



Colorado Scientific Society

Newsletter of the Society

January 2020

January meeting: Thursday, Jan. 16, 2020

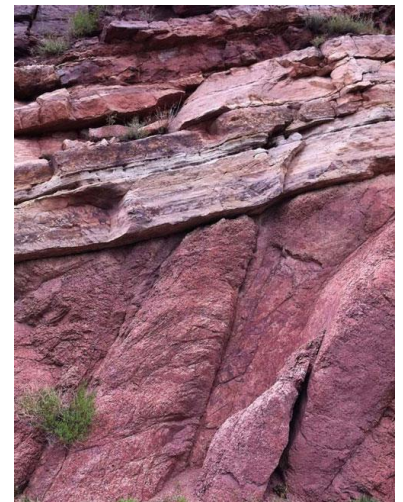
Room 241, Berthoud Hall, Colorado School of Mines campus

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

Deciphering the timing and causes of Great Unconformity erosion: An example from Pikes Peak, Colorado

Dr. Rebecca Flowers, University of Colorado, Boulder

Abstract: The Great Unconformity (GU) is an iconic geologic feature that marks a major gap in the geological record of the continents, separating Precambrian basement from Phanerozoic sedimentary rocks. Erosion across the GU has been associated with a variety of changes in the Earth System including the Neoproterozoic Snowball Earth, the initiation of modern plate tectonics, oxygenation of the ocean and atmosphere, and the Cambrian Explosion. Much work has focused on Cambrian records unconformably overlying the basement, however, because the GU typically marks a large temporal hiatus in the rock record (commonly 0.5-3 Gyr of missing time), the erosion history leading to its formation cannot be investigated directly by study of preserved sedimentary units. Consequently, the timing and magnitude of erosion below the GU, and whether it was globally synchronous or diachronous, are unknown. Here I present field relationships and new zircon (U-Th)/He data from the 1.07 Ga Pikes Peak batholith in Colorado that constrain the position of the Cryogenian and Cambrian paleosurfaces below the GU. Results provide evidence that most erosion below the GU in Colorado occurred before the Neoproterozoic Snowball Earth and Cambrian Explosion, and thus is unrelated to these events. Ongoing work on the GU in the Grand Canyon and other localities is underway to better constrain the age, duration, and spatial extent of GU formative events and thereby develop a more global understanding of the GU and its significance.



<http://strata.geology.wisc.edu/>

Becky Flowers is an Associate Professor in the Department of Geological Sciences at the University of Colorado – Boulder, where she directs a (U-Th)/He thermochronology lab. She has used thermochronology, geochronology, and geologic observations to address a variety of problems that include deciphering the missing sedimentary record of continental interiors, the topographic evolution of the western U.S. and southern African Plateau, the carving of the Grand Canyon, and the impact history of the moon. Her group's research also focuses on developing and refining (U-Th)/He thermochronometers. Flowers received her BSc degree at the College of William & Mary in 1998, her MSc degree at the University of Utah in 2000, and her PhD at MIT in 2005. She spent two years as a postdoctoral scholar at Caltech. Flowers is the lead PI and co-director of the AGeS (Awards for Geochronology Student research) program, which is a new strategy for supporting community access to geochronology data and the scientific expertise of lab personnel.



President's message for January Newsletter
Dear CSS Members,



As a new year and decade begin, I look forward to presiding over the 138th year of the Society's activities. Many thanks to last year's President, Tom Casadevall, who provided dynamic leadership throughout the year. For those who missed last month's annual potluck dinner/business meeting/Presidential address, Tom gave an inspiring presentation on Geoheritage as a means of recognizing and preserving Earth's legacy of landscapes, landforms, and features with significant scientific, cultural, educational, or historical value. We also voted to approve Dr. Bruce Trudgill, Associate Professor of Geology at Colorado School of Mines, as President-Elect, and Dr. Joe Sertich, Associate Curator of Dinosaurs at the Denver Museum of Nature & Science, as 2020-2022 Councilor. Welcome to both and thanks for your service!

