



Message from the Chair

Greetings from lush and beautiful Portland, OR, in the heart of the North America Cordillera! It has been an honor to serve as Chair of GSA's Cordilleran Section this year, representing members from lands in Canada, United States, Mexico, and several indigenous nations.

The Section continues its **122-year** tradition of supporting research and networking opportunities, particularly for students, focused on diverse scientific topics that draw us together along the ~8,000 km-long western/northern margins of North America.

Plans are in full swing for our **next Section meeting in Reno, NV (May 17-19, 2023)** where our gracious UNR hosts will get a re-do of the 2021 Section meeting they planned, but was moved to an online format due to the pandemic. The 2023 Section meeting will include dozens of excellent technical sessions and field trips to NV, CA, and OR. **Abstract deadline is February 14, 2023.**

In May **2024**, we will hold a Joint Cordilleran/Rocky Mountain Section Joint meeting in **Spokane, WA**, and the **2025** Cordilleran Section meeting will be held in **Sacramento, CA**. Mark your calendars!

After a ~13-year hiatus, we hope to bring a future Cordilleran Section meeting back to **Mexico or Canada, possibly as early as 2026**. Reach out if you are interested in hosting a future Section meeting in Mexico or Canada (sekbennett@usgs.gov). Stay tuned for future meeting announcements.

I hope your 2023 research year is off to a healthy and productive start. See you in Reno in May!

Scott E.K. Bennett — Cordilleran Section Chair

PLATES 2023 (ISSUE No. 15) GSA CORDILLERAN SECTION

NEWSLETTER

2022-2023 Cordilleran Board Officers

Chair: Scott Bennett (sekbennett@usgs.gov)

Vice-Chair: Jay Chapman: (jbchapmanv@utep.edu)

Secretary-Treasurer: Calvin Barnes (cal.barnes@ttu.edu)

Past-Chair: Rachel Teasdale: (rteasdale@csuchico.edu)

Thank You for Your Support

Thank you to GSA Cordilleran Section members for their continued support of the Section. The Cordilleran Section is the largest geographic section of GSA and membership remains strong (n = 5356). **Your membership dues support student travel to meetings**, educational activities and provides cash awards for student presentations. Remember to check the Cordilleran Section box when you renew your GSA membership. Please consider directly contributing to the **Cordilleran Section Fund**: <https://gsa-foundation.org/funds-and-awards/>.

Section Officers & Nominations

We are soliciting nominations for the next Cordilleran Section board Vice-Chair officer position. **Please consider nominating yourself or another member to join the Section leadership.**

Officers participate in the business of the Cordilleran Section, including support of the Cordilleran Section meeting organizers, selecting locations/hosts for upcoming meetings and additional business of the Section as needed.

Officers serve for three years, once as Vice-Chair, then as Chair and Past-Chair. Officers generally meet twice each year, once at the Section meeting and again at the GSA Annual meeting.

To nominate yourself or another member, please send a short statement describing relevant qualifications, interest and contact information of the nominee to Jay Chapman, Nominating Committee Chair (jbchapmanv@utep.edu) by **February 10, 2023**. We look forward to your participation!

Cordilleran Section News:

Membership in the Cordilleran Section remains strong, with 5356 members as of December 2022. Cordilleran Section members are active within the section and also a large constituency at national meetings, including 818 at the 2022 GSA Connects Annual Meeting in Denver, CO.

Please find more information about the Cordilleran Section (meetings, grants, awards) on our Website: <https://www.geosociety.org/gsa/about/sections/gsa/Sections/cd/home.aspx>

Diversity: The Cordilleran Section Board and our meeting organizers share GSA's dedication to diversity, which includes that we are "committed to making Earth literacy available to all people and to having geoscience professionals, including its membership, reflect the diversity of society. Diversity in the geosciences can be achieved through leadership and membership that models, advocates for, and practices equity and inclusion." Read GSAs complete [Position Statement on Diversity in the Geosciences](#).



