



Colorado Scientific Society

Newsletter of the Society

February 2020

February meeting: Thursday, 20, 2020

Room 241, Berthoud Hall, Colorado School of Mines campus

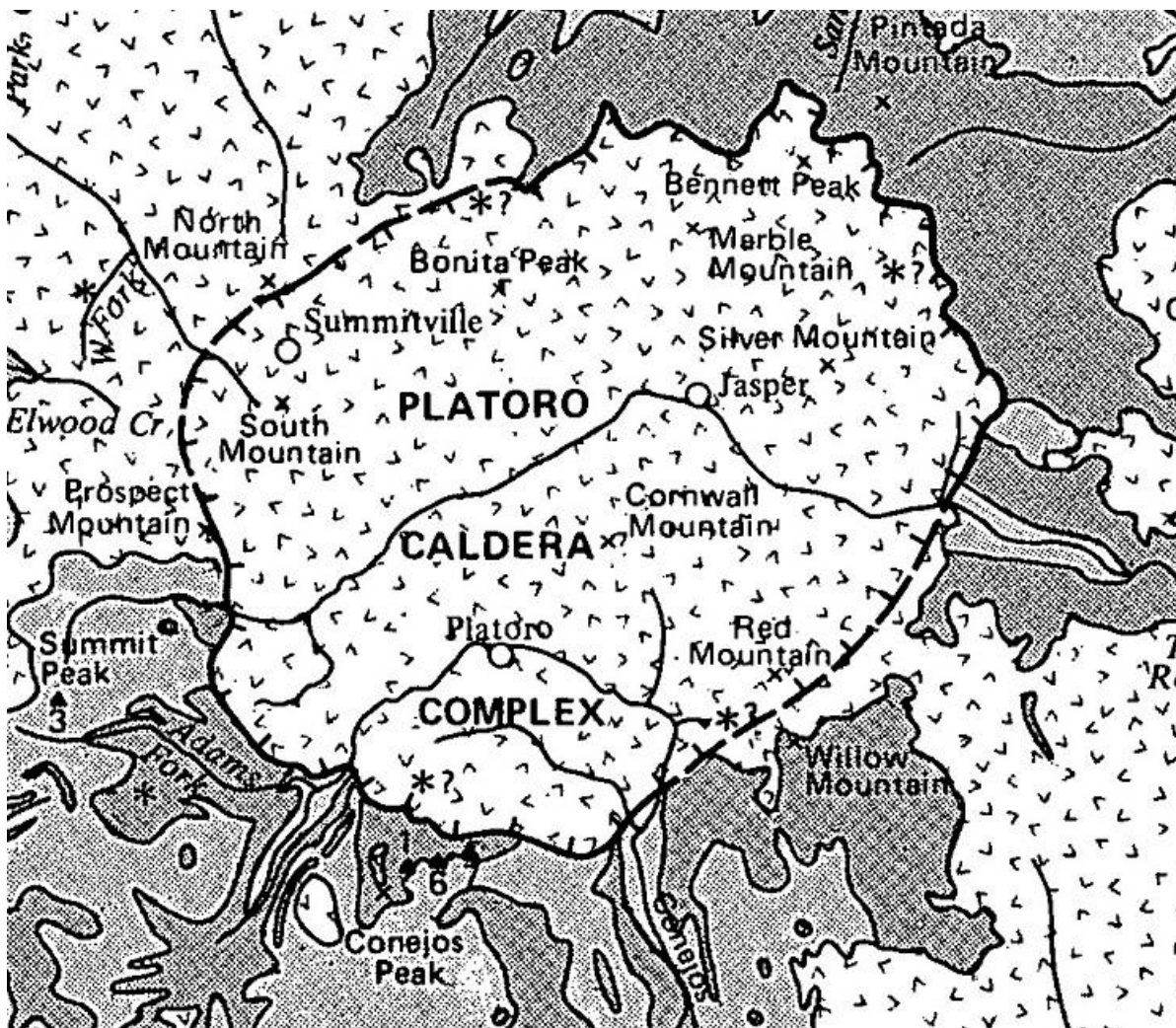
Social gathering starts at 6:30 pm; Lecture starts at 7:00 pm

