



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.

June 2024 Colorado Scientific Society Newsletter

Wildcat Mountain – CSS No Moss Gathering

As in “a rolling stone gathers no moss”.

Saturday, June 29th, 2024, 8:00 AM to noon

Bob Raynolds, Research Associate, Denver Museum of Nature and Science (DMNS) will lead this trip.



Wildcat Mtn.
diorama at the
Denver
Museum of
Nature and
Science

Logistics:

Saturday 29 June 2024

8:00 a.m. rendezvous for carpooling at RTD Littleton-Mineral Station Park & Ride (3203 West Mineral Ave., Littleton, CO 80120, northwest corner of Mineral and South Santa Fe)

Drive south to Sedalia on South Santa Fe Blvd. (Rt 85). Will do a roadside stop at the new outcrops along South Santa Fe.

At Sedalia turn right (west) onto Rt 67 toward Deckers

Go 2.4 miles then turn right (north) on Rainbow Creek Rd

Go 2.0 miles then turn left (south) on Cherokee Drive

Turn right (west) on Piute Drive, go 0.66 miles to Arapahoe Conglomerate roadcut

Continue west and south on Piute Dr. for 0.8 miles to trailhead for Wildcat Mountain

Climb Wildcat Mountain (500' up over 0.5 miles on unimproved trail). Not all need to climb all the way, nice views on the trail.

Depart Wildcat Mountain at 11:00 a.m.. Continue east on Piute Dr. for 0.35 miles, turn left (north) and go 0.56 miles on Winnebago Dr., turn right (east) on Cherokee Dr. and go 0.5 miles then turn right (southeast) on Rainbow Creek Road. Go 1.2 miles and turn left(east) on Rt 67 to return to Sedalia and South Santa Fe (Rt 85).

Return to RTD Littleton-Mineral Park and Ride by 12:00 noon.

Description:

Come see the evidence for the onset of the Laramide Orogeny in the Denver Basin. This is manifested by the Arapahoe conglomerate, well exposed west of Sedalia near Wildcat Mountain. Where do these cobbles come from? Then visit the outcrop exposures of the principal aquifer in Douglas County, the Arapahoe Aquifer. This rock body is present in a buried fluvial distributary fan system. Water wells in Douglas County drill down 2000 feet to access this finite water resource. We will discuss three-dimensional modeling of the aquifer and the challenges for communities in Douglas County to find sustainable water resources.

Flyer for [Wildcat Mountain No Moss Gathering 6-29-2024](#).
Print and bring it with you.

CSS Past Presidents Dinner – September

What do two geologists know about pandemics? Economic cascades, tipping points, and the costs of a business-as-usual approach to COVID-19

Thursday, September 19, 2024 at 7:00 p.m.
David Goodwin and Peter Roopnarine, California Academy of Sciences

At the Mount Vernon Canyon Club or Join us on Zoom

What do two geologists know about pandemics? Economic cascades, tipping points, and the costs of a business-as-usual approach to COVID-19

Abstract: Both natural and human systems rely on complex networks of exchange. In natural systems, exchanges involve the transfer of energy (i.e., ecology), whereas anthropogenic systems are based on exchanges of goods, services, and currency (economy). Despite differences in components (plants and animals versus humans) and scope (ecosystems versus economies), both types of networks are sensitive to perturbations. Disruptions, whether natural or anthropogenic, are linked by basic thermodynamic principles that unite ecological and economic theory.

Plagues and pandemics are inevitable; they have impacted human cultures for thousands of years. Examples include plagues of the Roman Empire, the Black Death, disease among indigenous peoples spurred by colonization, and the recent COVID-19 pandemic. Plagues also closely parallel mass extinctions in some respects. In each case, they are linked by their ability to radically disrupt complex networks and force the development of novel, and often revolutionary, reorganization of ecological and socioeconomic structures.

