



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.

## **December 2024 Colorado Scientific Society Newsletter**

### **CSS December Meeting**

**Tuesday, December 3, 2024 at 5:30 p.m.**

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

### **Quaternary Records of Spring Ecosystems**

Tuesday, December 3, 2024 at 5:30 p.m.

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

In-person Potluck Dinner at New Terrain Brewing Company for 50 people or Join us on Zoom

5:30 – **Arrive** at New Terrain Brewing Company with your potluck dish.

6:00 – **Dinner**

7:00 – Colorado Scientific Society **Annual Business Meeting**

~7:10 – Past President’s presentation – **Quaternary Records of Spring Ecosystems**

The location of New Terrain Brewery and details of the potluck dinner are described after CSS Annual Business Meeting actions and the abstract and images for Jeff Pigati and Kathleen Springer’s presentation.

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## **Colorado Scientific Society Annual Business Meeting**

**2024 Best Paper Award**

**Election of Colorado Scientific Society Councilors**

**Election of new Colorado Scientific Society President-Elect**

Presentation of the Silver Gavel from the outgoing President of the Colorado Scientific Society to the incoming CSS President

See [Silver Gavel](#) and page 7 of the [History of the Colorado Scientific Society](#) for details.

## Quaternary Records of Spring Ecosystems



upper level wash, Gass Peak – Eric Scott, SCBM photo credit

**Abstract:** Desert springs and wetlands are among the most biologically productive, diverse, and fragile ecosystems on Earth. They are home to thousands of rare, endemic, and endangered plants and animals and reflect the availability and health of emergent groundwater. Despite the ecological importance of these wetlands, our knowledge of how they might respond to predicted future climate change is limited. USGS Research Geologists Jeff Pigati and Kathleen Springer seek to understand how springs and wetlands in the Mojave Desert responded to past abrupt warming events, which are direct analogs for future conditions. To accomplish this, they reconstruct the hydrologic history of ancient spring ecosystems and establish patterns and rates of change in groundwater availability by investigating paleowetland deposits dating to the late Pleistocene and Holocene. Their results provide critical information for developing strategies aimed at managing these fragile ecosystems and mitigating the effects of climate change in the arid lands of the American Southwest. Pigati and Springer will also provide an update of their work on ancient human footprints in White Sands National Park and their link to abrupt climate change.

## Join Zoom Meeting:

<https://us06web.zoom.us/j/89592665012?pwd=3RcMSeObU166wpl0gzSwC0S7rX94pd.1>

Meeting ID: 895 9266 5012

Passcode: 657376



Ancient footprints in White Sands

See [The White Sands footprints — humans in North America 23,000 years ago](#) for more details.



Jeff Pigati

and Kathleen Springer

**Jeff Pigati** and **Kathleen Springer** are research geologists with the U.S. Geological Survey's Geosciences and Environmental Change Science Center in Denver, Colorado. They are co-PIs of the Quaternary Hydroclimate Records of Spring Ecosystems project in which they investigate geologic deposits associated with springs and desert wetlands to determine how these fragile ecosystems responded to past episodes of abrupt climate change. Their work has focused on developing stratigraphic and chronologic frameworks from paleowetland deposits throughout the Mojave Desert and southern Great Basin, which then serve as hydroclimate roadmaps for these ecosystems. They have established that spring and desert wetland ecosystems are incredibly sensitive to changes in climate at multi-decadal to centennial timescales and that they expanded and contracted in near lockstep with changes in climate recorded in the Greenland ice cores over the past 40,000 years. These sensitive groundwater dependent ecosystems allow them to evaluate the effects of abrupt warming events on terrestrial landscapes including Dansgaard-Oeschger (D-O) events, which are analogous to projected future warming in terms of their magnitude, timing, and sphere of influence. Notably, their results demonstrate that springs and wetlands in the southwestern U.S. contracted or disappeared altogether during D-O events due to rapid groundwater lowering associated with these megadrought episodes. Their findings have tremendous implications for extant springs in arid environments.