Postcaldera intrusions associated with the Platoro caldera complex, San Juan Volcanic Locus, Colorado

*Dr. Amy Gilmer
U.S. Geological Survey, Denver, CO*

Abstract: The relationship between ignimbrites and plutonic systems underlying calderas is often difficult to assess because the intrusive rocks are rarely exposed. However, plutonic parts of several Oligocene calderas of the Southern Rocky Mountain Volcanic Field reflect subvolcanic parts of caldera-forming magmatic systems. The Platoro caldera complex in the southeastern San Juan Mountains, erupted up to five large-volume, crystal-rich dacite ignimbrites over 1.5 Ma. Postcaldera magmatism includes andesite to rhyolite volcanics and diorite to quartz monzonite hypabyssal intrusions representing late-stage caldera resurgence or emplacement of volcanic cores adjacent to the caldera. Previous geochronological studies focused on volcanic deposits — ages for intrusions were inferred mainly from cross-cutting relations and stratigraphic position. Exceptional exposures and field relations of both postcaldera volcanic and intrusive rocks enable geochronologic and petrologic assessment of rocks associated with the Platoro caldera in order to track the evolution of that magmatic system from explosive, silicic ignimbrite eruption to intrusion emplacement. New zircon U-Pb SHRIMP dates and zircon trace element data combined with mineral compositions allow us to evaluate whether plutons in the Platoro system are the unerupted remains of a shallow post-ignimbrite magma reservoir or the result of subsequent emplacement of magma from other parts of the system. Resulting dates span too much time ($>> 1$ Ma) to represent magma evolution in a single upper crustal chamber and require remobilization of mush from different depths in the trans-crustal magmatic system.

Amy Gilmer is a research geologist with the Geosciences and Environmental Change Science Center of the USGS in Denver, CO. She studies the role of magmatic and hydrothermal processes in volcanic belts and is currently investigating ignimbrites and intrusions of the San Juan magma reservoir, Rio Grande extension-related magmatism, and ore deposition along the Intermountain West Transect. Amy has also worked on igneous complexes associated with porphyry copper systems in the Andean Cordillera of Chile. Amy received her BSc degree at the College of William & Mary in 1999, her MSc degree at The University of Texas at Austin in 2001, and her PhD at the University of Bristol in 2016. Amy also worked for the Virginia Division of Geology and Mineral Resources conducting mineral resource assessments and geologic mapping in the Virginia Blue Ridge, Piedmont, and Coastal Plain.



Overview of extent of Platoro caldera complex from: [Peter W. Lipman, 1975, Evolution of the Platoro Caldera Complex and Related Volcanic Rocks, Southeastern San Juan Mountains, Colorado\(44 MB\)](#), U.S. Geol. Survey Prof. Paper 852, Page 10, Figure 5. (Follow link for paper.)

CSS Upcoming Meetings:

Important note – change in meeting place for 2020!

Beginning January, 2020, CSS will meet in Berthoud Hall, Room 241, Colorado School of Mines campus. *Located along 16th St. between Illinois and Maple Streets, Berthoud Hall may be entered from doors on any side of the building. Campus parking is free after 5 p.m.; you may park on Maple, Illinois, or other campus streets or in campus parking lots. Lot D, west of Elm St., is the closest. 16th St. next to the building is a pedestrian mall, closed to traffic, but Berthoud Hall has a ground level entrance with access to an elevator, off 16th St. Room 241, on the 2nd floor, is located on the west (Maple St.) side of the building. Meetings will begin at 7:00 p.m., preceded by a social time beginning at 6:30. We will meet most months in Berthoud Hall, unless otherwise noted.*

2020 CSS meeting schedule:

Thurs., Jan. 16, **Deciphering the timing and causes of Great Unconformity erosion: An example from Pikes Peak, Colorado**, by Rebecca Flowers, University of Colorado

Thurs., Feb. 20, **Petrologic evolution of Platoro magmatic system after the eruption of the Chiquito Peak Tuff, San Juan Volcanic Locality, Colorado**, by Amy Gilmer, U.S. Geological Survey, Geoscience and Environmental Change Science Center