GSA On To the Future (OTF): The Cordilleran Section is proud to have contributed to the GSA OTF fund, which supports students from diverse communities to attend the GSA Annual Meeting by providing partial travel funds, meeting registration fees, one-year membership fees, and mentorship. Please consider contributing to the GSA On To the Future program:

<https://www.geosociety.org/GSA/About/Diversity/OTF/GSA/OTF/Home.aspx>

2023 Section Meeting 17-19 May, Reno, NV

The [2023 Cordilleran Section meeting](#) will be held at the historic **Whitney Peak Hotel in Reno, NV, USA**, hosted by University of Nevada, Reno and Cal Poly Humboldt. Reno is a modern boomtown situated within the Basin and Range at the foot of the Sierra Nevada Batholith.

The meeting offers **31 technical sessions** about regional tectonics, magmatism, volcanism, paleontology, glaciers, ecosystems, hydrology, paleoclimate, geomorphology, climate change, migratory birds, metamorphism, applied geophysics, resource management, geoscience education, remote sensing, GIS, and geologic mapping across the Cordillera, including tributes to the careers of **Art Sylvester** and **J. Doug Yule**.

The Reno meeting offers **11 field trips** to the Walker Lane region of NV, the Sierra Nevada of CA, and volcanic regions of OR, to explore mining districts, ophiolites, nuclear test sites, Mesozoic fossils, Mesozoic plutons, and active fault systems.

While in Reno, considering attending one of **3 short courses** being offered about flood analysis, wilderness first aid, and electron backscatter diffraction analysis.

Abstract deadline is February 14, 2023.

Early Registration deadline is April 10, 2023.

Special thanks go to meeting organizers, who will be planning this meeting a 2nd time, after their 2021 Cord Meeting was transitioned to a fully VIRTUAL meeting due to the pandemic:

Meeting General Chair: Stacia Gordon, UNR
Technical Program Co-Chairs: Andrew Zuza, UNR, Michael Darin, UNR
Field Trip Co-Chairs: Pat Cashman, UNR; Sue Cashman, Harvey Kelsey, Cal Poly Humboldt
Exhibits Chair: Joel DesOrmeau, UNR
Student Volunteer Chair: Wenrong Cao, UNR
Sponsorships Chair: John Louie, UNR
Short Course Chair: Rich Koehler, UNR

More information about the meeting is at: https://www.geosociety.org/GSA/Events/Section_Meetings/GSA/Sections/cd/2023mtg/home.aspx

Student Opportunities

for Grants, Funding, & Experiences

[Cordilleran Section Meeting Travel Grants](#) help defray travel costs for students to attend the Cordilleran Section meeting. Applicants must be a Cordilleran Section member, and must be both first author and presenting author on a paper or poster. **International students are encouraged to apply.** 13 students received an average of ~\$940 to support their attendance to the 2022 Cordilleran Section meeting in Las Vegas, NV. **Application Deadline for Section Meeting in Reno, NV is April 10, 2023.**

[GSA Annual Meeting Travel Grants from the Cordilleran Section](#) help defray travel costs for students to attend the GSA Annual Meeting (GSA Connects). Applicants must be a Cordilleran Section member, and must be both first author and presenting author on a paper or poster. 58 students received an average of ~\$350 to support their attendance to the 2022 GSA Annual meeting in Denver, CO. **Application Deadline for the 2023 Annual Meeting in Pittsburg, PA will be announced during open-registration period prior to the Annual meeting <https://community.geosociety.org/gsa2023/home>**

Attending the Cordilleran Section meeting in Reno, NV? Consider participating in the [GSA career mentoring and workshops](#) during the meeting.

The [On To the Future \(OTF\) program](#) supports students from diverse communities to attend the GSA Annual Meeting (GSA Connects) by offering partial travel funding if attending in-person, full or online meeting registration, one-year membership, mentorship, and special sessions with leadership during the meeting. **Application Deadline is June 3, 2023.**

[GSA Graduate Student Research Grants](#) support graduate student research in the geosciences. In 2022, 341 graduate students received a grant (average of \$2,301). **Application Deadline: February 2, 2023**

[Short-Term Field Opportunities, Field Camp Awards, and Scholarships](#) through GSA include the National Park Service (NPS) Scientists in Parks program (**Deadline: January 22, 2023**), the GeoCorps America program (**Deadline: February 1, 2023**), and various ways to obtain financial support for field camps and other scholarships.

