Geological Survey of Tanzania, 34 years with the USGS in Washington D.C., Denver, and Reston, as well as 15 years as adjunct faculty at SDSU in the Dept. of Geological Sciences.

### REPLAY!

### *Did you miss last's month's meeting? No Problem!!!*

Please **CLICK HERE** to watch a recording of last month's meeting on Landslides.

#### PLEASE NOTE:

There is a long period of *nothing* at the start of the video. Please **FF to 1:44:00** ( that's almost two hours ) to reach the start of the meeting.

### LANDSLIDE REPORT

### *Have you spotted any landslides recently?*

Our January guest speaker, Paul Burgess, would love the 411! Please use the link below to report landslides.

**CLICK HERE!**

### UPCOMING EVENTS

### *Next Meeting*

**Wednesday, March 17th 2021**

\*\*\*Meetings are usually held on the 3<sup>rd</sup> Wednesday of the month. This may change to accommodate the speaker and meeting place schedules. Please check the [SDAG website](http://www.sandiegogeologists.org) for updates.



# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

## PRESIDENT'S CORNER

Hello SDAG Members!

It was so good to see everyone last month! We had a record number of attendees view remotely as the total number of people rose to and then remained at 110 for nearly the entire talk. Many thanks to all of you for making it so successful. My biggest thanks to Paul Burgess, for his time and effort in bringing us the latest on San Diego landslides. As an FYI, we recorded the meeting and the link to the video is provided in this newsletter. We will also post it elsewhere for folks to find. If it is easier, just email me and I'll give it to you.

As always, a brief reminder to fill out and send in your 2021 memberships and, if you have the reserves, 2021 sponsorships.

I am looking forward to this month's meeting featuring our own Norrie Robbins. I met Norrie early on in my geo-studies and we were fast friends. It has been almost 10 years and I still learn something new from her every time we're together.

Cheers!

Luke Weidman

## 2021 EXECUTIVE COMMITTEE

**PRESIDENT:**

Luke Weidman  
[lcweidman@gmail.com](mailto:lcweidman@gmail.com)

**VICE-PRESIDENT:**

Keith Kastama  
[keithkastama@gmail.com](mailto:keithkastama@gmail.com)

**SECRETARY:**

Mariana Aguilar  
[secretary@sandiegogeologists.org](mailto:secretary@sandiegogeologists.org)  
[petishu@gmail.com](mailto:petishu@gmail.com)

**TREASURER:**

Athena Catanzaro  
[athenacatanzaro@gmail.com](mailto:athenacatanzaro@gmail.com)

## SDAG PUBLICATIONS

*We currently have 9 publications available for sale!*

Please visit the [Sunbelt Publications website](#) for details.





## SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

### 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.

### 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, starting with our first guidebook in 1972, from Coast to Cactus in 2014, and finally on the Julian 'Road to Gold' in 2017. 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, "oikocryst" for example, you can search for that keyword. This listing will be updated as new books are published. Thanks to Greg Cranham and Hargis + Associates, Inc., for making this possible.

See the links below:

[http://www.sandiegogeologists.org/SDAG\\_Pubs\\_authors.pdf](http://www.sandiegogeologists.org/SDAG_Pubs_authors.pdf)

[http://www.sandiegogeologists.org/SDAG\\_Pubs\\_chronological.pdf](http://www.sandiegogeologists.org/SDAG_Pubs_chronological.pdf)

### CALL FOR JOB POSTINGS

*Please Submit Job Postings to:*

[secretary@sandiegogeologists.org](mailto:secretary@sandiegogeologists.org)

*For Updated Job Postings, please Visit:*

<http://www.sandiegogeologists.org/Jobs.html>

### JOBS

#### COUNTY OF SAN DIEGO

invites applications for the position of

#### Land Use/Environmental Planner III - Geology - 21355001GE

SALARY: \$85,488.00 - \$104,998.40 Annually

**DEADLINE TO APPLY = 2/18/2021**

For a Job Description **PLEASE CLICK HERE**

\*\*\*For more details pls refer to 2nd attachment on email

### CALL FOR GEO PHOTOS

*Any recent field trips or exciting outings?*

**SHOW OFF YOUR PICTURES!**

*Please Submit to:* [petishu@gmail.com](mailto:petishu@gmail.com)





# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

## PHOTO SUBMISSIONS

BIG THANKS to all who shared the photos below!