Thurs., Mar. 19, **Historic avalanches in Hinsdale County, Colorado: Impacts to Lake City and old mining dams, along with new evidence of the association of snow and rock avalanches and a possible link to the formation of rock glaciers**, by Jonathon Lovekin, Colorado Geological Survey

Thurs., Apr. 16, **Rise of the Mammals: Exceptional Continental Record of Biotic Recovery after the Cretaceous–Paleogene Mass Extinction** (about the Corral Bluffs fossil mammal find), by Ian Miller and Tyler Lyson, Denver Museum of Nature and Science; at the **CSS Annual Past Presidents' Dinner**, to be held at the **Mount Vernon Canyon Club**

April 25, **A CSS Field Trip to Corral Bluffs, Colorado Springs Open Space, A Record across the Cretaceous–Paleogene Mass Extinction**. A field trip for CSS, to be led by Sharon Milito, Colorado Springs educator and open space volunteer; some DMNS staff may also participate. The trip will be limited to 20 people; please contact CSS field trip coordinator Cal Ruleman if you wish to participate (303-236-7804, cruleman@usgs.gov). Details will be available next month

Sat., May 16, CSS will co-sponsor a **2020 Symposium on Water and Energy**, to be held in Ricketson Auditorium, Denver Museum of Nature and Science. Details will be coming!

Thurs, Sept. 17, program topic yet to be confirmed

Thurs., Oct. 15, **CSS Annual Emmons Lecture: Cosmic Dust, Stardust, and Comet Dust**, by Mike Zolensky, NASA Johnson Space Center; *Meeting location TBA*

Thurs., Nov. 19, program topic to be confirmed

Thurs., Dec. 17, **CSS Annual Meeting, Potluck Dinner, and President's Address**; meeting place TBA



January's "Where is this rock?" Two CSS members replied and correctly identified this picture, Cal Ruleman and Chris Morrison (Cal's reply came in about 2 hours before Chris's). Both supplied some good details about the area; I'll quote both:



Cal's response:

"It's Big Thompson Canyon and Proterozoic metamorphic rocks overlain by:

Penn-Perm Fountain Fm

Permian Ingleside Fm

Permian Satanka Fm

Permian Lyons Sandstone

Permian? and Triassic? Lykins Fm

Triassic and Jurassic Entrada Sandstone and Jelm Fm

All deeply eroded and incised in the last ~500 ka???? with the Central Colorado Icefield and major climate change associated with marine Oxygen Isotope stage 12 (~490-420 ka).....

that's my guess, and very nice photo!"

And Chris's:

The picture is looking southeast down the Big Thompson as it exits the Precambrian, from the southeast ridge of Alexander Mountain above Big Thompson Canyon. A picture from Google Earth is attached.

Thanks for the puzzles - Chris

After I wrote & told Chris he was correct, he added a few more details:

Regarding the red beds, those are good candidates, plus Lyons. For a geologic map, the USGS Masonville quad covers it well at: https://ngmdb.usgs.gov/Prodesc/proddesc_2134.htm

This was mapped by Braddock, et. al. The PDF map is 11 MB.

From the Precambrian up, the first ridge is Fountain with Ingleside cap and Satanka capped by Lyons. Then the second ridge in the picture is just the above formations repeated because they are offset by the Green Ridge Fault. Then you can see another ridge beyond the Lykins valley which is Morrison capped by Dakota.

The photo was sent to me on Dec. 28 by Ulli Limpitlaw, of Greeley, CO, a past CSS member, who had just taken the picture on a hike. Ulli wrote: "People who live in Colorado have most likely traveled the road below. Can you see the pipe crossing the highway in center of the image? Can you see the Narrows? Big Thompson Canyon with 34 leading up to Estes Park and then over the Continental Divide to Granby. It was taken from the top of Alexander Mountain, 7073'. It's the mountain right behind the Dam Store, for those who know the area."

