



Colorado Scientific Society

The objective of the Society is to promote the knowledge and understanding of Earth science, and its application to human needs

January Meeting, Thursday, Jan. 19, 2017, 7:00 p.m.
Shepherd of the Hills Presbyterian Church, 11500 W. 20th Ave., Lakewood CO
Social time beginning at 6:30; meeting & program at 7:00

An Arctic perspective on 20th Century warming
Dr. Gifford Miller
INSTAAR and Geological Sciences
University of Colorado, Boulder

As the planet has warmed over the past century, Arctic temperatures have increased at 2 to 3 times the global rate, with documented reductions in sea ice, glacier size, and snowcover, reflecting the strong positive feedbacks operating in the polar regions. However, the extent to which recent Arctic warming has been anomalous with respect to long-term natural climate variability remains uncertain. We use radiocarbon measurements on rooted tundra plants exposed by recent ice-cap retreat to provide a millennial perspective on summer temperature change. Over 300 ¹⁴C dates on plants entombed beneath ice in Arctic Canada demonstrate that 5000 years of regional summertime cooling has been reversed, with 100-year average summer temperatures now higher than during any century in more than 45,000 years, including peak warmth of the early Holocene when solar energy in summer was 9% greater than present. Our results suggest that anthropogenic increases in greenhouse gases have led to unprecedented Arctic warmth, with implications for lower latitudes through sea-level rise and changes in Northern Hemisphere atmospheric circulation.



Biography: Gifford Miller is Professor of Geological Sciences and Fellow of the Institute of Arctic and Alpine Research (INSTAAR) at the University of Colorado, Boulder, where he also serves as Associate Director. His research focuses on utilizing the record of the recent geological past, primarily in hot and cold deserts, to gain a better understanding of Earth's climate system, and the role of humans in the Earth System. He has long-standing research programs in the

Eastern Canadian Arctic, Australia, Iceland, and Svalbard. He focuses primarily on the Late Quaternary, with a goal of gaining a better understanding of Earth's climate system. His early research was dominantly in the cold deserts of the Polar Regions, with current field projects in the Eastern Canadian Arctic, Svalbard, Iceland and West Greenland, where his research group focuses on abrupt climate change and placing current summer warming in a millennial perspective. In mid-career Miller became interested in hot deserts and monsoon systems while working in North Africa. He has focused on the Australian Summer Monsoon, causes of megafaunal extinction and the footprints of human colonization in Australia for the past 25 years. Recently, his research group expanded the megafaunal extinction work to Madagascar, where he is evaluating the extinction of the Elephant Bird, *Aepyornis*.

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COLORADO SCIENTIFIC SOCIETY, SCHEDULE OF TALKS AND TOPICS FOR 2017

- January 19 Giff Miller, INSTAAR and Geological Sciences, University of Colorado: **An Arctic perspective on contemporary warming**
- Feb. 16 Cal Ruleman, Geology and Environmental Change, USGS: **Late Neogene Tectonic and Volcanic Fragmentation and Middle Pleistocene Climate-Driven Drainage Integration of the Southern Rocky Mountains**
- March 16 Will Yeck, National Earthquake Information Center, USGS: **The Far-Reaching Effects of Wastewater Injection: Recent Case Studies of Anthropogenic Earthquakes**
- April 20 Scott Denning, Atmospheric Sciences, Colorado State University: **Climate models and global change**
- May 18 (Emmons Lecture) Julie Brigham-Grette, University of Massachusetts-Amherst: **Too Warm, Two Poles: How Past Super Interglacials Should Inform Future Coastal Policy** (to be held at the American Mountaineering Center)
- Aug. 25-26 **CSS Flat Tops/White River Plateau Field Trip**, with James Hagadorn
- Sept. 21 **Student Paper Night** (to be held at Arbor House, Maple Grove Park)
- Oct. 19 Suzette Morman, Crustal Imaging and Characterization, USGS: **Using Geoscience to Augment Environmental Public Health Studies**
- Nov. 16 (speaker & title TBA) Planned, a talk on some aspect of planetary geology
- Dec. 21? Marith Reheis, Emeritus USGS: **President's address** (date & location to be confirmed)

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January 2017: Incoming President's Message