**STEPHEN  
JACOBS**

WHITE POCKET  
VERMILION CLIFFS  
NATIONAL MONUMENT  
ARIZONA

SEPTEMBER 2020

SLUMP FOLDING  
IN JURASSIC NAVAJO  
SANDSTONE  
BY LIQUEFACTION &  
FLUIDIZATION,  
INTERPRETED AS  
HAVING OCCURRED  
DURING PALEOSEISMIC  
EVENTS







**SAN DIEGO ASSOCIATION OF GEOLOGISTS**

*[www.sandiegogeologists.org](http://www.sandiegogeologists.org)*

*ED  
HERNANDEZ*

IDYLLWILD HIKE  
ORTEGA FALLS

2020







**SAN DIEGO ASSOCIATION OF GEOLOGISTS**

*[www.sandiegogeologists.org](http://www.sandiegogeologists.org)*

**ROBERT  
GALLARDO**

HORSESHOE BEND

PAGE, AZ.  
2020



**MIKE  
THACKER**

EXPOSURE OF  
JULIAN SCHIST

SANTA YSABEL, CA.  
2020







# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

## GREG CRANHAM

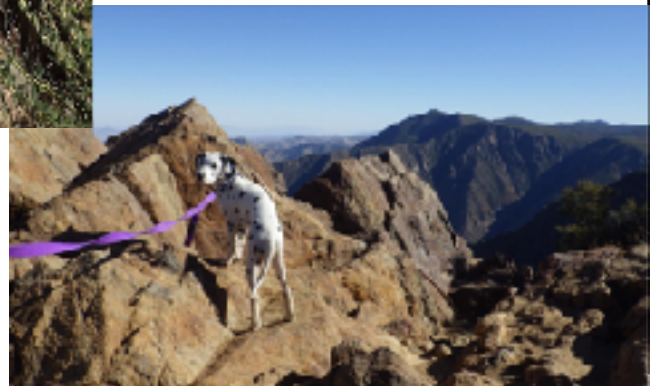
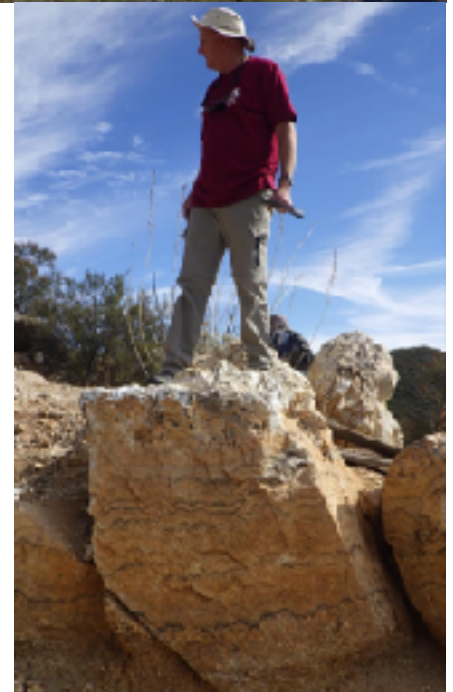
CLOCKWISE FROM THE TOP:

