



Founded in 1882, the objective of the Society is to promote the knowledge and understanding of Earth science, and its application to human needs. Samuel Franklin Emmons, 1841-1911, was “Geologist in Charge” of the Colorado Division of the U.S. Geological Survey when it was established in 1879 and was the first president of the Society.

## **April 2024 Colorado Scientific Society Newsletter**

# **CSS April Meeting & Emmons Lecture** **Thursday, April 18, 2024 at 7:00 p.m.** **Calvary Church, Golden, and via Zoom**

## **Tales from the Field: Using Modern Earth to Assess Life on Ancient Mars**

**Brian Hynek**

**Department of Geological Sciences and Laboratory for Atmospheric and Space  
Physics at the University of Colorado**

***In-person Meeting at Calvary Church Golden with free pizza and beer!***

***All are welcome - no admission charge***

**6:30 pm – Social time at in-person meetings**

**6:45 pm – Join Zoom meetings**

**7:00 pm – Meeting and Program begin. Please arrive early.**

**Church doors are locked, and no one will be at the door to let you in after 7:00 pm.**



### *Respirators needed*

**Abstract:** After two decades of intense exploration, it is clear that ancient Mars met all the requirements to support microbial life for at least 100s of millions of years. This includes an active hydrologic cycle hosting rivers, lakes, and potentially an ocean. We have also found many “dried up Yellowstones” on Mars and these are crucial habitats since most scientists believe that Earth’s life originated in similar settings and at a similar time in the planet’s history. One way to learn about ancient environments on Mars and the microbes that might have lived there is to study analogous environments on modern Earth.

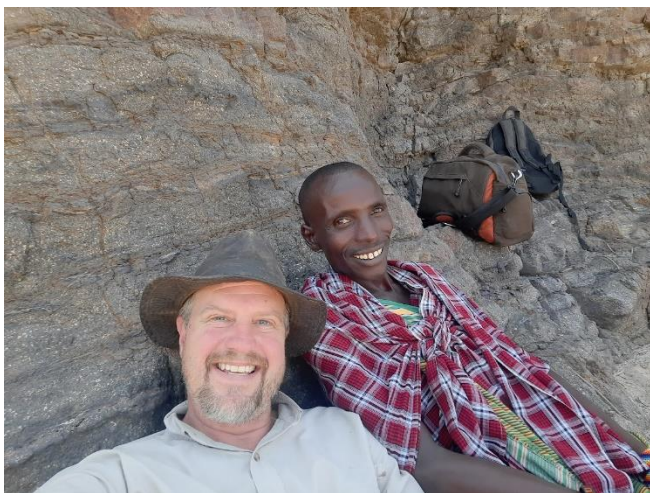
I will talk about some of my recent work from around the world that have detailed some of Earth’s most extreme environments including expeditions to the world’s tallest active volcano, hypersaline alkaline lakes in Tanzania, steaming lava fields in Iceland, boiling acid lakes in Costa Rica, and high-altitude salty lagoons in the high Argentinian desert. Remarkably, most all of these extreme settings host microbial ecosystems. I will discuss our current understanding of ancient Mars and how Earth life’s remarkable resiliency makes the likelihood of past microbial life on Mars quite likely.

### **A unique ecosystem in an inhospitable desert**

Deep within Argentina’s Puna de Atacama, a desert more than 12,000 feet above sea level, a previously undocumented ecosystem could provide scientists with a window to life 3.5 billion years ago. These lagoons surrounded by salt flats are home to microbial communities called stromatolites, which grow alongside minerals to create unusual rock formations over time.

CU Media put together a nice drone video montage that you can view from here:

<https://vimeo.com/891536538/268ef5428f?share=copy>



**Bio:** Dr. Brian M. Hynek is Professor in the Department of Geological Sciences and Laboratory for Atmospheric and Space Physics at the University of Colorado Boulder. He has spent the last 25 years studying Mars and its potential to host past life. Brian is a world expert on the study of modern terrestrial analogs to understand geological processes that operated on early Mars and the Moon, with recent field-based projects spanning five continents. He has worked extensively with NASA, conducting mission simulations in preparation for robotic and human exploration of the Moon and Mars. Brian has published over 80 peer-reviewed scientific papers, multiple book chapters, and hundreds of conference abstracts.