Marith Reheis, Emeritus, U.S. Geological Survey



Hello to the members of the Colorado Scientific Society, near and far, in this new year of change! A new year brings opportunities for new initiatives, new directions, new and exciting science, and renewed friendship and fellowship. I step into the position of President fully aware of the example set by the many illustrious leaders of the Society that preceded me, including friends, colleagues, and yes, my former father-in-law, Wallace Cady. We welcome two new council members who are sure to bring energy and new ideas to the CSS: Bob Reynolds (president elect; research associate with the Denver Museum of Nature and Science) and Jim Reed (President of Rockware Inc.), and one renewing council member, Chris Morrison. Continuing Council members and officers are Melissa Foster, Linda Barton Cronoble, Lisa Fisher, Don Sweetkind, Bruce Geller, and Pete Modreski. Peter Barkmann, as Past President, is not quite off the hook but is looking forward to a year that requires somewhat less energy than the last. The efforts of many volunteers in addition to those of the Council keep the Society running smoothly and allow us to host field trips, award grants to graduate students, give prizes to state science fair winners, participate in GSA meetings that are in Denver, and many other activities. For opportunities to help, please talk to any of the Council or look at the volunteer page on the CSS website. Speaking of which—please do browse the newly revamped website at <http://coloscisoc.org/>, and give thanks to Chris Morrison and Barb Warden, who expended considerable effort last year to create a website worthy of our organization.

The coming year the Society will host several talks on various topics in the field of earth surface processes. I hope you'll find them interesting and challenging. This slate of talks arises out of my own diverse career interests as a "lifer" in the U.S. Geological Survey. I like to describe my career as one of increasing desiccation, beginning as an undergraduate in Georgia, followed by studies of active cirque glaciers in the Front Range, progressing through river terraces in the Bighorn Basin, and ending up with desert dust and the long-gone pluvial lakes of the Great Basin and Mojave Desert. On the way I learned surficial and bedrock mapping, became proficient in the properties of arid and semiarid soils, interpreted fault histories and paleoseismicity, inferred paleoclimate from lake sediments, and spent decades studying the interaction of desert dust, wind erosion, land use, soil genesis, plant nutrients, and ecosystems (including humans!). Though I retired almost four years ago, I'm very active as an emeritus and continue with field work in the Southwestern U.S.

I encourage you to participate in all our activities as your schedule allows. We hope to host an entertaining Past Presidents' Dinner this spring to celebrate the Society's 135th anniversary year! We want to make vigorous efforts to connect with other earth-science-oriented groups in the area and to reach out and enlist more student members as well as regular members. In this vein, we will follow up on a very successful Student Night held last September and again host a student presentation night at the Arbor House in east Golden, with awards to the best talks. I hope to rejuvenate efforts to replace or rehabilitate the geologic signage in the Morrison I-70 roadcut. Our meetings are great opportunities for networking and socializing as well as hearing provocative and interesting talks. And of course, we want to host at least two field trips this year; please propose your ideas to Cal Ruleman, field trip chairman, or any of the council members.

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Sci. Soc. Flat Tops Field Trip Planned for weekend of Aug. 25-26, 2017

Dr. James Hagadorn of the Denver Museum of Nature & Science has agreed to lead a field trip for CSS to the Flat Tops/White River Plateau area of Colorado, the weekend of August 25-26, 2017, to look at things relating to his studies of the Devonian in Colorado. Details are still to be worked out, but I will quote from some of James' brainstorming thoughts about possibilities for the trip:

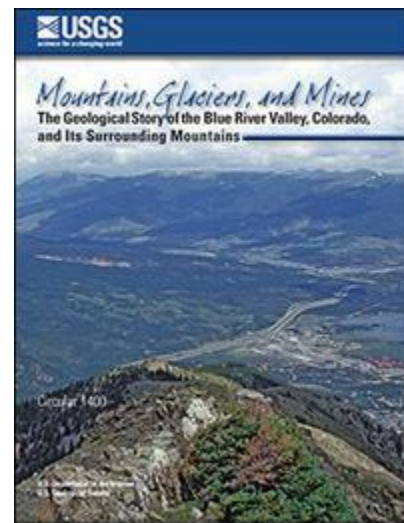
"There are many options for a trip like this, including one that involves spending the night camping in the Flat Tops, staying in a motel in Eagle, camping in Deep Creek, or a combo. There is more to see up there beyond the Dyer Fm, so if others wanted to talk about the Leadville, the Parting, the cool stromatolites of the Cline Top Mbr. of the Dotsero, etc.. all are exposed up there.

