



Colorado Scientific Society

The objective of the Society is to promote the knowledge and understanding of Earth science, and its application to human needs

CSS Newsletter, December 2021

CSS Annual Meeting and President's Address

Standing on the Shoulders of Giants: Unraveling Salt Tectonics in the Eagle Basin

Bruce Trudgill, Colorado School of Mines

This meeting will be both in-person and remote.

We are meeting at Calvary Church in Golden, 1320 Arapahoe St., for a potluck dinner, short annual business meeting, and our CSS President's Address.

You can also join us via Zoom for our business meeting and the President's Address (see below).

All are welcome – no admission charge

- **6:30 pm: Meet for *POTLUCK DINNER* at Calvary Church, Golden**
- **7:30 pm: CSS Annual Business meeting**
- **8:00 pm: Talk by Bruce Trudgill, CSS President, about *Unraveling Salt Tectonics in the Eagle Basin***

Link to Join CSS December Zoom Meeting and President's Address

– starts at 7:30, Join after 7:20

Click to Join CSS Zoom Meeting
from PC, Mac, Linux, iOS or Android

Meeting login number is **96588778710**; Password for meeting, if needed: **028144**

Other options to Join Zoom meeting:

Topic: CSS Annual Business Meeting and President's Address

Time: Dec 16, 2021 07:30 PM Mountain Time (US and Canada)

Join from PC, Mac, Linux, iOS or

Android: <https://mines.zoom.us/j/96588778710?pwd=Y0NkMi9zWDVheU80RIRNaDBBSHVQZz09>

Password: **028144**

CSS President's Address – 8:00 pm

Standing on the Shoulders of Giants: Unraveling Salt Tectonics in the Eagle Basin

R. Wes Pearigen II, **Bruce Trudgill**, Savannah Rice, Haley Thorson, Thomas Hearon IV* and Mary Carr
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Example of an allochthonous salt sheet in on the Puma Paw Ranch, Rifle, CO



Abstract: Field mapping, measured stratigraphic sections, and restored cross-sections of the Eagle Valley Evaporite and overlying Late Pennsylvanian to Triassic aged strata indicate a long-lived phase of salt tectonics in the Eagle Basin, central Colorado. Diapiric salt structures represent formerly connected, polygonal salt walls flanked by deep, elongate minibasins. Previous work interpreted these structures to be the result of the Laramide Orogeny and younger tectonism; however, the proposed phase of salt-influenced deformation in the Eagle Basin suggests a new paradigm for the tectonic evolution of this region.