Despite a 30-year career with the USGS in Denver, I only became involved in CSS in the last 5 years or so. In that time, I've become impressed seeing the Society fulfill its mission of promoting science and its application to human needs. Towards that end, we have an exciting set of Winter/Spring presentations in store. Lecture topics will include investigations of the Great Unconformity that commonly defines the base of the Phanerozoic, magmatic evolution in the San Juan Volcanic field, an epic year of Colorado snow avalanches in 2019, and a chance to hear about the fantastic discovery of Paleocene mammals that managed to survive the K-T collision event! In addition, the Society will be co-organizing and -sponsoring a day-long symposium that will address some of the most important topics in all of our lives, specifically water and energy in Colorado and how the two are linked in our rapidly changing economic, environmental, and increasingly technological world. We'll also try to run a spring field trip to the Paleocene mammal find at Corral Bluffs Open Space near Colorado Springs. More information on all of those events is or will be posted on our Website. Keep checking!

A big change for 2020 is the move of our meeting venue starting in January. We will be back at Colorado School of Mines campus after an 8-year hiatus. The move was prompted by increasing fees at the Shepard of the Hills Presbyterian Church and by increasing involvement of CSM faculty in the Society (Drs. Yvette Kuiper as Councilor and Bruce Trudgill as President-Elect) as well as plans to co-locate more USGS scientists on the CSM campus by 2022

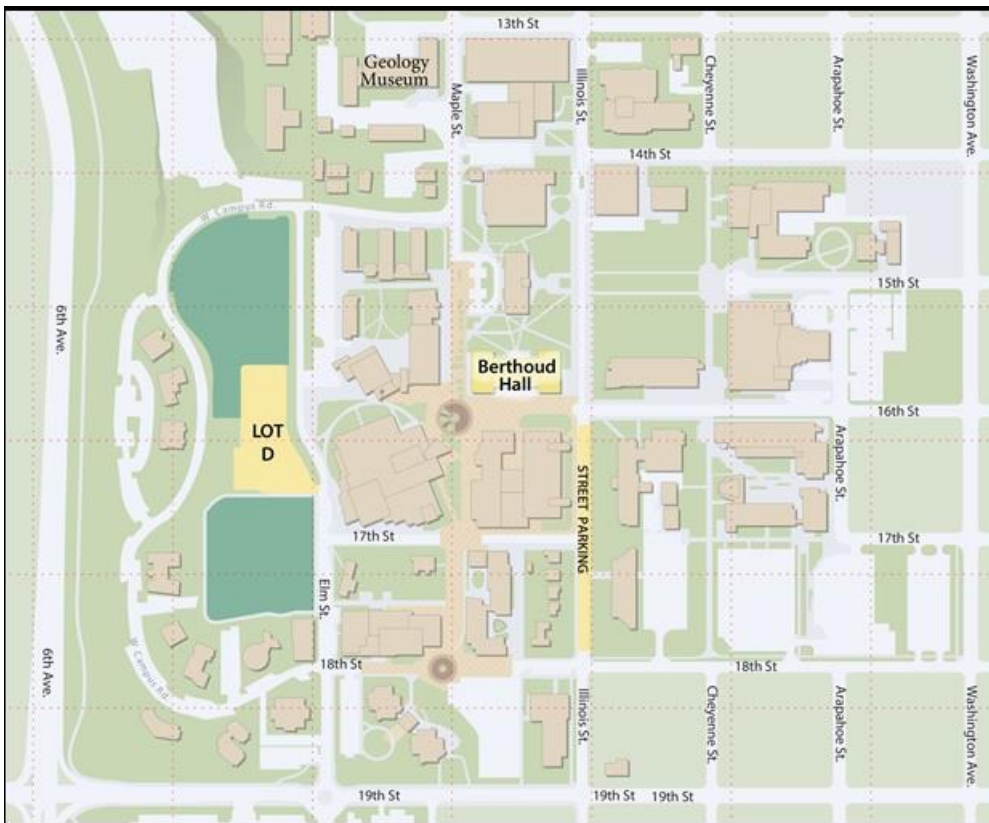
(<https://www.minesnewsroom.com/news/colorado-school-mines-moving-forward-plans-subsurface-frontiers-building>).



