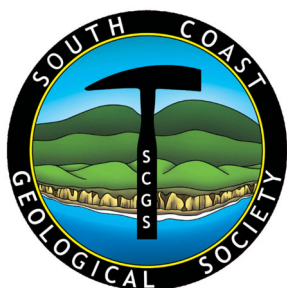


THE RECORD

OFFICIAL NEWSLETTER OF THE

South Coast Geological Society



In this edition:

- [Upcoming Meeting Information](#)
- [Job Postings](#)
- [Presidents Corner](#)
- [Membership](#)
- [Volunteer with SCGS](#)
- [Additional Links](#)
- [Ways to Support SCGS](#)

**NEXT VIRTUAL MEETING DATE:
MONDAY, JUNE 7TH (6:30PM-8:00PM)**

South Coast Geological Society welcomes you to join our virtual meeting on **June 7th via Zoom!** We are delighted to host **PhD Candidate Mr. Travis Clow**, who will be presenting on his topic **Long Term Coastal Cliff Retreat in Del Mar, CA!**

All participants should sign up via Eventbrite (using the button below). A link to the meeting will be emailed to all participants approximately 30 minutes prior to the meeting start time. **Registration for this meeting will close at 5:30pm on June 7th.**

[Attend Meeting](#)

Upcoming Meeting Info

Abstract:

Long Term Coastal Cliff Retreat in Del Mar, CA Revealed from Shore Platform 10Be 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.

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.

JOB POSTINGS

LGC GEOTECHNICAL, INC. has an immediate opening for a Staff Geologist with a solid work ethic, organizational skills, and the capability of working in a fast-paced, team-oriented environment.

Requirements

- Education: B.S. in Geology required. M.S. in Geology preferred. GIT preferred (or the ability to obtain within 1 year).
- Entry level to 3 years of geotechnical consulting experience, including conducting subsurface evaluations, laboratory testing, analysis of field and laboratory test data, preliminary geotechnical analysis and design, construction observation and testing, drafting of geotechnical information.
- Strong computer skills in the use of Word, Excel, PowerPoint, Adobe, AutoCAD and Google Earth.
- Strong communication and report writing skills.
- Ability to work independently or in close coordination with a team in a multi-disciplinary environment.
- Ability to organize and adjust to changing priorities and assignments, strategically plan and coordinate multiple tasks in an efficient manner.
- Must have own vehicle, a valid driver's license and willing to travel locally to job sites.
- Positive work attitude and a thirst to learn and achieve continuous improvement in a team environment.

Responsibilities

The Staff Geologist will be expected to have strong analytical skills, technical knowledge of the principles of geology and field geologic mapping skills and experience.

Project tasks may include the following:

- Planning, scheduling, conducting and/or coordination of field and laboratory testing.
- Performing preliminary field geologic mapping, sampling and logging of exploratory borings and trenches, preparation of geologic maps and cross-sections, and drafting for geotechnical projects.

- Preparation of proposals, report writing, reviewing drawings, geotechnical reports, calculations, and maps.
- Performing grading and construction observation and testing.

LGC Geotechnical, Inc. offers competitive benefits and salaries and an excellent work environment. Their benefits package includes employee health insurance, short- and long-term disability insurance, paid time off, 401k, vehicle and mileage compensation, and educational reimbursements. Group rates are also available for family health insurance, dental and vision insurance. Salary determination is based on experience.

Please submit a PDF copy of your resume and cover letter to Amanda Amado (aamado@lgcgeotechnical.com).

THOMAS HARDER & CO

Staff Level Hydrogeologist Opening – Field Emphasis

Thomas Harder & Co. is a hydrogeological consulting firm specializing in groundwater basin characterization and management, groundwater models, water wells, artificial recharge, and groundwater quality. We serve a critical role providing technical support and water resources advice for municipalities, private industry, law firms, and agricultural interests across California, Nevada, Arizona and Mexico. Among other things, we specialize in the siting, design, and construction management of large diameter, high-capacity municipal water supply wells.

We are a tight-knit, collaborative group that knows the best outcomes for our clients come from the collective intellectual contribution from each of our team members. We are looking to add a skilled and motivated hydrogeologist to provide field data collection and construction inspection for our well projects.

Primary Responsibilities:

- Field Data Collection and Construction Management Support Tasks: Lithologic logging during drilling projects; Inspection of geophysical logging; Sieve analyses of samples; Monitoring groundwater levels; Groundwater quality sampling; Data collection during pumping tests; Analysis of pumping test data; Well siting reconnaissance and documentation; and assistance with preparation of reports.
- Provide construction management support including: Preparation of well construction design drawings; Well construction inspection; Well destruction inspection; and field documentation of daily activities.

Secondary Responsibilities:

- Assist Senior Staff with Analytical Tasks: Preparation of well construction technical specifications; Preparation of maps, charts, tables, and other exhibits for analysis and reporting; Preparation of reports and technical

memoranda; Analysis of pumping test and water quality data; Compiling and processing data necessary for conceptual and numerical models; and hydrogeological research for well siting and design studies.

Minimum Qualifications:

- Bachelor of Science in Geology, Hydrogeology or Hydrology
- 0 to 3 years of experience in a geology, hydrogeology, or hydrology-related field
- Proficient in the use of Microsoft Excel and Word.

Preferred Qualifications:

- Proficiency with ArcGIS software
- Excellent written and oral communication skills.

If you are interested in joining our team, please email your resume to: Ms. Georgie Aronson (garonson@thomashardercompany.com)

THOMAS HARDER & CO

Staff Level Hydrogeologist Opening – Model Emphasis

Thomas Harder & Co. is a hydrogeological consulting firm specializing in groundwater basin characterization and management, groundwater models, water wells, artificial recharge, and groundwater quality. We serve a critical role providing technical support and water resources advice for municipalities, private industry, law firms, and agricultural interests across California, Nevada, Arizona and Mexico. We specialize in the development and application of numerical groundwater flow models for use in informing groundwater basin management decisions. Our team has been at the forefront of developing a practical methodology for applying predictive uncertainty to model results.