"If someone else wanted to lead part of the trip, we could examine nearby outcrops in the Eagle Valley of the Leadville near Glenwood, and/or the State Bridge in South Canyon Creek (there's a hot spring there), or that cool outcrop on the little Colorado River near Dotsero with the coal beds in it (can't recall its name) or we could also go to the gypsum quarries in the Eagle Fm., see the gypsum plant, etc."

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USGS Circular 1400, Mountains, Glaciers, and Mines, The Geological Story of the Blue River Valley, Colorado, and its Surrounding Mountains

This USGS Circular (44p,) by Karl S. Kellogg, Bruce Bryant, and Ralph R. Shroba, was published in 2016. I (Pete, the CSS newsletter editor) are somewhat late in putting this note in our newsletter, but if you would like a copy of the Circular, you are invited to contact Karl, at kkellogg@usgs.gov, phone 303-236-1305. The report can also be viewed or downloaded online at <https://pubs.er.usgs.gov/publication/cir1400> .



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New CSS Dues Structure!

At our January CSS Council meeting, the Council voted to change the dues structure. Regular annual membership will now be \$25 (up from the previous longtime rate of \$20), **however**, any renewing member paying their dues for the upcoming year no later than Jan. 31 of each year, will receive a reduced rate of \$20. A new category of Lifetime Membership has been established, with a onetime payment of \$395.00. The dues rate for Corresponding Members (those who live beyond the Front Range area and who cannot regularly attend meetings) will remain at \$10, and the Student Member rate will remain at \$5. Members are always encouraged to consider making an extra contribution to one of the Society's Memorial Funds or to the Endowment Fund. A membership form showing the new rates is attached to this newsletter. You may also pay dues online, at <http://www.coloscisoc.org/membership/dues.html>, with payment by Paypal or credit card, or you may always mail a check to **Colorado Scientific Society, P.O. Box 150495, Lakewood CO 80215-0495**.

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For more news & information about the Society, always check our website, www.coloscisoc.org, or search for us, Colorado Scientific Society, and "like" us on Facebook. Anyone can view or facebook page, whether you have an account or not, at <https://www.facebook.com/groups/511533159044226/> .

USGS 2017 Rocky Mountain Science Seminar Schedule

Below is the 2017 schedule of biweekly USGS Rocky Mountain Science Seminars. All are welcome to attend. Seminars take place at 10:30-11:30 a.m., Tuesdays, in the Building 25 Auditorium, Denver Federal Center, Lakewood, near 6th Avenue and Kipling St. Enter the Federal Center at Gate 1 (Main Gate), off Kipling St. Turn right on to First St. and proceed about 3 blocks to the north., and park in the large lot with overhead solar panels, east of Building 25. Enter Building 25 via east-facing entrance E-14, past the security guard's desk.

USGS Rocky Mountain Science Seminar

(Lecture Hall, Building 25, 10:30 am)

<u>Date</u>	<u>Speaker</u>	<u>Title</u>
1/10/17	Kristin Bergmann (MIT)	Constraints on climate and the carbon cycle during the early evolution of animals
1/24/17	Clara Blättler (Princeton Univ.)	How salty was the sea? Constraining seawater chemistry with ancient evaporites
2/7/17	Justin Hagerty (USGS Flagstaff)	The state-of-the-art of lunar science: We've only scratched the surface
2/21/17	Ian Miller (Denver Museum of N&S)	Prehistoric Leaf Lust: The Denver Basin and Beyond
3/7/17	Zane Jobe (Colorado School of Mines)	Comparing Submarine and Fluvial Channel Kinematics: Implications for stratigraphic architecture
3/21/17	Brian Ebel (USGS Denver)	Post-wildfire flooding: Can our numerical models be improved?
4/4/17	Christy Till (Arizona State Univ.)	Understanding the Years to Months Preceding Eruptions at Yellowstone Caldera
4/18/17	Sebastian Kopf (CU Boulder)	Geochemical Approaches to Studying the Environmental Chemistry and Microbial Ecology of the Cystic Fibrosis Lung
5/2/17	Laura Nielsen Lammers (UC Berkeley)	Radiocesium attenuation by clays: An emerging view of interlayer accessibility
5/16/17	Julie Fosdick (Univ. Connecticut)	Middle Cenozoic Patagonian marine transgressions: eustasy or tectonic loading during uplift of the Andes?
5/30/17	Jen Kay (CU Boulder)	The Community Earth System Model (CESM) Large Ensemble Project: A Community Resource for Studying Climate Change in the Presence of Internal Climate Variability