\*\*\*SDAG - OSW  
RECON TEAM  
GARNET PEAK TRAIL

\*\*\*GEO-PUP SAPPHIRE  
(MURBACH) GARNET  
PEAK SUMMIT

\*\*\*SDGS BOARD  
MEMBER CHUCK  
HOUSER W/ "LINE  
ROCK" UNDERFOOT  
BLUE LADY MINE  
CHIHUAHUA VALLEY  
EAST SD COUNTY

\*\*\*STRONGLY FOLIATED  
JULIAN SCHIST, NEAR  
PACK RAT MINE, EAST  
OF MCCAIN VALLEY.  
EAST SD COUNTY







# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

**CANDACE  
KOHL**

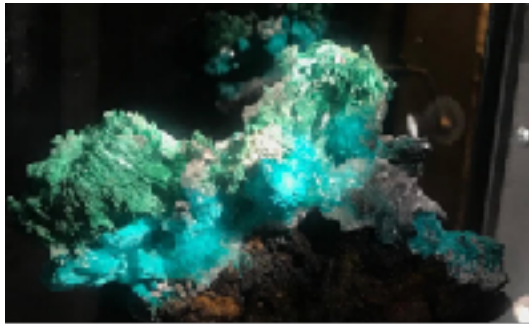
CLOCKWISE FROM  
THE TOP:

\*\*\*BLAUBEUREN,  
GERMANY  
MARCH 2020  
"I WAS IN GERMANY  
WHEN THE TRAVEL BAN  
WAS ANNOUNCED"

\*\*\*CHIRICAHUA  
NATIONAL MONUMENT  
NOVEMBER 2020

\*\*\*COMMERCIAL TOUR  
OF THE COPPER QUEEN  
MINE. BISBEE, CA.  
NOVEMBER 2020

\*\*\*MINERAL SAMPLE  
FROM MINE





## SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

### Request for 2021 SDAG/SDGS Publication Sponsors

On behalf of the San Diego Geological Society, Inc. (SDGS), a public benefit 501(c)3 nonprofit educational corporation, we would like to request tax deductible Donations for our San Diego Association of Geologists (SDAG) group.

Your donation will further the SDGS mission to promote geology and related fields in the greater San Diego region, operating through the San Diego Association of Geologists (SDAG), a committee of SDGS. To achieve our primary educational objective, we organize frequent field trips and maintain a program of monthly meetings featuring speakers on current geological topics.

**REQUESTS  
FOR  
2021  
SPONSORS**

**\$100.00 Donation - EMERALD SPONSOR**

**\$500 Donation - RUBY SPONSOR**

**\$1,000.00 Donation - DIAMOND SPONSOR**

All sponsors will be listed on the [SDAG web site](http://www.sandiegogeologists.org) and in the monthly SDAG meeting newsletters. In addition, "DIAMOND SPONSORS will be presented with a thank you plaque.

Sponsors as well as information on how to become a Sponsor are located on the SDAG web site at:

<http://www.sandiegogeologists.org/Sponsors.html>.

Should you have any questions regarding a Sponsorship, please contact our non-profit **SDGS Secretary (Diane Murbach) at 619-865-4333**.





# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

## THANK YOU SPONSORS !!!



*Diamond*



Kuper Consulting, LLC



*Ruby*



Leighton



*Dave Bloom*



*Emerald*

- [Dr. Pat Abbott](#) - SDSU Prof. of Geology, Emeritus
- Marty and Sherry Bloom
- [Dr. Vic Camp](#)
- Joe Coronas
- Greg Cranham - Consulting Geologist
- Dr. Margaret R. Eggers, CHG - [Eggers Environmental, Inc.](#)
- Karen Evans for Jim Evans (deceased)
- Phil Farquharson - [Geology Guy](#)
- Geotechnical Exploration, Inc.
- Carolyn Glockhoff - [Caro-Lion Enterprises](#)
- Cari Gomes - [Pinao Consulting](#)
- [Woody Higdon, Geotech Imagery Intl.](#)

- Frank Kingery Tom Lamb
- Lowell E. Lindsay and Diana Lindsay - [Sunbelt Publications](#)
- Dr. Monte Marshall - SDSU Prof. of Geology and Geophysics, Emeritus
- Doug & Betty Moran
- Jennifer Morton - [Terramar Environmental](#)
- Monte and Diane Murbach - [Murbach Geotech](#)
- [Pacific Drilling Co.](#) - Tod Clark
- [Peet's Coffee & Tea Solana Beach](#)
- [Pure Wine, Inc.](#)
- Gerald Shiller
- [Scott Snyder](#)
- Starbucks - Devore/San Bernardino
- David and Jan Steller
- [Dr. Anne Sturz](#)
- Randy Wagner
- Mary Walke
- Carole L. Ziegler