SDAG MEETING ANNOUNCEMENT

MONDAY JUNE 7th 2021
6:00 PM

*** VIRTUAL MEETING ***

Join Zoom Meeting
https://us02web.zoom.us/j/6315275954?
pwd=L3pGai9FejBzTXpUV0g3WkF6elZBdz09

Meeting ID: 631 527 5954
Passcode: 030187

THIS WILL BE A JOINT MEETING WITH SCGS

Long term coastal cliff retreat in Del Mar, CA revealed from shore platform $^{10}$Be concentrations and numerical modeling

Travis Clow is currently
PhD Candidate at Stanford University
ABSTRACT

Long term coastal cliff retreat in Del Mar, CA revealed from shore platform $^{10}$Be concentrations and numerical modeling

T. Clow, J.K. Willenbring, H. Matsumoto, A. Young, A. Hidy

Eroding coasts make up the majority of the coastlines on Earth, including the west coast of the United States, and host critical infrastructure like roads, railways, and residential structures. The precarious siting of infrastructure is particularly true for Del Mar, California, where a major railway between Los Angeles and San Diego sits within just a few meters of a cliff edge that is closely backed by dense housing subdivisions. Coastal cliff retreat presents a danger to these communities that is potentially amplified under rising sea level conditions, among other factors, yet constraints on retreat rates are most often limited to those derived from historical imagery and maps dating back 10-100 years. These modern retreat rates are then used, in conjunction with multi-model ensembles, for forecasting cliff retreat over the next 50-100 years in order to gauge future impacts to coastal communities. Managers and policymakers make decisions for mitigation efforts based on these results, however they may not capture the full picture of cliff retreat, and the factors that influence it, over time. While nearly all of the existing forecasting models explicitly account for projected sea level rise, the majority of them ignore other factors (e.g. subtidal and subaerial weathering) that may also play a large role.

A recently developed combination of in situ-produced cosmogenic $^{10}$Be surface exposure dating in conjunction with a new numerical model of shore platform profile development that takes into account sea level rise, intertidal weathering, and wave attack on cliff retreat provides quantification of cliff retreat histories over hundreds to thousands of years via cliff-normal $^{10}$Be sample transects. Here, we use a shore-perpendicular transect of cosmogenic $^{10}$Be concentrations from the surface of a sandy claystone shore platform exposed along a narrow and sandy beach backed by a near vertical ~20-meter-tall cliff in Del Mar, California to present a long-term cliff retreat rate of 5.5 - 8 cm a$^{-1}$ over the last two millennia for this site. This is the first long term cliff retreat rate for any coast in North America determined by this new methodology. Existing decadal retreat rates at and proximal to this site range from 5-20 cm a$^{-1}$, suggesting that cliff retreat here may be accelerating towards the present. Preliminary modeling results suggest that uplift-corrected sea level rise in Southern California, which remained constant during the late Holocene (0.8 mm a$^{-1}$) but doubled in the last century, cannot alone explain this potential increase, as modeled platform geometries and associated development rates show a dependence on the imposed weathering rate as well as wave erosion efficacy. Recent investigation into the relative influence of weathering and wave attack on observed cliff retreat at this same location also shows a roughly equal contribution for both drivers. We further explore this and other potential drivers (e.g. land use change) for this potential increase, and speculate on the implications of these results for future cliff retreat forecasting efforts.
Travis Clow is currently a PhD Candidate at Stanford University working with Dr. Jane Willenbring on resolving rates and dates of landscape evolution in North and Central America using cosmogenic nuclides. He received his master's and bachelor's degrees at the University of Texas at Austin in 2017 and 2014, respectively. His main research interests involve unraveling the interplay of climate and tectonics as drivers of Quaternary geomorphological landscape change from coasts to mountain belts, as well as active tectonics and critical zone science. Outside of the lab and field, Travis spends his time hiking, skateboarding, and relaxing anywhere with a nice view.

AWARDS AND RECOGNITIONS
- Outstanding Teaching Assistant Award, Scripps Institution of Oceanography / UC San Diego (Spring 2019)
- Early-Career Graduate Best Poster Award, Runner-up, The University of Texas at Austin, Jackson School of Geosciences (Spring 2016)
- Undergraduate Merit Based Scholarship, The University of Texas at Austin, Jackson School of Geosciences (Spring 2013 - Fall 2014)
- University Honors, The University of Texas at Austin (Fall 2012, Spring 2014)
- President's List, The University of Texas at San Antonio (Fall 2009 - Spring 2010)

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

Please CLICK HERE to watch a replay of:

Nuclear Waste Disposal in Rock: Sweden and the US by Hans Janzon

Access Passcode: AQpMR@4#
Hello SDAG Members!

Many thanks to everybody that attended last month’s meeting! A big shout out to Hans Janzon for speaking at last month’s meeting. It was a pleasure to get to know Hans a little bit better and I know we all enjoy a little insight into what our membership is involved with.

As always, a brief reminder to fill out and send in your 2021 memberships and, if you have the reserves, 2021 sponsorships. Don’t forget to save the date for this year’s field trip! October 23-24.