We are a tight-knit, collaborative group that knows the best outcomes for our clients come from the collective intellectual contribution from each of our team members. We are looking to add a skilled and motivated hydrogeologist with a particular interest in groundwater modeling to add to our team.

Primary Responsibilities:

- Analytical tasks: Compile and process data necessary to develop conceptual basin models; Prepare hydrogeological cross sections; Prepare groundwater elevation contour maps; Prepare and analyze hydrographs; Pumping test analysis; Prepare structure maps of basin boundaries; Conduct water budget analyses; Prepare model input files Calibrate models and process output; Compile, update, and manage databases; Hydrogeological research and analysis for well siting and design studies; Preparation of maps, charts, tables, and other exhibits for analysis and reporting; and prepare model reports and technical memoranda.

Secondary Responsibilities:

- Field data collection tasks: Documentation of daily tasks in the field; Logging boreholes for well construction projects; Inspection of geophysical logging; Sieve analyses of samples; Monitoring groundwater levels; Groundwater quality sampling; and pumping test data collection and analysis.

Minimum Qualifications:

- Bachelor of Science in Geology, Hydrogeology or Hydrology.
- 1 to 5 years of experience in a geology, hydrogeology, or hydrology-related field.
- Proficient in the use of Microsoft Excel and Word.

Preferred Qualifications:

- Master of Science in Geology, Hydrogeology or Hydrology
- Proficient with MODFLOW groundwater modeling software.
- Proficient with ArcGIS software.
- Excellent written and oral communication skills

If you are interested in joining our team, please email your resume to: Ms. Georgie Aronson (garonson@thomashardercompany.com)

Presidents Corner

May 2021

Dear Friends,

We have so many good tidings this month – the most exciting news is that we have successfully reserved our group campground for the annual field trip for October 8-10, 2021. Our trip will explore the San Jacinto and San Andreas faults in light of recent field studies and research on both faults. You won't want to miss this trip – it coincides with our 50th anniversary as a Society and will be the 40th anniversary of the 1981 San Jacinto field trip! We will be camping at Hurkey Creek campground in Mountain Center on Friday (optional) and Saturday nights, with our traditional local barbeque dinner on Saturday night along with some amateur astronomers sharing their high-power telescopes for an old-fashioned star party.

With that exciting news, we also request you consider a Corporate Sponsorship which will help keep our individual field trip costs low. Our website has recently been renovated (check it out at www.southcoastgeology.org) and the Corporate

Sponsorship link is up and running – please remember if you prefer not to pay via Pay Pal, just fill out the form and send a check payable to SCGS at P.O. Box 10244, Santa Ana, 92711. Don't worry, we will be happy to take your donations/sponsorships in any way provided! We also have a fantastically convenient "Donate" button on the home page of the website and Eventbrite is also an easy way to donate when you sign up for our monthly meetings!

Please join us for our next meeting on Monday June 7 – which will be our annual joint meeting with San Diego Association of Geologists. We are happy to welcome Travis Clow, who will be presenting on long term coastal cliff retreat in Del Mar, California. He performed the research for this study with Dr. Jane Willenbring who was one of the scientists featured in the film "Picture A Scientist", brought to you by SCGS and the Association for Women Geoscientists last September.

As always, thank you for attending our last monthly meeting with Justin Hagerty of the USGS Astrogeology Science Center in Flagstaff, Arizona. While the audio was intermittent, his slides, videos and geologic maps of the Lunar surface were absolutely captivating. Justin promises to reach out to us next time he is in southern California for an in-person presentation.

I know we are all starting to get Zoom-fatigue, but hold tight for a few more months and I think we will be able to meet again in person before too long. I am most definitely looking forward to it.

Take care and see you soon!
Lynne Yost
SCGS President

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Lynne Yost, SCGS President

MEMBERSHIP

Memberships allow SCGS to host stellar field trips, provide over \$2,000 annually in student scholarships, and improve the society in many ways. South Coast Geological Society raises our annual budget through private contributions, so your membership is essential for us to continue the society, make improvements, provide phenomenal meetings, host field trips, and award student scholarships. To support the goals of SCGS we are asking for your membership renewal for 2020.

A membership to South Coast Geological Society has many benefits including discounted meeting and field trip costs, exclusive field trips and events, and more!

We welcome you to join or renew your membership with SCGS, one of the largest, most active Geological Societies in Southern California.

Membership Costs:

Professionals: \$35 / year

Students: Free

Become A Member

Volunteer with SCGS

South Coast Geological Society is seeking motivated individuals to serve as committee members for our scholarships, poster sessions, field trips, and community outreach.

Contact us if you are interested!

CONTACT US

ADDITIONAL LINKS

Association of Environmental & Engineering Geologists - So. California

Association for Women Geoscientists - LA/OC Chapter

American Society of Civil Engineers

Coast Geological Society

Groundwater Resources Association of California - So. California

Inland Geological Society

Los Angeles Basin Geological Society

San Diego Association of Geologists

San Joaquin Geological Society

Southern California Paleontological Society

SUPPORT US

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South Coast Geological Society, Inc.

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Your tax deduction is the price at which the car or vehicle sells. You get rid of an unwanted car and the satisfaction of helping others, and you pay less income tax.

We accept all Cars, Trucks, Vans, Boats, Motor-homes, Junk Cars, Disabled cars, and Wrecked cars. No Title? Failed Smog Check? No Problem!

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