Check out [GSA's Grants & Scholarships](#) website for several other research grants, awards, and scholarship opportunities.



Graduate Student Research Grant recipient **Ogochukwu Ozotta**, conducting lab work for geo-mechanical analysis of Bakken Formation behavior to CO₂ sequestration and potential for fault reactivation.

[GSA's International Travel Grants](#) defray travel costs to attend a GSA meeting for anyone who resides outside of North America. **Application Deadline is usually in ~June each year.**

[GSA's Congressional Visits Day](#) is an opportunity for students to visit Congress in Washington DC and help increase visibility of and support for the geosciences. **Application Deadline usually ~July each year.**

Student Highlights

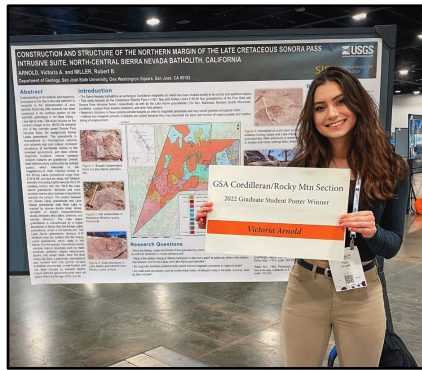
Luz Lim (UNR MS student) investigates the crystallographic modes of lead loss and retention in deformed zircons, with focus on samples from an ultrahigh-pressure and multiphase metamorphic terrane in Norway. Luz represented the Cordilleran Section during her participation at GSA's Congressional Visits Day in Sept 2022.



Cordilleran Section

Student Member presentations at GSA Meetings

The following students made presentations at the 2022 Cordilleran Section or GSA Connects Meetings this year, with travel funds and awards funded by generous donations to the Cordilleran Section. Presentations of their research were supported by you!



Victoria Arnold (San Jose State Univ. MS student) investigates the construction and structure of Late Cretaceous Sonora Pass Intrusive Suite, in the Sierra Nevada Batholith, CA. Victoria earned the Best Graduate Poster award at the March 2022 Cordilleran- Rocky Mtn Joint Section meeting in Las Vegas. Victoria

received a cash award and was funded to attend the October 2022 GSA Annual meeting in Denver to spotlight her award-winning poster.

W. Mathew McCormick

(Fort Lewis College) received a B.S. in Geology and GIS and conducted research on creating a cost-effective bathymetric map of Haviland Lake, CO. Mathew earned the Best Undergraduate Poster award at the March 2022 Cordilleran-



Rocky Mtn Joint Section meeting in Las Vegas. Mathew received a cash award and was funded to attend the October 2022 GSA Annual meeting in Denver to spotlight his award-winning poster.

Hollianne McClure (San Jose State Univ. MS student) studies the construction, emplacement, and structure of intrusive suites in the northern Sierra Nevada batholith, where she documents enclave swarms near Mosquito Lake, CA.



Hollianne presented a poster at the 2022 Las Vegas Section meeting on her graduate research.

Lauren Reeher (Univ. of Arizona) integrates field and modeling methods to determine Laramide paleo-stress environments across the western US. She will join the geologic mapping team at Utah Geol. Survey next year.



Iza Ogilvie (Univ. Nevada, Reno) sitting next to an outcrop of flow-banded rhyolite that was discovered during her geologic mapping-based thesis project at Rhyolite Ridge, Silver Peak Range, Nevada



Matthew Wagoner (Chico State) collecting ultramafic soil samples for his undergraduate research. Rock and soil samples will be analyzed by ICP-MS to understand the mobility of chromium.