For this month’s meeting, we are joining forces with South Coast again! So, heads up, we are on their time schedule which means the meeting time and date will be out of our usual rotation.

Monday, June 7th!

We will be back to our regularly scheduled program next month with presentations from our scholarship winners!

Cheers,
Luke Weidman

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**PRESIDENT:**
Luke Weidman
lcoweidman@gmail.com

**VICE-PRESIDENT:**
Keith Kastama
keithkastama@gmail.com

**SECRETARY:**
Mariana Aguilar
secretary@sandiegogeologists.org
petishu@gmail.com

**TREASURER:**
Athena Catanzaro
athenacatanzaro@gmail.com

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**CALL FOR JOB POSTINGS**

Please Submit Job Postings to:
secretary@sandiegogeologists.org

For Updated Job Postings, please Visit:
http://www.sandiegogeologists.org/Jobs.html
## 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 available on our website. Entries are sorted by primary author, or chronologically by date of publication, starting with our first guidebook in 1972, out to Calico and the Mojave Desert in 2018, and finally up to the Temecula wine country for a return visit in 2020. 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:

- [Search by Author](#)
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## ANNOUNCEMENT

**PSAAPG 2021 Virtual Convention**

Save the Dates: June 21-24, 2021
PSAAPG 2021: Hindsight is 2020
Pacific Section Virtual Convention

Schedule of Events
- **Monday**
  - Evening: Virtual field trip led by Richard Hold of CSIR
- **Tuesday**
  - Morning: Monterny Session: Greg Blair of Wade Geological Services, LLC will lead a lecture on age control in the Monterny and its relations to for climate change, plus several technical presentations focusing on the coastal basins of California.
  - Evening: Bob Hendriksen's annual dinner and awards ceremony, and keynote speaker featuring Jonathan Alles, Senior Earth Scientist, Gulf of Mexico/Coastal Development Team at Chevron and AAPG Secretary ( Emeritus)
- **Wednesday**
  - Morning: Geochemistry and basin Modeling Seminar: Allin Kappler and Schein of Stanford University will lead a discussion on the use of marine learning to enhance understanding of petroleum systems, plus several technical presentations focusing on the basins of California.
- **Thursday**
  - Morning: Regolatory and Environmental Geology Session: A panel discussion with the State Geologist, Dr. Steven Thomas and Bill Hensley, former Chief Deputy for CAGEM, on the future of petroleum geology in California, plus a lecture on the use and roles of stratigraphic in the environmental industry by Erik Daines, and a lecture from Laurie Flasco, Senior Geographer for Geostrata,

See our website for more information:

[https://www.psaapgconvention.org/PSAPG2021](https://www.psaapgconvention.org/PSAPG2021)
### Support SDAG While You Shop!

**What is AmazonSmile?**
AmazonSmile is an automatic way for you to support the “San Diego Geological Society” (SDGS) SDAG’s 501(c)(3) as your favorite public charitable organization every time you shop on Amazon at no cost to you at smile.amazon.com.

**How do I select a charitable organization to support when shopping on AmazonSmile?**
On your first visit to AmazonSmile smile.amazon.com, you need to select a charitable organization to receive donations from eligible purchases before you begin shopping. Please select the San Diego Geological Society. Amazon will remember your selection, and then every eligible purchase you make at smile.amazon.com will result in a donation to SDGS (SDAG).

**How much of my purchase does Amazon donate?**
The AmazonSmile Foundation will donate 0.5% of the purchase price from your eligible AmazonSmile purchases.

**How can I learn more about AmazonSmile?**
Please see complete AmazonSmile program details.

### 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.

- **$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 and in the monthly SDAG meeting newsletters.

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

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

- **Diamond**
  - Dr. Pat Abbott - SDSU Prof. of Geology, Emeritus
  - Dr. Vic Camp
  - Joe Corones
  - Greg Cranham - Consulting Geologist
  - Dr. Margaret R. Eggers, CHG - [Eggers Environmental, Inc.](https://www.eggersenvironmental.com)
  - Karen Evans for Jim Evans (deceased)
  - Phil Farquharson - [Geology Guy](https://www.geologyguy.com)
  - Eldon Gath, Earth Consultants International
  - Geotechnical Exploration, Inc.
  - Carolyn Glockhoff - [Caro-Lion Enterprises](https://www.caro-lion.com)
  - Rob Hawk
  - Kip Hering
  - Ed Hernandez - [Project X Corrosion](https://www.projectxcorrosion.com)

- **Ruby**
  - Tom Lamb
  - Lowell E. Lindsay and Diana Lindsay - [Sunbelt Publications](https://www.sunbeltpublications.com)
  - Dr. Monte Marshall - SDSU Prof. of Geology and Geophysics, Emeritus
  - Jennifer Morton - [Terramar Environmental](https://www.terramar.com)
  - Monte and Diane Murbach - [Murbach Geotech](https://www.murbachgeotech.com)
  - [Pacific Drilling Co.](https://www.pacificdrilling.com) - Tod Clark
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- **Emerald**