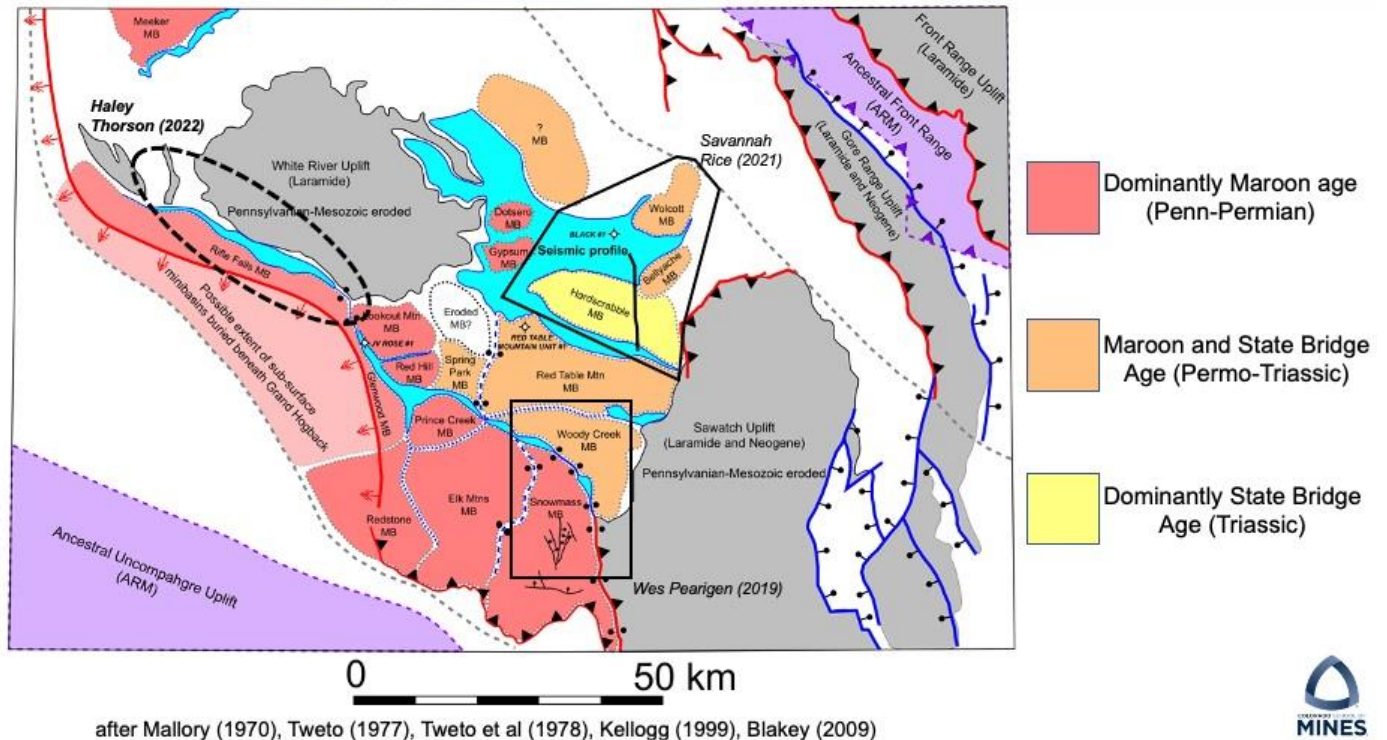
The late Paleozoic Eagle Basin formed as a flexural foreland basin, associated with the neighboring uplifts of the Ancestral Rocky Mountains. Cyclic flooding and desiccation of the Eagle Basin during Atokan-Desmoinesian time led to the deposition of a thick layered evaporite sequence containing cyclic deposits of halite, other salts, carbonates, and clastics of the Eagle Valley Evaporites.

Structural and stratigraphic analysis offers compelling evidence for long-term deformation compatible with salt tectonics prior to the Laramide Orogeny. The following features and interpretation support a prolonged salt tectonic history: (i) over-thickened, unconformity-bound strata contain abundant

growth structures represent Permo-Triassic minibasins; (ii) linear structures cored by evaporite, in some places exposed at the surface, represent former diapiric salt walls that grew during Pennsylvanian through Triassic time between minibasins; and (iii) Laramide-age shortening resulted in basinal contraction and reactivation of secondary welds as thrust structures.

Building on the pioneering work of Ogden Tweto (CSS President 1952), Bruce Bryant CSS President 1985), this work has significant implications for the tectonic evolution of Central Colorado and salt-related features in the Eagle Basin are a new analog for salt systems that have undergone basement-involved shortening.

Eagle Basin Structural Setting



- **For our Potluck Dinner, Calvary Church, 1320 Arapahoe St., Golden,** Enter the church via the door on 14th Street. We will meet in **Community Rooms 1 and 2.**
- **Masks are Required for All Indoor Gatherings at Calvary Church,** in compliance with Jefferson County Public Health Order 21-006.
- CSS will provide soft drinks. Beer and wine are only permitted for those over 21, and a CSS member must monitor our use. Hard liquor is not permitted. Golden City Brewery is donating a pony keg for our potluck!

Parking at the Church

- The parking structure is southeast of the Church. Access the top level of the AirGarage from 14th Street, a block and a half southwest of Washington Ave.
- Park in the top level of the structure. (see more instructions, next page...)

- Driver texts license plate to “Guest of Calvary” phone number on the sign on the structure walls (719-212-2702)
- The parking system responds with the instruction “Please get a validation code from inside and text it back”
- Driver texts back this code: **csspark**
- System will respond with a message “Welcome to Calvary Church! Your parking is valid for ” [our event].

There is also on-street parking available fairly close by, west of Washington Ave in downtown Golden.

