



SAN DIEGO ASSOCIATION OF GEOLOGISTS

www.sandiegogeologists.org

SDAG MEETING ANNOUNCEMENT

*MONDAY JUNE 7th 2021
6:00 PM*

**** VIRTUAL MEETING ****

Join Zoom Meeting

[https://us02web.zoom.us/j/
6315275954?](https://us02web.zoom.us/j/6315275954?)

[pwd=L3pGai9FejBzTXpUV0g3Wk
F6elZBdz09](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 ¹⁰Be
concentrations and numerical modeling**

**Travis Clow is currently
PhD Candidate at Stanford University**





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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.

ABSTRACT

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.



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SPEAKER BIO

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)

REPLAY!

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

Please [CLICK HERE](#) to watch a replay of:

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

Access Passcode: AQpMR@4#



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PRESIDENT'S CORNER

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

2021 EXECUTIVE COMMITTEE

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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>



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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 lead by Dr. Richard Rahn of CSRR
- **Tuesday**
 - Morning - Monterey Session: Gregg Blake of Blake Geological Services, LLC will lead a lecture on age control in the Monterey and its relationship to climate change, plus several technical presentations including updates on the latest Monterey research.
- **Wednesday**
 - Morning - Geochemistry and Basin Modeling Session: Allegra Hoford Scheiner of Stanford University will lead the session on the use of machine learning to enhance the understanding of petroleum systems, plus several technical presentations focusing on the coastal basins of California.
 - Evening - Bob Lindblom's annual Honor and Awards session, and keynote speaker featuring Jonathan Allen, Senior Earth Scientist, Gulf of Mexico Asset Development Team at Chevron and AAPG Secretary Elect.
- **Thursday**
 - Morning - Regulatory and Environmental Geology Session: A panel discussion with the State Geologist Dr. Steven Bohlen and William Bartling, former Chief Deputy for CalGEM, on the future of petroleum geologists in California, plus a lecture on the use and role of stratigraphy in the environmental industry by Rick Dramec, and a lecture from Laurie Rocco, Senior Registrar for Geology and Geophysics for BPUSA.

See our website for more information
<http://www.psaapgconvention.org/2021/>





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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

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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.

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- Joe Corones
- Greg Cranham - Consulting Geologist
- Dr. Margaret R. Eggers, CHG - [Eggers Environmental, Inc.](#)
- Karen Evans for Jim Evans (deceased)
- Phil Farquharson - [Geology Guy](#)
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