* * * * *

I am "challenged" right now to have the time to find and insert a "Where's This Rock" picture for this newsletter, as it's late Friday afternoon/evening, it's snowing hard outside, we are leaving for Tucson AZ in the morning, and I would like to get this newsletter sent out now, rather than in 11 days from now when I return! So if you don't mind, I will defer our next geology quiz until the March newsletter! – ed.

Did you catch it in the above, that annual dues are reduced by \$5 if you pay by January 31! Regular rate is \$25, but \$20 if paid in January.

2019 Colorado Scientific Society Officers, Councilors, and Committee Chairs

President.....	Jim Paces, U.S. Geological Survey, jamespaces@comcast.net
President-elect	Bruce Trudgill, Colorado School of Mines, btrudgil@mines.edu, 303-273-3883
Past President.....	Tom Casadevall, tcasadev@gmail.com, 720-244-7052
Secretary.....	Lisa Fisher, 303-215-0480, lisa.fisher@alumni.mines.edu
Treasurer.....	Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov, or dsweetkind@gmail.com

2018-2020: Pete Modreski, pmodreski@aol.com, 720-205-2553
 2020: (*appointed to fill the last year of a vacated term*) Scott Minor, USGS
 2019-2021: Linda Barton Cronoble, lbarton1611@gmail.com, 720-338-1237
 2019-2021: Yvette Kuiper, Colorado School of Mines, ykuiper@mines.edu, 303-273-3105
 2020-2022: Chris Morrison, chris-morrison@comcast.net
 2020-2022: Joe Sertich, Denver Museum of Nature & Science, Joe.Sertich@dmns.org, 303-370-6331

Field Trip Chair: Cal Ruleman, 303-236-7804, cruleman@usgs.gov
GSA Meeting Co-chairs, Lisa Fisher & Libby Prueher
History Chair: Beth Simmons, cloverknoll@comcast.net
Hospitality/Refreshments Chair: OPEN
Membership Database Manager: Don Sweetkind, 303-236-1828, dsweetkind@gmail.com
Newsletter & Publicity: Pete Modreski, office 303-202-4766, cell 720-205-2553, pmodreski@aol.com
Outreach: OPEN
Past Presidents' Best Paper Award: Tom Casadevall, tcasadev@gmail.com
State Science Fair Awards: Chuck Weisenberg, 303-238-8806, cweisnbrg@msn.com
Student Programs Chair: Melissa Foster, melissa.ann.foster@gmail.com, 707-498-2484
Student Research Grants Chair: Tom Casadevall, Past Pres., tcasadev@gmail.com
Webmaster: Chris Morrison, chris-morrison@comcast.net

5



Volunteer Needed! For our CSS Hospitality/Refreshments Chair to bring or coordinate refreshments at our monthly meetings. Mary-Margaret Coates, who has been doing this for the last couple years, will need to step down and we need a new volunteer. It's not a real big job! CSS reimburses you for refreshments that you purchase, plus we set out a jar for donations for refreshments, which often covers their cost. We normally keep it pretty simple—chips, cookies, muffins, nuts, soft drinks, or sometimes cheese, veggies, fruit, and dips or hummus. [Members are always welcome to help by bringing extras in the form of cookies, etc.] We normally do not bother with hot drinks. If you can't be at every meeting, just ask someone to fill in. You'll care for a bin with plates, cups, napkins, plasticware, etc., and try to keep a supply of gummed nametags & pens too. Please, someone volunteer! Contact the President or any of the other officers to do so. Our

thanks to Mary-Margaret for having done this for the past few years!

* * * * *

Welcome new members!

The Colorado Scientific Society welcomes the following new members who have joined for 2020: **Lisa Binder, Shawna Crocker, Paul Favret, Philip Persson, Steve and Fran Singer, and Ron Yamiolkowski.**

Please introduce yourself to any of these new members when you see them at CSS lectures and functions!

* * * * *

The CSS website is www.coloscisoc.org. Anyone can also view our facebook page, whether you have a facebook account or not, at <https://www.facebook.com/groups/511533159044226/>. If you use facebook—please go there and “like” the CSS! (Just search there for Colorado Scientific Society.)