Student Highlights (cont'd)



Carolina Ortiz-Guerrero (Univ. Florida) Geological mapping of the ductile deformation in the Wildhorse Dome of the Pioneer Mountains Metamorphic Core Complex in Idaho, U.S.



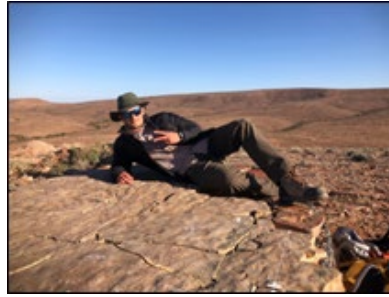
Sydney Maguire (UNC Chapel Hill) sampling detrital sanidine along the Garlock fault near Ridgecrest, CA in June 2022.



Sara Olson (Cal State, Long Beach) holding a 65 million-year-old turtle carapace fossil on a paleontological dig in Utah.

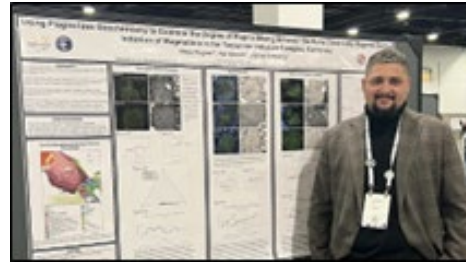


Aurora Rosenberger (Fresno State) getting a strike and dip from Franciscan Complex meta-sandstones, in Henry W Coe State Park, CA. These were used for a preliminary geologic map, which was presented at the GSA 2022 meeting.



Phillip C. Boan (UC Riverside) uses photogrammetry, lidar, and spatial point pattern analyses to examine the spatial ecology of *in-situ* fossil communities preserved on meter scale bedding surfaces excavated at Nilpena

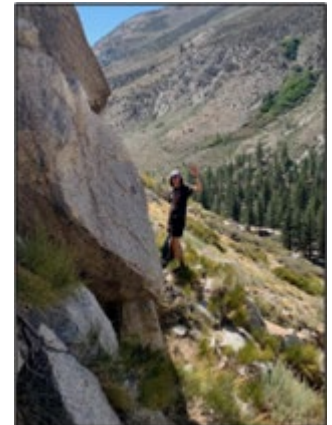
Ediacara National Park, South Australia.



Vince Mugica (CSU Fullerton). Attending GSA Connects 2022 was an inflection point for Vince's academic career in geology. Vince made connections with

other geology students, presented his research and attended exciting talks on the latest research in igneous petrology, meteoritics and planetary geology and had so much fun in Denver, CO!

Nolan Clark (Pomona College) studies the ~100 Ma Sierra Nevada Batholith magmatic flare-up; in this photo Nolan is surveying a high silica granite in the eastern Sierran foothills. Nolan is wrapping up his senior year at Pomona College and looking forward to having more time to look at rocks in the Sierra after graduation.



Mallory Ford (Univ. Idaho) presents her work on Glacier Peak Community Outreach, focused on Volcanic Hazards near Darrington, Washington.

Student Highlights (cont'd)



Judith Gauriau (Univ Southern Calif), sampling sand for luminescence dating at a potential slip-rate site on the San Jacinto fault. Mask is up to prevent valley fever!

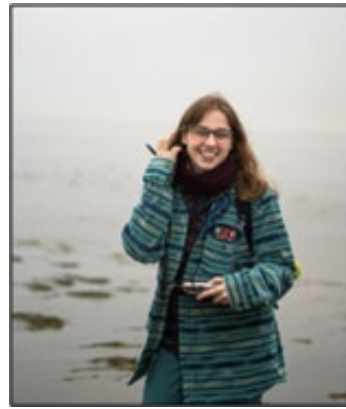


Augustine Lodise (Pomona College) During the Late Miocene, Nevada was wetter and greener. Augustine is combining the tools of paleontology and geology to analyze the paleoecology of a new fossil locality.