We have secured use of lecture Room 241 in Berthoud Hall, which many long-time members will recall from the 2000s (thanks for the help, Yvette). Parking may be a bit more challenging (try lot D or street parking on Illinois St.; both are free after 5:00 pm), but worth the effort to increase exposure to a wider cross section of earth and planetary scientists along with other science enthusiasts. We're also hoping to reach out and encourage a younger crowd to participate!

I look forward to seeing all of you at our meetings in the next few months!

--- Jim Paces, U.S. Geological Survey, 2020 CSS President



Location of Berthoud Hall and nearby parking areas on the Colorado School of Mines campus in Golden, CO.



Colorado Scientific Society

Lecture Announcement

Thursday, February 20, 2020 at 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

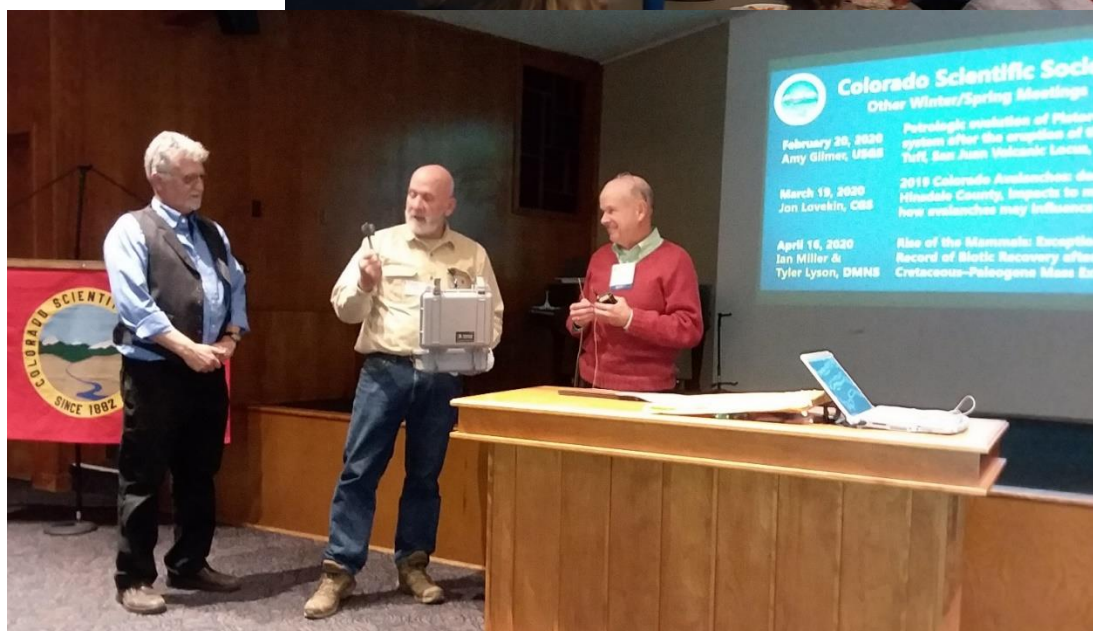
Dr. Amy Gilmer, U.S. Geological Survey, Denver, CO

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.



A few pictures from our Annual Meeting, Dec. 19, 2019. Top right, 2019 President Tom Casadevall delivering his President's address on "Geoheritage, a new frontier for the earth sciences". The meeting, our last for the time being at



Shepherd of the Hills Church, was well attended (about 60 people) with a fine potluck dinner that included plenty of desserts. Center, the traditional presentation of the silver President's gavel to incoming 2020 President Jim Paces. CSS Councilor Jim Reed, who transported the gavel (chained to his arm, of course) from its normal home in a display case at the Mines Museum to the meeting, holds the 11 Troy oz. gavel, which dates to 1907. Read about it on our website at