To pay dues online, please go to:

<http://coloscisoc.org/membership-payment/> ***Thank you!***

* * * * *

Calendar of Coming Events

Mon., Feb. 10, 11:30, Denver Mining Club weekly meeting, Martin Palkovic, Colorado Geological Survey, **Cretaceous Sedimentary Bedrock and its Impact on Uranium Concentrations in Irrigation Return-Flows to the Arkansas River, Southeastern Colorado.** Golden Corral Buffet & Grill, 3677 South Santa Fe Dr., Sheridan, CO (southwest side at Santa Fe Dr. & Hampden Ave.). All are welcome; purchase of lunch is required for entry; meeting runs from 11:30 to 1:00.

Tues., Feb. 11, 7:00 p.m., Western Museum of Mining & Industry, Colorado Springs, February Lecture Series, **“Industrial Minerals All Around Us”**, by David Abbott. “Industrial minerals are major components of most products we use on a daily basis: bricks & concrete, building stones, wallboard, glass, ceramics and sand paper. They are found in cleaning products like Soft Scrub, many cosmetics and even the table salt we eat!” The monthly lecture series is free to WMMI Members, \$5.00 for guests. To RSVP to attend a lecture call 719-488-0880 or email rsvp@wmmi.org.

Feb. 13-16, 66th Annual Tucson Gem and Mineral Show, sponsored by the Tucson Gem and Mineral Society (TGMS), Tucson Convention Center, Tucson, AZ. This is “the main show” in Tucson; many of the other, commercial shows, in the city are already open and have been for the past week or more.

Sun, Feb. 16, noonish, at the monthly FSS (Florissant Scientific Society) meeting, Jay Temple (geologist) and Jennifer Heiny (Garden of the Gods Visitors Center) will give a presentation “**Behind the Scenes at Garden of the Gods**”, followed perhaps by a short field trip. Meeting place and exact time TBD. All are welcome to attend—the FSS has no formal membership, other than an email list of persons interested in geology. Contact Beth Simmons, cloverknoll@comcast.net, for details or to be put on the FSS mailing list.

Tues., Feb. 18, 10:30-11:30 a.m., USGS Rocky Mountain Science Seminar, **Global metal resources; land of plenty or are we running out?**, Dr. Simon Jowitt, University of Nevada, Las Vegas. Building 25 auditorium, Denver Federal Center, Lakewood CO.

Tues., Feb. 18, 3:00 p.m., Denver Museum of Nature and Science M. Ray Thomasson Earth Sciences Colloquium, **Last gasp of the Cretaceous: Insights from North Dakota**, Clint Boyd (North Dakota Geological Survey). The DMNS Earth Sciences Department has named its 2020 Colloquium series in honor M. Ray Thomasson, a longtime Earth Sciences volunteer at the museum. Link to the series schedule for the whole year: <https://sites.google.com/view/dmnsdes2020colloquiumschedule/home>

Thurs., Feb. 20, 7:00 p.m., **Petrologic evolution of Platoro magmatic system after the eruption of the Chiquito Peak Tuff, San Juan Volcanic Locality, Colorado**, by Amy Gilmer, US Geological Survey.

Monthly meeting of the Colorado Scientific Society, Berthoud Hall Room 241, Colorado School of Mines campus, Golden; all are welcome; social time & refreshments at 6:30, meeting at 7:00. See an abstract (and a map) on the Sci Soc website, <https://coloscisoc.org/>.

Denver Museum of Nature and Science M. Ray Thomasson Earth Sciences Colloquium:

Wed., Feb 26, 2 pm **Paleoecology, taphonomy, and paleoenvironments of the Permian Phosphoria Rock Complex**, Madeline Marshall (Albion College)

3 pm **Phosphorites, glass ramps, carbonate factories, and saline lakes: the marine-terrestrial transition in the Phosphoria Rock Complex**, Ted Matheson (Queens U.)

Fri.-Sat.-Sun., Feb. 28-Mar. 1, Denver Gem & Mineral Guild, Jewelry, Gem, and Mineral Show, Jefferson County Fair Grounds, 15200 W. 6th Ave., Golden, CO. Free parking & free admission; hours 10-6 Fri. & Sat., 10-5 Sun.