In this presentation we illustrate the utility of network models originally designed to simulate mass extinction dynamics, to understand counterfactual dynamics of the recent COVID-19 pandemic in which the economy remained open and active during the pandemic's first year, thereby providing a baseline against which to compare actual levels of job losses. We developed an economic-epidemiological mathematical model to

simulate outbreaks of COVID-19 in ten large socio-economic regions of California. Results show that job losses are an unavoidable consequence of the pandemic, because even in an open economy, debilitating illness and death among workers drive economic downturns. Although job losses in the counterfactual scenario were predicted to be less than those actually experienced, the cost would have been the additional death or disablement of tens of thousands of workers. Furthermore, whereas an open economy would have favored populous, services-oriented coastal areas in terms of employment, the opposite would have been true of smaller inland areas and those with relatively larger agricultural sectors. Thus, in addition to the greater cost in lives, the benefits of maintaining economic activity would have been unequally distributed, exacerbating other realized social inequities of the disease's impact. Ultimately, the COVID pandemic revealed not only vulnerabilities in health systems, but also in economic and decision-making systems.



David Goodwin and Peter Roopnarine

Peter Roopnarine is the Curator of Geology at the California Academy of Sciences in San Francisco. He has worked at the Academy since 1999. Peter holds degrees in Biology (BS; Mount Allison University), Oceanography (MS; Nova Southeastern University), and Geology (PhD; University of California, Davis). His research is transdisciplinary, with a focus on understanding the evolution of ecological systems, emphasizing paleontology,

deep time, and perspectives on complexity dynamics. Much of Peter's current research centers around global change biology, and how we can further develop our understanding of Earth's past ecosystems to better forecast our future.

David Goodwin is a Professor of Earth & Environmental Sciences at Denison University in Granville, OH. David joined the faculty in 2003. He has degrees in Natural and Environmental Science (BS: Lyndon State College), Geology (MS; University of Montana), and Geoscience (PhD; University of Arizona). Dave's research focuses on documenting and interpreting records of environmental variation archived in the hard parts of modern and fossil organisms. This is accomplished primarily through calibration of environmental conditions with skeletal archives: specifically, biogeochemical variations and patterns of shell growth.

CSS October Meeting

Lava dams, Footprints, and Faults: some vignettes from the USGS Luminescence Dating Lab in Denver, Colorado.

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
(A link to Join the Zoom meeting will be posted here before the meeting.)

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



Harrison Gray sampling for luminescence dating along the Colorado River. Photo credit: Ryan Crow, USGS

Abstract: A lot has happened on planet earth over the past 200,000 years. Climate, erosion, and the distribution of people have all changed radically over that period. As scientists, we wish to know how, when, and why these changes occurred and to use this knowledge going forward. At the USGS luminescence dating lab, we use the physics of light, electrons, and minerals to figure out the “when.” In this presentation, I start off with a primer on how quartz and feldspar sand can store electrons within their crystal structure and how we can measure these electrons to figure out how old a sample is. With this knowledge, we then consider some recent projects such as the enigmatic Chemehuevi Formation of the Colorado River, the use of luminescence dating towards the footprints at White Sands National Park, and how the erosion of meters-tall fault scarps reveals the hidden physics of erosion on Earth’s surface. Each vignette is meant to give a thought-provoking snapshot into Earth’s dynamic past for discussion and further speculation!

Bio: Harrison Gray is a Research Geologist at the USGS Luminescence dating lab in Denver, Colorado. Harrison applies luminescence dating to various USGS projects including geologic maps, natural hazards and beyond. Recent projects include dating sand deposits of the Colorado River in and downstream of the Grand Canyon, creating new two-dimensional “age maps” using a portable luminescence reader, and helping determine the age of footprints at White Sands National Park.