<https://coloscisoc.org/css-silver-gavel/>. Also at the meeting, the CSS annual Best Paper Award was presented jointly to Don Becker and Jeff Sloan for their April 2018 presentation, "Kilauea's 2018 eruption - new methods and perspectives for monitoring volcanic eruptions". And, a surprise turned up at our Jan. 2020 CSS Council meeting, the "Official seal of the Society", which had been, not lost but "whereabouts uncertain" for the past several years and which we'd been searching for in every nook and cranny of every box of materials belonging to the Society, appeared at the meeting. It had been (unbeknownst to all) in the custody of one of our past presidents, who shall remain nameless and who, we are told, "Didn't know we were looking for it". The seal dates to 1885, when the Society was incorporated, after its founding in 1882 (6 years after Colorado became a State, and 3 years after the U.S. Geological Survey was established). Our continuing thanks to Jim Reed for hosting our Council meetings at his Rockware, Inc. offices in Golden!



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, **2019 Colorado Avalanches: A case history of destruction in Hinsdale County, impacts to historic mining dams, and how snow avalanches may influence development 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**

May ??, **A CSS Field Trip to Corral Bluffs, Colorado Springs Open Space, A Record across the Cretaceous-Paleogene Mass Extinction** (*a tentatively planned field trip, date not yet set*)

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: Comets: Where We Are, How We Got Here, and Where We Want to Go Next**, 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 “Where is this rock?” Here is a good picture for you, showing a lot of “geology”, and some human constructions too. The major question for you to answer is simply, “Where is this?”. For a bonus, tell me what geologic formations are visible. The picture was supplied by a geologist-friend, but I won’t divulge

the person’s name at this time because it might provide a location clue to those of you who may know that person. Send your reply with your answers to, most expeditiously, Pete at pmodeski@aol.com. Answers, and an acknowledgement of all the correct guessers, will be in the newsletter next month.

* * * * *

CSS member deceased: William Ross Moore, Lake Jackson, Texas, 1938-2019

A member of our chapter for the past several years, but whom probably few of our members have ever met, William Ross Moore passed away on July 27, 2019 at the age of 81. We just recently learned of his death via a letter from his family. Because of his interest in San Juan Mountains mining history and minerals he attended several conferences held in Creede and Ouray in the early 2010s, during which (and probably through my newsletters to those attendees) he learned of the CSS and joined. William was one of our members who do not use email, so he received our newsletters via USPS; we have about seven other such members at this time—we mail them copies of the newsletters as a courtesy.

The following is extracted from his obituary published at

<https://www.dignitymemorial.com/obituaries/clute-tx/william-moore-8792721>:

“After graduating from Southwest Texas State, he immediately began his career with the Dow Chemical Company in Freeport, retiring 28 years later as a senior research leader. He was a “hands-on” technical chemist and designed and built numerous mini and pilot plants. Holder of 13 U.S. and several foreign patents, he made significant contributions to Dow’s monomer/polymer processes/ production.

“Ross’s main hobby was mineralogy, specializing in the minerals of the San Juan Mountains in Colorado. He donated his 7000 volume Mining History Library of the American West to the Ouray County (Colorado) Historical Society Museum and his mineral collection to the Creede Colorado Underground Mining Museum for public use. He donated his mining ore samples to Texas A&M Geology Department.”

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
 2018-2020: *one vacant position to replace Matt Rhoades, for the last year of his term*
 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

8

* * * * *



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!

* * * * *

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

Wed., Jan. 15, 4:00 p.m., CU Geological Science Colloquium Series, “**The 2018 Sunda Strait tsunami caused by a flank failure of the Anak Krakatau volcano, and potential future tsunami observing systems**”, Iyan E. Mulia, Research Fellow, Earthquake Research Institute, The University of Tokyo, Tokyo, Japan. Benson Earth Sciences Building Room 180. “1st Geo Colloquium of the decade!” All are welcome. “Please also join us for the Social Hour after the Colloquium: 5 to 6 p.m., BESC 185, “An hour of science, socialization, and good food and drink!”

Thurs., Jan. 16, 4:00 p.m., Van Tuyl Lecture series at CSM, **Diverse Environments of Advanced Argillic Alteration (Mineral Stabilities; Hypogene, Steam-heated, and Supergene Formation; Exploration Implications)**, by Antonio Arribas, University of Texas at El Paso. Berthoud Hall room 241; all are welcome.