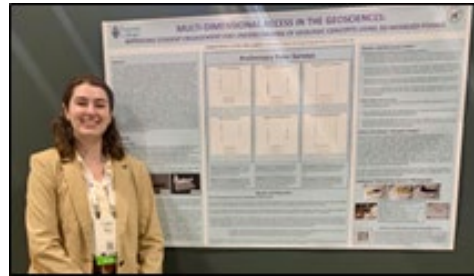


Benjamin Deans (Washington Univ. in St. Louis) taking field descriptions of slack-water flood deposits. His research is the Hanford Reach of the Columbia River.

Casey Cleaveland (Cal Poly Pomona), at Clark Park Collections in Orange County, using calipers to measure oreodont teeth. These measurements were presented at the 2022 GSA Connects Meeting in Denver.



PG. 6
Lexi Thompson (Oregon State Univ.) studies ocean ecology and biogeochemistry and specifically works with foraminifera.



Matti Horne (Pomona College) conducts research that discusses the benefits of using 3D modeled fossils in geoscience education. Matti plans to continue on and obtain her

Master's degree in Earth Science/STEM education.



Jack Konguthaithip (Univ. Arizona), between the rhyolitic and andesitic rock boulders next to the Eagle Pass detachment fault, Ariz. during winter of 2020.

Upcoming Section Meetings & Organizers

2024: May 15-17, Spokane, WA: Joint with Rocky Mountain Section (Chad Pritchard, Eastern Washington University and Peter Larson, Washington State University)

2025: Sacramento, CA (David Shimabukuro, CSU Sacramento, Todd Greene, CSU, Chico)

Upcoming GSA Connects Annual Meetings

2023: Oct 15-18, Pittsburgh, PA USA

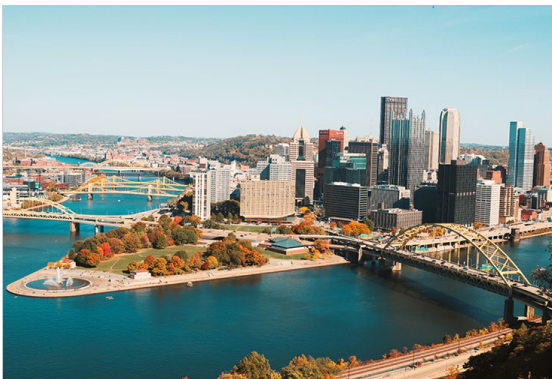
Important Dates:

Feb 1, 2023: Short Course and Technical session Proposals

Dates to watch for:

- Abstract submissions (Summer 2023)
- Student applications to [Onto the Future](#)
- Early Registration

Find information for field trips, short courses and technical sessions at the [2023 meeting website](#).



2024: Sept 22-25, Anaheim, CA USA

2025: Oct 19-22, San Antonio, TX USA

2026: Oct 11-14, Denver, CO USA

2027: Oct 17-20, Montréal, Québec, Canada



2022 Cord/Rocky Mtn Joint Section 118th Meeting Report

The March 2022 Cordilleran/Rocky Mountain Joint Section meeting in **Las Vegas** was a huge success! This was the first in-person Cordilleran Section meeting since we gathered in Portland, OR in 2019.

Thanks to our hosts from University of Nevada, Las Vegas (UNLV) who organized a quality scientific program and excellent meeting spaces. Meeting participation was strong with numerous field trips and student opportunities (Schlemon and Mann programs).

The Las Vegas meeting was supported by generous sponsorships from the Department of Geoscience and College of Sciences at the University of Nevada, Las Vegas, the Nevada Bureau of Mines and Geology, the University of Nevada, Reno, Southern Nevada Water Authority, Bruker, Penn's Online Master of Science in Applied Geosciences, and Grindstone Laboratory.