*Brian Hynek and associate*

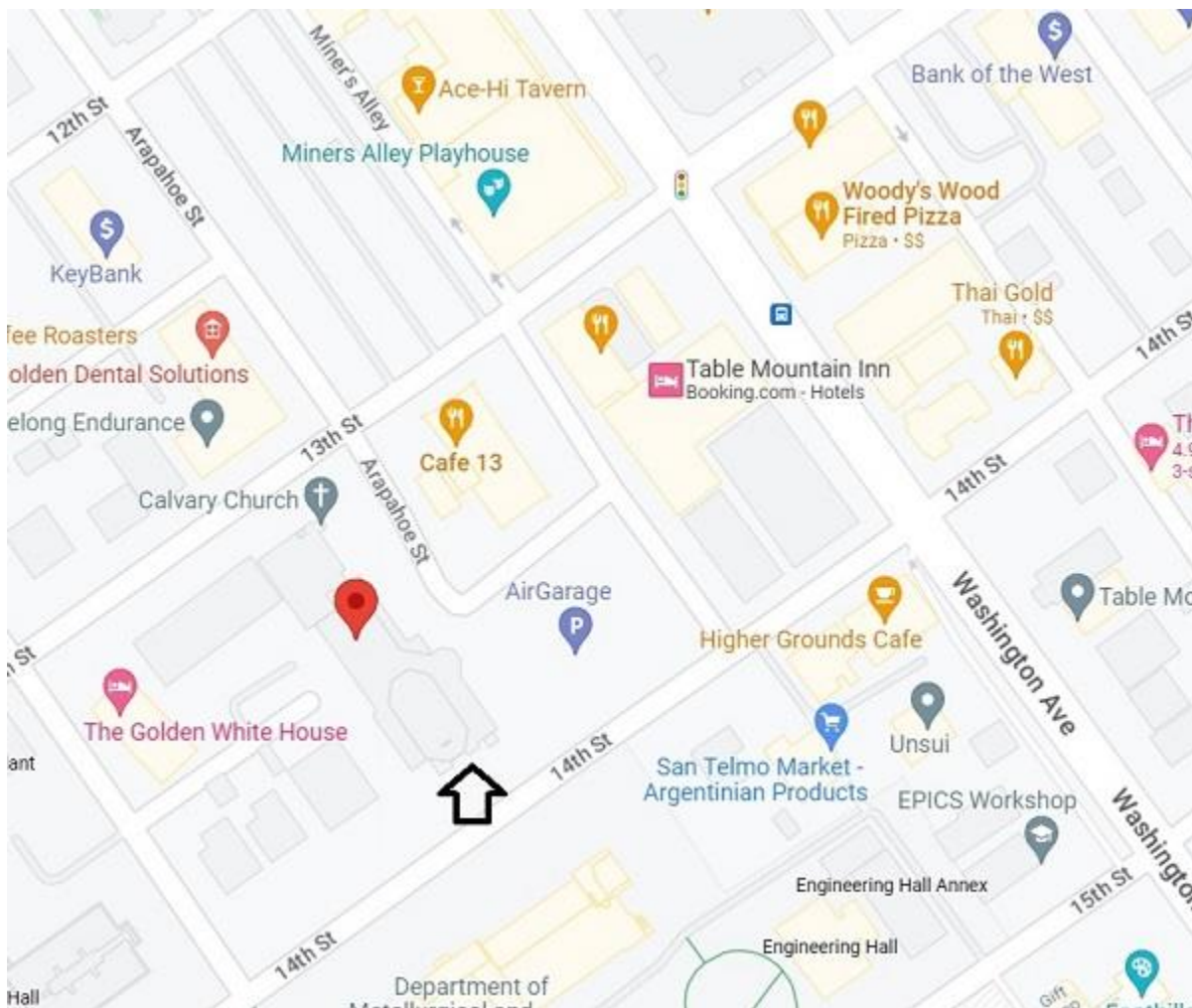
## Link to Join CSS April Meeting via Zoom

CSS is inviting you to our meeting on Thursday, April 18 at 7:00 pm.

[Click to Join CSS Zoom Meeting](#)  
from PC, Mac, Linux, iOS or Android

[For other Zoom options, click here.](#)

See details about attending in-person at the church below.



Calvary Church in Golden. Enter at arrow on map.

### [Calvary Church Golden](#)

Click on link to open a Google map.

**Enter from 14th St.**, go in by the main glass doors at [906] 14th St.

Do **not** enter via the old church above 13th St.



From the 14th Street entrance go down the hallway following Colo Sci Soc signs to Community Rooms 1 and 2, where we meet.

**The church doors must stay locked, and we will have a person to let you in at the doors off 14th st.**

They want to see the presentation too, so **please arrive before 7:00 pm.**

There will be a phone number that you can text to be let in if you arrive late.

### **Parking**

On street parking is available close by, along 14th St and west of Washington Ave in Golden.

The AirGarage parking structure, which can be entered from Arapahoe St., is \$3.00 for three hours.

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***Our “No Moss” field trip*** on March 30 to examine and understand the Fountain Formation in Red Rocks Park was a great success. We had beautiful weather for it, and the attendance, some 50-55 CSS members, was surely a record for any of these Saturday morning field trips. Our thanks go to Ned Sterne and Steve Cumella for organizing and leading the trips, plus contributions from Mark Kirschbaum and several others for insight into matters relating to the depositional environment, post-depositional alteration by reducing fluids, and ongoing “slipping and sliding” downhill of the Fountain Formation.