Thurs., Mar. 12, 7:30 p.m., bimonthly meeting, Friends of Mineralogy, Colorado Chapter, featuring Scott Werschky, Reno, NV, mining geologist, mineral dealer (Miner’s Lunchbox, specializing in gold specimens and “investment quality mineral specimens”), and board member of the Rice Museum of Rocks and Minerals. Presentation topic TBA. Berthoud Hall Room 108, Colorado School of Mines campus, Golden. See <https://friendsofmineralogycolorado.org/> for more info when available.

Fri., Mar. 13, North Jeffco Gem & Mineral Club Silent Auction, APEX Community Center, 6842 Wadsworth Blvd., Arvada, setup at 5:30 p.m., auction begins at 6:45 p.m. All are welcome. For more info, Bill Jones, 303-503-6288, email sidewindermin@comcast.net.

Fri.-Sat.-Sun., Mar. 13-15, Fort Collins Gem & Mineral Show; at Thomas M. McKee Building, at The Ranch/Larimer County Fairgrounds, 5280 Arena Circle, Loveland, CO (I-25 exit 259); hours 4-8 Fri., 9-6 Sat., 10-5 Sun.; adult admission \$4. Sponsored by the Fort Collins Rockhounds Club.

Thurs., Mar. 19, 7:00 p.m., Colo. Sci. Soc. Monthly meeting, **Historic avalanches in Hinsdale County, Colorado: Impacts to Lake City and old mining dams, along with new evidence of the association of snow and rock avalanches and a possible link to the formation of rock glaciers**, by Jonathon Lovekin, Colorado Geological Survey. Berthoud Hall Room 241.

Fri.-Sat.-Sun., Apr. 10-12, Colorado Mineral and Fossil Spring Show, Crown Plaza Hotel - Convention Center, 15500 E 40th Ave., Denver, Colorado, 10-6 Fri. & Sat., 10-5 Sun., free parking & admission.

Thurs., Apr. 16, 5:30 p.m., Rise of the Mammals: Exceptional Continental Record of Biotic Recovery after the Cretaceous–Paleogene Mass Extinction (about the Corral Bluffs fossil mammal find), by Ian Miller and Tyler Lyson, Denver Museum of Nature and Science; at the **CSS Annual Past Presidents’ Dinner**, to be held at the **Mount Vernon Canyon Club**

Sat., May 16, noon–4 p.m., Silent Auction, sponsored by Colorado Chapter, Friends of Mineralogy. All are welcome; setup at 11, auction begins at noon, live auction at 1 p.m. At a new location: Wheat Ridge United Methodist Church, 7530 W. 38th Ave., Wheat Ridge (38th Ave. at Wadsworth Blvd.).

Sat., May 16, 2020 Symposium on Water and Energy, to be held in Ricketson Auditorium, Denver Museum of Nature and Science. Cosponsored by the Colorado Scientific Society, Denver Museum of Nature & Science, Center for the American West, and others. Details forthcoming!

Sun, May 17, noonish, for the monthly FSS (Florissant Scientific Society) meeting, Christine Siddoway (Colorado College) will give a talk on the **Tava Sandstone** (the geologically famous “sandstone injectite dikes of the Pikes Peak region”) followed by a short field trip. Osborne Center, University of Colorado at Colorado Springs. All are welcome to attend; contact Beth Simmons, cloverknoll@comcast.net, for details or to be put on the FSS mailing list.

Fri.-Sat.-Sun., June 12-14, Pikes Peak Gem & Mineral Show, Norris-Penrose Event Center, 1045 Lower Gold Camp Road, Colorado Springs, CO 80905. Sponsored by the Colorado Springs Mineralogical Society. Hours: noon–7 pm Fri., 10–5 Sat, 10–4 Sun. Adult admission \$5.

Thurs.-Sun., July 23-26, Fairplay Contin-Tail Gem, Mineral, and Jewelry Show, Fairplay River Park.