On behalf of the Cordilleran Section board officers, members and meeting attendees, we extend an enthusiastic thanks to the dedicated organizing committee:

Meeting General Co-Chairs: Michael Wells (UNLV), Alexis Ault (USU)

Technical Program Co-Chairs: Tomas Capaldi (UNLV), Dennis Newell (USU)

Field Trip Co-Chairs: Carol Dehler (USU), Ganqing Jiang (UNLV)

Short Course Chair: Margo Odum (UNLV)

Sponsorships Chair: Simon Jowitt (UNLV)

Exhibits Co-Chairs: Michael Nicholl (UNLV), Michael Wells (UNLV)

Student Volunteer Chair: Pamela Burnley (UNLV)

In addition to excellent science presentations, the 2022 meeting resulted in approximately \$49,097 in net proceeds, which will financially benefit all programs of the Cordilleran and Rocky Mountain Sections. Our financial health allowed the Section to provide \$12,250 of support to 16 students to attend and present at the 2022 Las Vegas Section meeting and \$20,060 of support to 59 students to attend and present at the 2022 GSA Connects Annual Meeting in Denver. Cordilleran Section funds were also used to support a student to attend GSA's Congressional Visit Day and for awards to outstanding student posters, as noted in the Student Highlights section and below:

**2022 Cordilleran/Rocky Mtn Joint Section Meeting
Student Research Awardees:**

Graduate Student Posters

Victoria Arnold, San Jose State University (Best Graduate Poster Award) *Construction And Structure Of The Northern Margin Of The Late Cretaceous Sonora Pass Intrusive Suite, North-Central Sierra Nevada Batholith, California*

Genevieve Kidman, UNLV (1st Runner-up Graduate Poster Award), *Stress Distributions In Polycrystalline Quartz Using Raman Spectroscopy*

Luis Velderrain Rojas, Universidad de Sonora (2nd Runner-up Graduate Poster Award), *Isla San Pedro Nolasco: A Late Miocene Intrusive Record At The Eastern Margin Of The Gulf Of California: Insights From Geological, Geochemical, Geochronological And Paleomagnetic Studies*

Undergraduate Student Posters

William McCormick, Fort Lewis College (Best Undergraduate Poster Award), *Integrating Remote Sensing And In-Situ Measurements To Produce A Cost-Effective Bathymetric Map Of Haviland Lake In Durango, Colorado*

Jaycee Chango, Oregon State Univ. (1st Runner-up Undergraduate Poster Award) *Textural And Geochemical Analysis Of Plagioclase From Todd Lake Volcano And Triangle Hill Dome Complex Of Central Oregon*

Jack Tingwall, Fort Lewis College (2nd Runner-up Undergraduate Poster Award) *Channel Complexity On The Dolores River: Using Planet Labs Imagery To Measure Side Channel Length For Different Discharges During 2019 Release From McPhee Reservoir*

First authors of the outstanding graduate (Arnold) and undergraduate (McCormick) posters also received free registration from GSA to attend the 2022 Annual Meeting where their award-winning Cord/RM Section posters were on special display.

A warm thank you goes to everyone who helped judge student posters at the 2022 Cord/RM Joint meeting. We often hear from students and former students what it meant to them to receive awards that honor them for their hard work on their research and presentations.



Engaging with the Cordilleran Section:

We encourage your participation in all ways in the Cordilleran Section! Please consider a financial donation to the Section or a gift of your time through service on the Management Board (see the solicitation for our next Vice-Chair noted on pg. 1). Members are also an important part of supporting students at Section meetings- as judges for student posters (watch for emails or contact Jay Chapman (jbchapmanv@utep.edu) and as mentors or panelists at national meetings.

Please also consider your institution as a host for an upcoming Section Meeting (contact Scott Bennett: sekbennett@usgs.gov)

Newsletter Contributions

If you have news you would like to share with the Cordilleran Section or ideas for content, please consider contributing to the Section Newsletter. Contact Scott Bennett (sekbennett@usgs.gov) to share your suggestions.

2022 Cordilleran Section Donations

Donations to the Cordilleran Section support student programs, including travel grants to the Cordilleran Section and Annual Meetings, educational programs, and awards to students for their presentations. You may contribute to the Cordilleran Section Fund directly at:

<https://gsa-foundation.org/funds-and-awards/>.