You can still access the several handouts that were prepared and shared about the Fountain Formation, via links on our CSS website.





## ***Where's this rock?***

Restoring this feature to our newsletter, we showed this image in our March Newsletter. These hoodoos are in the Dawson Arkose (Paleocene), on an open space trail in the West Woodmen Road area of northwest Colorado Springs. The erosion-resistant capping layer that created the hoodoos here is a highly iron oxide-cemented layer in the sandstone.



I think our best (and first) answer received came from Susan Slomski, who guessed Roxborough Park, then improved their guess to Monument, CO (which is pretty close, geographically). *Editor's note to himself: next time, be sure to record/write down exactly who responds and with what answer(s), and not depend on my memory to search through the email for last month's responses!*



And here is our "Where's This Rock" for this month! Write your guess back to [pmodreski@gmail.com](mailto:pmodreski@gmail.com). We'll report on the results next month.

# CSS 2024 Meetings

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## **CSS April Meeting and Emmons Lecture**

**Tales from the Field: Using Modern Earth to Assess Life on Ancient Mars**

**Thursday, April 18, 2024** at 7:00 p.m.

**Brian Hynek**, University of Colorado

In-person Meeting at Calvary Church Golden or Join us on Zoom

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## **CSS May Meeting**

**Rare Earth Elements, Some Thoughts for Colorado and The United States**

**Thursday, May 16, 2024** at 7:00 p.m.

**Peyton Jackson**, American Clean Resources Group

In-person Meeting at Calvary Church Golden or Join us on Zoom

*See more info about this presentation now posted on the CSS website!*

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## **CSS Past Presidents Dinner – September**

**Topic TBA**

**Thursday, September 19, 2024** at 7:00 p.m.

**David Goodwin** and **Peter Roopnarine**, California Academy of Sciences

Mount Vernon Canyon Club or Join us on Zoom

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## **CSS October Meeting**

**Topic TBA**

**Thursday, October 24, 2024** at 7:00 p.m. – note a week later than normal

**Harrison Gray**, U.S. Geological Survey

In-person Meeting at Calvary Church Golden or Join us on Zoom

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## **CSS November Meeting and Student/Member Poster Night**

**Thursday, November 21, 2024** at 7:00 p.m.

In-person Meeting at Calvary Church Golden or Join us on Zoom

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## **CSS December Holiday Potluck, Meeting and President's Address**

**Quaternary Records of Spring Ecosystems**

**Tuesday, early December 2024** at 5:30 p.m. (exact date TBA)

**Jeff Pigati** and **Kathleen Springer**, U.S. Geological Survey

In-person Potluck Dinner at New Terrain Brewing Company or Join us on Zoom

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## **Watch Zoom Recordings of Recent CSS Meetings!**

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

## **Please pay your CSS dues for 2024!**

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 [Membership and Donations](#) for the CSS membership PDF and our online membership payment form.

**Regular CSS Membership** is \$25;

**Student Membership**, \$5;

**Life Membership**, \$395.

Send your membership payment, if not done through [our online membership payment form](#), to Colorado Scientific Society P.O. Box 150495 Lakewood, CO 80215-0495.

Thank you!

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**Field trips to come**

We are planning to have some additional “No Moss” short field trips, and one or more full-day or weekend field trips, during the year; we’ll be informing you (and see our website!) as specific trips are scheduled. Some likely trips being discussed include: Faulting on Green Mountain; Gateway Mesa (Castle Rock) Open Space and the Castle Rock Conglomerate; geologic structures along Coal Creek; Eldorado Springs Canyon; and, building stones in downtown Denver historic buildings.

We’ll hope to see you at many or all of these coming events!

---Pete Modreski, CSS newsletter editor; you can always write to me at [pmodreski@gmail.com](mailto:pmodreski@gmail.com)

**CSS officers and councilors for 2024 are:**

Jeff Pigati – President	Julie Herrick – Councilor 2022-2024
Shannon Mahan – President Elect	Lesli Wood – Councilor 2022-2024
Cal Ruleman – Past President	Michael Frothingham – Councilor 2023-2025
Patrick Sullivan – Secretary	Kassandra Lindsey – Councilor 2023-2025
Jim Paces – Treasurer	Susan Slomski – Councilor 2024-2026
Chris Morrison – Chair, Webmaster	Nathan Rogers – Councilor 2024-2026
Pete Modreski – Newsletter	Sylvia Nicovich – Chair, Field Trips

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**Available from the CSS—Did you know?**

**The Geology of Boulder County, with 25 Field Trips**, 2004, by Raymond Bridge, 490 pages, Lone Eagle Publications. \$20.00. Copies of this book were donated to the CSS by the family of the author (deceased)

**Colorado Scientific Society T-Shirts**; also \$20.00

Ask to see these at any of our CSS meetings! [You’d know better about these, and would have seen them, if you come to our meetings in person!]