Thurs., Jan. 16, 7:00 p.m., **Deciphering the timing and causes of Great Unconformity erosion: An example from Pikes Peak, Colorado**, by Rebecca Flowers, Univ. of Colorado. At the monthly meeting of the Colorado Scientific Society, Berthoud Hall (***new meeting place for CSS!***) Room 241, Colorado School of Mines campus, Golden; all are welcome; come for social time & refreshments at 6:30, meeting at 7:00. See abstract & more info at <https://coloscisoc.org/>.

Wed., Jan. 22, 10:30-11:30 a.m., USGS Rocky Mountain Science Seminar, **Tracking anoxia in ancient oceans**, by Dr. Kim Lau, Univ. of Wyoming. Building 25 auditorium, Denver Federal Center, Lakewood CO.

Visitors are welcome. Enter the Federal Center via Gate 1 on Kipling St., turn right and continue 2-1/2 blocks north to the big parking lot (partly roofed over by solar panels) east of Building 25, and enter the building via the main entrance near the center of the building through the security guard station, entrance E-14. *See the full USGS schedule elsewhere in this newsletter.*

Thurs., Jan. 23, 4:00 p.m., Van Tuyl Lecture Series at CSM, **Structural Geology of Porphyry Copper Deposits from Regional Tectonic Setting to Vein-formation**, John Dilles, Oregon State University. Berthoud Hall Room 241.

Tues., Jan. 28, 3:00 p.m., Denver Museum of Nature & Science Earth Sciences Colloquium, **The crisis explained**, Joep Van Dijk (CU Boulder). VIP Room, all are welcome. *See the full DMNS Colloquium schedule elsewhere in this newsletter.*

Thurs., Jan. 30, 4:00 p.m., Van Tuyl Lecture series at CSM, **The Rare Earth Elements: A Tale of Plumes, Magmas and Aqueous Fluids**, by A. E. Williams-Jones, McGill University, Montreal, Quebec. **Berthoud Hall room 241; all are welcome.**

Tues., Feb. 4, 10:30-11:30 a.m., USGS Rocky Mountain Science Seminar, **Exploring the mechanics of our retreating Arctic coastline**, Dr. Matt Thomas, U.S. Geological Survey. Building 25 auditorium, Denver Federal Center, Lakewood CO.

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., DMNS Earth Sciences Colloquium, **Last gasp of the Cretaceous: Insights from North Dakota**, Clint Boyd (North Dakota Geological Survey)

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.

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.

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, **2019 Colorado Avalanches: A case history of destruction in Hinsdale County, impacts to historic mining dams, and how snow avalanches may influence development 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, 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!

Fri.-Sat.-Sun., June 5-7, 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.

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 Science 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 <http://www.dmns.org/science/research/earth-sciences/>

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 .

USGS 2020 Rocky Mountain Science Seminar Schedule

Visitors are welcome. Enter the Federal Center via Gate 1 on Kipling St., turn right and continue 2-1/2 blocks to the big parking lot (partly roofed over by solar panels) east of Building 25, and enter the building via the main entrance near the center of the building through the security guard station, entrance E-14. The seminars take place in the Building 25 lecture room (auditorium) located just inside entrance E-14, and begin promptly at 10:30 a.m. They normally take place on Tuesdays, with the one exception of the January 22 talk (Wednesday) on this year's schedule. The security guard will give you a visitor's pass and direct you (you will need to show him your driver's license). The USGS seminar hosts are Sam Johnstone & Leah Morgan

Tuesday, January 7th at 10:30 am

The Earth's earliest crust: Hadean origins of Paleoproterozoic crust in the Wyoming province.

Dr. Carol Frost, University of Wyoming

Wednesday, January 22nd at 10:30 am

Tracking Anoxia in Ancient Oceans

Dr. Kim Lau, University of Wyoming

Tuesday, February 4th at 10:30 am

Exploring the mechanics of our retreating Arctic coastline

Dr. Matt Thomas, U.S. Geological Survey

Tuesday, February 18th at 10:30 am

Global metal resources; land of plenty or are we running out?