In-person Meeting at Calvary Church Golden

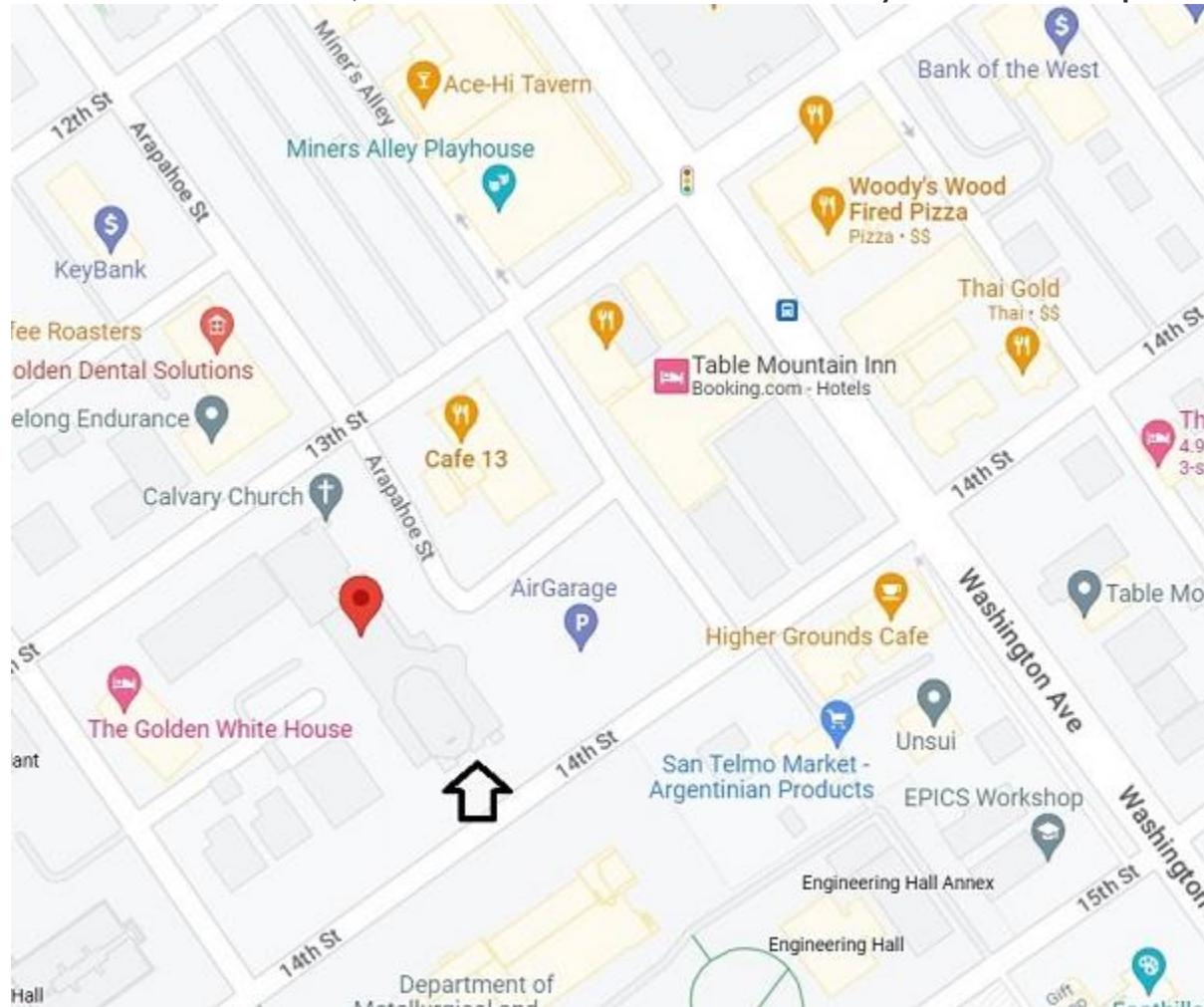
All are welcome – no admission charge

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.**



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.

Copies of *The Geology of Boulder County* by Raymond Bridge (2004) will be available for \$20.

CSS November Meeting with Student and Member Poster Night

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

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

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