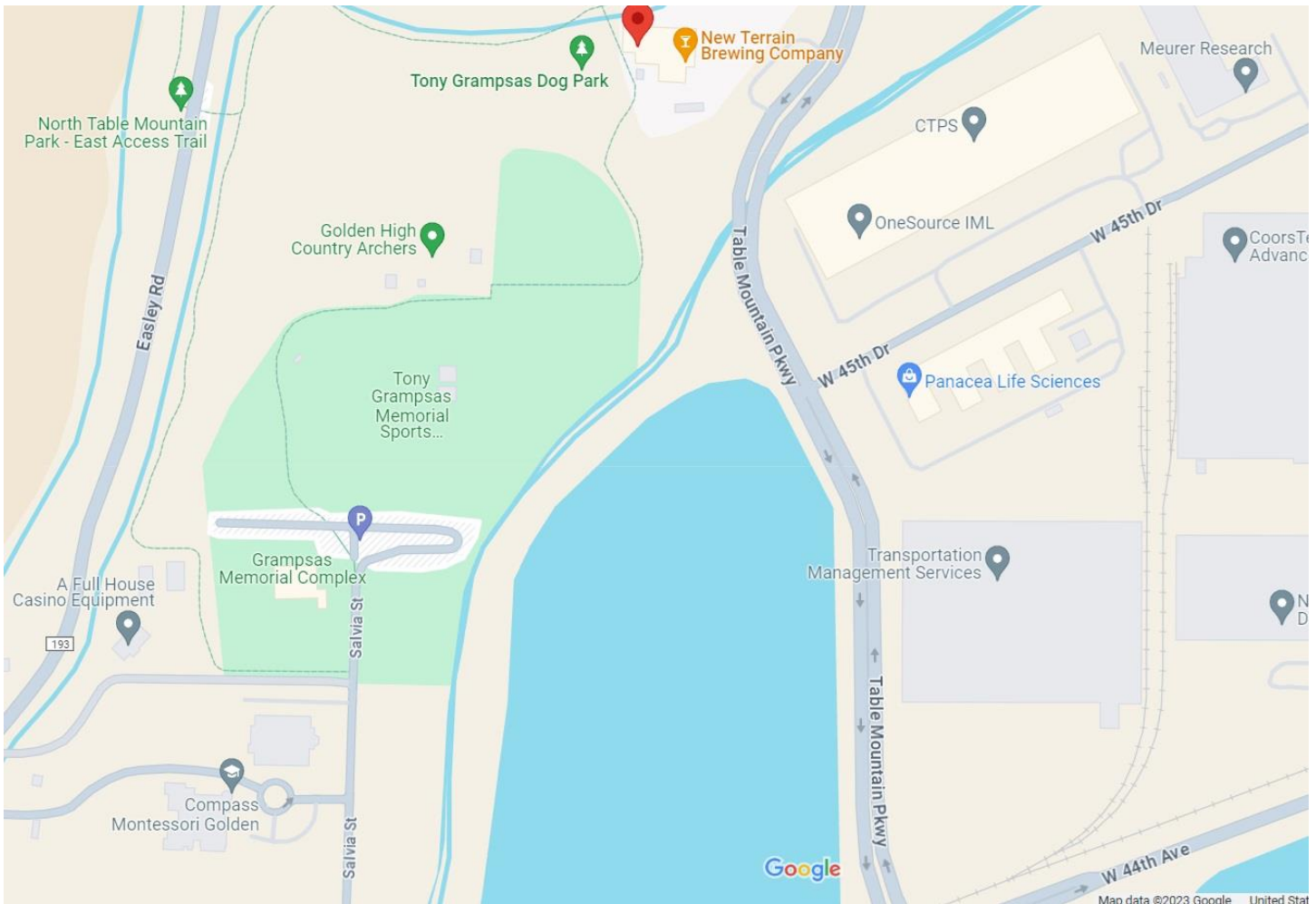
Their research is largely conducted on federal lands administered by the National Park Service, including Tule Springs Fossil Beds National Monument, Death Valley National Park, Joshua Tree National Park, Channel Islands National Park, and the Mojave National Preserve. In White Sands National Park, Kathleen and Jeff have combined detailed stratigraphic analyses and cutting-edge dating techniques with their intimate understanding of past climate events to establish the age, geologic context, and paleoenvironmental setting of ancient human footprints recently discovered there – including the link to abrupt climate change that allowed the human and megafaunal footprints and trackways to be created and preserved. Their results have upended traditional models regarding the peopling of the Americas and fundamentally change the very foundation of North American archaeology.

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## New Terrain Brewing Company

New Terrain Brewing company is southeast of North Table Mountain, off of Table Mountain Parkway, which is north of 44th Ave. (16401 Table Mountain Parkway, Golden 80403)

There is ample parking at New Terrain



New Terrain Brewing Company is in the top center of this image.

## CSS Potluck Dinner – after 5:30 pm

- Bring a main course entree, a side dish, salad, or dessert, etc. to share with other CSS members. CSS Council members will bring a spiral cut ham and rolls
- We will not be able to cook at New Terrain Brewery. We should be able to warm up dishes.
- CSS will provide plates, bowls, cups, dishes, napkins and eating utensils.
- Purchase a selection of beers and ales from New Terrain (and help cover our expenses for the night). Please do **not** bring your own alcoholic beverages.



**Our Nov. 21 Poster Session meeting** was a big success. We had about 15 posters and 30-some attendees, plus several more via Zoom. Each presenter give a 2-3 “lightning” summary of the research depicted on their poster, which really inform the audience of what each was all about. The pizza, veggies, and beer, wine, etc. refreshments were a big hit too.

See our website for these and more CSS present/past things to read or do...  
[Colorado Scientific Society | Earth Sciences since 1882 https://coloscisoc.org/](https://coloscisoc.org/)

## Please pay your CSS dues for 2025!

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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## [Read past Colorado Scientific Society Newsletters](#)

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## Start or renew your membership with the [Online CSS Membership Form](#)

Or print and mail in the [Colorado Scientific Society Membership Form \(PDF\)](#)

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## [Archive of Past Colo. Scientific Society Meetings](#)

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*Election of 2025 officers* will take place at our Dec. 3 Annual Meeting. The final slate of officer/Councilor candidates will be announced at the meeting, and new candidates may be proposed then, but we have so far:

President – **Shannon Mahon** (now, already President-elect; does not require a new nomination)

Secretary – **Patrick Sullivan** (incumbent)

Treasurer – **Jim Paces** (incumbent)

Past President (current president automatically assumes this position) – **Jeff Pigati**

President-elect (to become president in 2026) – position is open

Councilors: 2023-2025 term continues: **Michael Frothingham**

2023-2025 term continues: **Kassandra Lindsey**

2024-2026 term continues: **Nate Rogers**

2024-2026 term continues: **Susan Slomski**

2025-2027 term, proposed candidate, **Lisa Rukstales**

2025-2027 term, proposed candidate, **Adam Hudson**