December's "What is this Rock?" Quiz

My first (and best) set of answers to this Christmas-colors-themed quiz came from Lesley Sebol, who identified 6 out of 7 correctly. The answers are (left to right, top row to bottom row), #1 Rhodochrosite (Sweet Home mine, Colorado), #2 Emerald (Chivor, Colombia), #3 Fluorite (Mont Blanc, France), #4 Dioptase (Tsumeb, Namibia), #5 Cuprite (locality uncertain), #6 Malachite (probably, Democratic Republic of Congo), and the last, #7, Lesley, it is not crocoite, (PbCrO_4), though that was a very good guess; it is "chalcotrichite", the acicular/fibrous variety of cuprite (Cu_2O) (locality uncertain). Crocoite, though also acicular, normally forms slightly coarser, thicker prismatic crystals, and is more of a red-orange to orange shade, whereas cuprite is closer to pure red.



Numbered, left to right:

top row: 1 – 2 – 3 – 4

bottom row: 5 – 6 – 7



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A followup note to November's "Where is this rock?" ---back to our "zebra dolomite". Vince Matthews wrote to mention that he had made comments on a picture of zebra dolomite in his "Leadville Geology" blog post, March, 2013. Here's what Vince wrote then:

***DID YOU KNOW?** That zebra rock is one of the interesting rocks found in the Leadville Mining District? It is Leadville limestone (dolomite) that has been altered by hot fluids near ore bodies. The hot fluids caused the gray dolomite to recrystallize to coarser white dolomite. During the recrystallization, the dolomite grew much coarser dolomite crystals that excluded the dark, organic material. Note that the right side of the specimen shows larger and whiter layers, and much darker layers than the two areas to the left. In this small specimen the fluids were migrating from right to left. Note how the small faults apparently served as partial barriers to the migration of the recrystallizing fluids. Zebra rock was used by prospectors to indicate they were probably near ore."*



January “What is this rock?” For this month, my question is going to be “What?” rather than “Where?” I usually post my own pictures here, but this time, these are from a friend of a friend. These images (an overall view of an outcrop, plus a closeup) was posted on facebook by David Montgomery, an artist (oil painting) from Alamosa, Colorado. David was puzzled as to what these structures in the rock are—as I am, too. They are from Peña Blanca, New Mexico. (A bit of a question on the locality here; I believe it is Peña Blanca, Sandoval County, New Mexico, near Cochiti Pueblo and the Rio Grande; just south of the Jemez Mountains; but there is also a Peña Blanca in the Organ Mountains, and perhaps others in NM too). I have only seen the pictures, so I do not know if this rock with the unusual, partly hollow, horizontal tubular structures is sedimentary or volcanic rock (you decide?). P.S., the funny-looking, blurry part of the first image is a photoshop artifact, it was blurred out intentionally by David, I think he said because the featureless black shadowed area made the perspective in the image hard to interpret (or was it because there was graffiti there, I forget). I’ll try to confirm several of these points of uncertainty by next month. But, any ideas as to what these are? Write to me at pmodeski@usgs.gov . I am quite stumped, I’ve never seen anything like this, so I will appreciate hearing any ideas/suggestions!



Colorado Scientific Society dues are \$25 for regular members, **\$20 if dues renewals are paid before Jan. 31 of each year**, \$10 for corresponding members (outside the Colorado Front Range area) and only \$5 for students. A Lifetime Membership is now available, for \$395.00. Mail a check to the CSS or pay with a credit card using PayPal on the CSS website. Please contact CSS Treasurer Don Sweetkind at 303-236-1828 or dsweetkind@usgs.gov if you are uncertain of your dues or membership status. Extra payments to contribute to our Memorial Funds or Endowment Fund are always most welcome; you'll see a list of them on the membership form attached to this newsletter, or see our website at <http://www.coloscisoc.org/membership/dues.html>.