Thurs.-Sun., Aug. 6-9, Buena Vista Contin-Tail outdoor gem and mineral show, Buena Vista Rodeo Grounds. Colorado’s longtime famous and best attended tent & tailgate rock swap and show.

Fri.-Sun., Aug. 14-16, Lake George Gem and Mineral Show, sponsored by the Lake George Gem and Mineral Club. Also taking place nearby “down the road” is the **Woodland Park Rock, Gem and Jewelry Show**, Aug. 13–16.

Fri.-Sun., Sept. 18-20, 53rd Annual Denver Gem and Mineral Show, at the Denver Mart. 2020 theme is “Fabulous Fluorite”.

* * * * *

For more lecture series during the year see:

Colorado Café Scientifique in Denver, monthly lectures on science topics held either at Blake Street Station or Brooklyn’s, Denver; open to the public, no charge other than refreshments you may choose to purchase; see <http://cafescicolorado.org/> .

Colorado Scientific Society (3rd Thursday, 7 p.m.), see <http://coloscisoc.org/> . Meets at Berthoud Hall Room 241, CSM campus, Golden, except when noted otherwise.

CU Geological Science Colloquium (Wednesdays, 4 p.m.) see <http://www.colorado.edu/geologicalsciences/colloquium>
CSU Dept. of Geoscience Seminars (Fridays, 4 p.m.), see <https://warnercnr.colostate.edu/geosciences/geosciences-seminar-series/>

Van Tuyl Lecture Series, Colorado School of Mines, (Thursdays, 4 p.m.): <https://geology.mines.edu/events-calendar/lectures/>

Denver Mining Club (Mondays, 11:30), see <http://www.denverminingclub.org/> .

Denver Museum of Nature and Science, Earth Sciences M. Ray Thomasson Colloquium series, 3:00-4:00 p.m., VIP Room unless noted, meeting dates and day of the week vary. Museum admission is not required;

see <https://sites.google.com/view/dmnsdes2020colloquiumschedule/home>

Denver Region Exploration Geologists Society (DREGS); usually 1st Monday, 7 p.m., Room 241 Bethoud Hall, CSM campus, Golden; <http://www.dregs.org/index.html>

Florissant Scientific Society (FSS); meets monthly in various Front Range locations for a lecture or field trip; meeting locations vary, normally on Sundays at noon; all interested persons are welcome to attend the meetings and trips; see <http://www.fss-co.org/> for details and schedules.

Friends of Mineralogy, Colorado Chapter, usually meets on the 2nd Thursday of odd-numbered months, 7:30 p.m., Berthoud Hall Room 108, CSM campus, Golden; see <https://friendsofmineralogycolorado.org/>.

Golden Beer Talks (2nd Tuesday, 6-8 p.m.), at the Buffalo Rose, 1119 Washington Ave., Golden. Doors open at 6; Talk begins at 6:35; Intermission – 7-7:15; Q&A/clean up 7:15-8. “Golden’s grassroots version of TED talks, Expand your mind with a beer in your hand”, <http://goldenbeertalks.org/>

Nerd Night Denver is a theater-style evening featuring usually 3 short (20-minute) TED-style talks on science or related topics; held more-or-less monthly at the Oriental Theater, 4335 W. 44th Ave., Denver; drinks are available; for ages 18+. Admission is \$6 online in advance, \$10 at the door. See <https://www.nerdnitedenver.com/>.

Rocky Mountain Map Society (RMMS); Denver Public Library, Gates Room, 3rd Tuesday, 5:30 p.m.), <http://rmmaps.org/>

Western Interior Paleontological Society (WIPS); beginning January 2020, WIPS will meet on the 1st Monday of the month, 7 p.m., in Petroleum Hall, Green Center, 924 16th St., Colorado School of Mines campus, Golden See <http://westernpaleo.org/>.

* * * * *

Grand Canyon Float Trip July 19-28 CSS member Lew Kleinhans asks me to share that he is once again organizing a 9-day “Deep Time” Grand Canyon float trip specially planned for geologists. For a flier with details about the trip, please contact Lew Kleinhans, 720-273-9233, lewis.oysterclub@gmail.com.