CSS Potluck Dinner – 6:30 pm

- Bring either a main course entree, a side dish, desert, etc. to share with other CSS members. CSS Council members will provide a spiral cut ham and dinner rolls
- We will not be able to cook at the church. We should be able to warm up dishes.
- CSS will provide plates, bowls, cups, dishes, napkins and eating utensils.
- Be prepared for a good dinner and an enjoyable evening!

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CSS Election of 2022 Officers:

By our by-laws, we are required to present our slate of officers in a newsletter prior to the Annual Meeting. The slate below was first sent to members last week in our November-December Newsletter via email. Here it is again, the slate of officers presented by our Nominating Committee for 2022:

President Elect:

Cal Ruleman, Research Geologist, [Geosciences and Environmental Change Science Center](#)

Secretary:

Lisa Rae Fisher, Executive Vice President, Escalante Resources

Note: Patrick Sullivan will be working with Lisa Fisher, in order to smoothly transition to Secretary in 2023. There is no formal designation for a “Secretary Elect”, therefore there is not a place on the slate per se.

Treasurer:

James C. Paces, **Scientist Emeritus, USGS, Geology and Environmental Change Science Center**

Note: Don Sweetkind will aid in the transition.

Councilors for 2022-24:

Lesli J. Wood, Colorado School of Mines, Weimer Distinguished Chair and Professor, Geology and Geological Engineering

Julie A. Herrick, Geologist/Geologic Map Editor, [USGS Office of Communications and Publishing](#)

A vote on the proposed officers will be conducted at the Annual Meeting on Thursday, Dec.16. **Additional nominations may be submitted in person at the December Business Meeting, or may be mailed (or emailed) to the Secretary beforehand.** If you do not expect to attend the Annual Meeting, you may also email us your vote on the above-listed positions, in time for it to be received by the Society by Dec. 16. Please email your nomination or ballot (a copy of the above slate of officers, or just your yea or nay for the entire slate) to our Secretary, Lisa Fisher. (Due to a change in email servers for Mines alumni taking place right now, for the time being, please email any communications to the Secretary to BOTH these addresses, lisa.fisher@alumni.mines.edu, AND lisa.fisher@escalantemines.com. Lisa thanks you!)

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Upcoming CSS meetings: Our meetings are regularly held on the 3rd Thursday of each month.

You can read more about all CSS upcoming programs on our website, <https://coloscisoc.org/> . We are hoping to resume in-person meetings in 2022! Our first meeting is planned for Thursday, January 20, 2022. We expect to continue to broadcast via Zoom as well as in-person meetings. Members will receive an email newsletter about it, or check our website.

Recent CSS presentations are recorded on Zoom. Follow the links on the website for each presentation to see abstracts, biographies of the speakers and video recordings of our meetings.

We invite you to pay your dues for 2022 to CSS! You may pay dues online, or print out a pdf of the membership form and mail it to us with a check. Continuing your membership in CSS will enable us to continue all our ongoing programs, including our field trips, virtual meetings, Student Research Grants, and more.

See <https://coloscisoc.org/join-donate/> for the online link to our membership & dues form. Regular CSS dues are \$25 (\$20 if paid prior to Jan. 31); Corresponding Membership (outside of the Front Range area) \$10; Student Membership (any level) \$5; Life Membership, \$395. It's easiest to pay online through our website; or, send your membership payment to Colorado Scientific Society P.O. Box 150495 Lakewood, CO 80215-0495.
Thank you!

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The present 2021 officers and councilors of the Colorado Scientific Society are:

President, Bruce Trudgill, Colorado School of Mines
President-elect, Ned Sterne, consulting geologist
Past-president, Jim Paces, U.S. Geological Survey
Secretary, Lisa Fisher, Escalante Mines, Inc.
Treasurer, Don Sweetkind, U.S. Geological Survey
Councilors: 2019-2021: Linda Barton Cronoble
2019-2021: Yvette Kuiper, Colorado School of Mines
2020-2022: Joe Sertich, Denver Museum of Nature & Science
2020-2022: Warren Day, U.S. Geological Survey
2021-2023: Lew Kleinhans, independent geologist
2021-2023: Karen Berry, Director, Colorado Geological Survey