We thank the following donors whose generosity in 2022 (and in most cases for many years) helps support the Cordilleran Section and future geoscientists who study and do research in the Cordilleran region:

Keil **Albert**, Katie E. **Ardill**, Bruce A. **Blackerby**, Tomas N. **Capaldi**, Douglas H. **Clark**, Diane **Clemens-Knott**, Brian L. **Cousens**, Nigel **Davies**, Joan E. **Fryxell**, James D. **Greybeck**, Daina V. **Hardisty**, James B. **Harrison**, Carol **Hasenberg**, Sarah R. **Hoover**, Angela S. **Jayko**, Pete **Matsudaira**, Chris G. **Mattinson**, Rodney V. **Metcalf**, Calvin F. **Miller**, Robert B. **Miller**, Ralph **Moberly**, Jennifer A. **Ross**, Walter G. **Spaulding**, Warren M. **Thomas**, Charles H. **Thorman**, Brian P. **Wernicke**

In Memory

We are saddened to have lost the following GSA Cordilleran Section members who passed away in 2022. We fondly honor the memories of:

Robert O. **Beringer**, Carols S. **Breed-McCauley**, Nikolas I. **Christensen**, Kenneth L. **Cole**, Gilmor S. **Hamil**, Allan **James**, E.A. **Keller**, Les J. **Fountain**, Gloria A. **Linder**, Richard **Lung**, James M. **Mattinson**, Thomas **Meixner**, Gerald A. **Nicoll**, William Christopher **Robinson**, Tracy L. **Vallier**, and J. Douglas **Yule**.



Upcoming GSA Penrose Conferences

The Role of Outburst Floods in Earth and Planetary Evolution

Grand Coulee, WA, June 5-9, 2023.

Application deadline January 27, 2023



Conveners:

Tim Goudge, University of Texas at Austin

Isaac Larsen, University of Massachusetts

Jim O'Connor, U.S. Geological Survey

Greta Wells, University of Iceland

The century following the start of the “Spokane Flood” debate has seen tremendous growth in the understanding of the significant role outburst floods have played in shaping the surfaces of Earth and Mars. Study of the geomorphology and hydrology of outburst floods has, in turn, generated hypotheses regarding the role such floods play in driving climate change and a greater recognition of the geohazards associated with outburst flooding. The objective of this Penrose Conference is to bring together a diverse community of scholars to discuss the current state of knowledge and chart the future of outburst flood science. The timing of the proposed conference in 2023 is also historically significant, as it marks the centennial anniversary of J Harlen Bretz’s first publication on the Channeled Scabland.

The full announcement and additional details (including how to apply) are at:

https://www.geosociety.org/GSA/Events/Penrose_Conferences/GSA/penrose/current.aspx

Developing a New Paradigm for the Mid-Cretaceous to Eocene North American Cordillera: An Obliquely Convergent Plate Margin

McCall, ID, August 18-25, 2023

Application deadline March 1, 2023



Conveners:

Basil Tikoff, University of Wisconsin–Madison

Stacia Gordon, University of Nevada–Reno

William A. Matthews, University of Calgary

Elena Centeno-Garcia, Universidad Nacional Autónoma de México

The issue of major right-lateral displacement throughout the N. American Cordillera has been debated for 50 years. Paleomagnetic data from the western part of the Canadian Cordillera and some parts of the Pacific Northwest, during the interval ~110–40 Ma, have consistently suggested thousands of km of northward displacement, while geological fault studies indicate only hundreds. This discrepancy is unavoidable because faults tend to be on terrane margins, resulting in few unequivocal offset markers. Further debate includes the subduction polarity of the terranes with respect to the western margin of N. America and the past size of the ocean basins that separated them. The objective of this Penrose Conference is to bring together a diverse community of open-minded scholars to discuss what is agreed upon and where future work is needed, but also to work collaboratively to evaluate how all the data sets can be reconciled into a coherent model for an obliquely convergent plate boundary.

The full announcement and additional details are at:

https://www.geosociety.org/GSA/Events/Penrose_Conferences/GSA/penrose/current-2.aspx