Dr. Simon Jowitt, University of Nevada, Las Vegas

Tuesday, March 3rd at 10:30 am

Cenozoic flat-slab subduction processes and the tectonic development of southern Alaska/STEM Engagement with Native American Students and Their Communities

Dr. Kenneth Ridgway, Purdue University

Tuesday, March 17th at 10:30 am

The Late Holocene Teanaway River: a complex history of climate, landslides, river capture, and human impacts

Dr. Sarah Schanz, Colorado College

Tuesday, March 31st at 10:30 am

Can beauty really be only skin deep??? The wonders of biological soil crusts.

Dr. Jayne Belnap, U.S. Geological Survey

Tuesday, April 14th at 10:30 am

How Magmas Evolve: Evidence from In Situ Chemical Data and Computational Modeling

Dr. Wendy Bohron, Colorado School of Mines

Tuesday, April 28th at 10:30 am

Latitude is a little thing that makes a big difference: Reconstructing the last 120 million years of the geography of Tibet for tectonic, geodynamic, and climate models

Dr. Pete Lippert, University of Utah

Tuesday, May 12th at 10:30 am

Dr. Hannah Dietterich, U.S. Geological Survey – title TBA

Denver Museum of Nature and Science, 2020 Earth Sciences Colloquium Schedule

Talks are 3-4 pm in the VIP Room (located to the left of the Museum entrance, past the security guard station and through the T-rex Cafeteria seating area). * Museum admission not required to attend * All are welcome.

This is a preliminary schedule, received to share with CSS members courtesy of James Hagadorn of DMNS. You may want to confirm the lecture dates in the future before coming to DMNS to attend any of these.

| | |
|--------------------------|--|
| Tues., Jan 28 | The climate crisis explained , Joep Van Dijk (CU Boulder) |
| Tues., Feb 18 | Last gasp of the Cretaceous: Insights from North Dakota , Clint Boyd (North Dakota Geological Survey) |
| Wed. Feb 26, 2 pm | Paleoecology, taphonomy, and paleoenvironments of the Permian Phosporia Rock Complex , Madeline Marshall (Albion College) |
| Wed. Feb 26, 3 pm | Phosphorites, glass ramps, carbonate factories, and saline lakes: the marine-terrestrial transition in the Phosphoria Rock Complex , Ted Matheson (Queens U.) |
| Thurs. Mar 5 | Colorado's coolest Triassic paradox: The salty evolution of the Moenkopi , Rob Fillmore (Western Colorado U.) |
| Thurs. Apr 2 | Dating the K-Pg eruptions that made life miserable for dinosaurs , Blair Schoene (Princeton U.) |
| Thurs. Apr 16 | To Xiphactinus and beyond: The savage ancient seas of Kansas , Anthony Maltese (Rocky Mountain Dinosaur Resource Center) |
| Fri. May 1 | The multituberculates as living animals: The mammals that thrived during the Age of Dinosaurs , Luke Weaver (U. of Washington) |
| Fri. May 15 | Usurpers and insinulators: Competition and environmental change in the Great American Biotic Interchange in mammals , Marie Hoerner (U. of Colorado – Colorado Springs) |
| Fri. Jun 5 | Latest Cretaceous birds from Madagascar and extinction dynamics of the first (Mesozoic) avian diversification , Pat O'Connor (Ohio U.) |
| Wed. Jul 15 | Our Earth was completely frozen? Twice? , Carol Dehler (Utah State U.) |
| Thurs. Jul 30 | 3D surface modeling of Corral Bluffs using Unmanned Aircraft Systems (UAS) for paleontological surveying , Mark Bauer and Matt Burgess (USGS) |
| Tues. Sep 29 | Under the feet of dinosaurs: A new view of Late Cretaceous landscapes along the margin of the Western Interior Seaway , Henry Fricke (Colorado College) |
| Thurs., Nov 5 | New exceptionally preserved Eocene primate skeletons from Wyoming , Doug Boyer (Duke University) |