Colorado Scientific Society, P.O. Box 150495, Lakewood CO 80215-0495 <http://www.coloscisoc.org>

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Calendar of Coming Events

Wed., Jan. 18, 4:00 p.m., CU Geological Sciences Seminar, Boulder, "**Geomicrobiological processes in banded iron formations**", by Andreas Kappler, Eberhard-Karls-University, Tubingen. Benson Earth Sciences Building Auditorium (room 180). All welcome; refreshments are served at 3:30 in the 2nd floor atrium.

Thurs., Jan. 19, 4:00 p.m., Van Tuyl Lecture Series at Colorado School of Mines, "**Gold deposits in metamorphic rocks: why are we getting more confused?**", by Richard Goldfarb, CSM. Berthoud Hall Room 241, all are welcome.

Thurs, Jan. 19, 7:00 p.m., monthly meeting of the Colorado Scientific Society, featuring a talk by Giff Miller, INSTAAR and Geological Sciences, University of Colorado, **An Arctic perspective on 20th Century warming**. At Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood. All are welcome. Social time 6:30, meeting begins at 7.

Tues., Jan. 24, 10:30 a.m., USGS Rocky Mountain Science Seminar series, "**How salty was the sea? Constraining seawater chemistry with ancient evaporites**", by Clara Blättler, Princeton University. Visitors are welcome; in the Building 25 auditorium (enter the Federal Center at the main gate, Gate 1, on Kipling St.; park east of building 25 and use building entrance E-14).

Thurs., Jan. 26, 4:00 p.m., Van Tuyl Lecture Series at Colorado School of Mines, "**Differential zircon fertility, sedimentary recycling, and other problems for detrital zircon geochronology in provenance studies: Detrital monazite to the rescue!**", by David Moecher, Univ. of Kentucky. Berthoud Hall Room 241, all are welcome.

Thurs., Feb. 2, 7:00 p.m., **The end of the Laramide Orogeny as we know it: The switch from porphyry copper to Au/Ag veins**, by William A. Rehrig, exploration geologist. Friends of the Colorado School of Mines Geology Museum's "First Thursday" lecture series on the CSM campus in the Ben H. Parker Student Center, Ballroom E, Maple Street, Golden. Socializing begins at 6:30 PM and the lecture will start at 7:00. Admission is free and all are welcome.

Thurs, Feb. 16, 7:00 p.m., monthly meeting of the Colorado Scientific Society, featuring a talk by Cal Ruleman, USGS, **Cenozoic drainage integration of the southern Rocky Mountains**. At Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood. All are welcome. Social time 6:30, meeting begins at 7.

Fri.-Sat.-Sun., Feb. 24-26, Gem and Mineral Show, sponsored by the **Denver Gem and Mineral Guild**; Jefferson County Fairgrounds, 10-6 Fri. & Sat., 10-5 Sun.; free admission.

Sat.-Sun., March 4-5, Journey to the Jurassic – Exploring the Morrison Formation, WIPS (Western Interior Paleontological Society) 10th Founders Symposium. Green Center, Colorado School of Mines campus, Golden.

Fri.-Sat.-Sun., Mar. 31-Apr. 2, Fort Collins Gem & Mineral Show, sponsored by the Fort Collins Rockhounds Club, at the McKee 4-H Building, Larimer County Fairgrounds/The Ranch, I-25 exit 259. 4-8 p.m. Fri., 9-6 Sat., 10-5 Sun.

Fri.-Sat.-Sun., Apr. 14-17, Colorado Mineral and Fossil Spring Show, Crowne Plaza Hotel - Airport, 15500 E. 40th Ave. Denver, CO. See <http://www.rockygems.com/colorado-mineral--fossil-spring-show-2017.html>.

Sat., May 13, Friends of Mineralogy, Colorado Chapter, Silent Auction. Clements Community Center, 1580 Yarrow St., Lakewood CO, 12:00-4:00 (setup begins at 10:30 a.m., auction begins at 12:00, verbal auction 1:00, all tables will close by 3:00 p.m., checkout follows).

Fri.-Sat.-Sun., June 2-4, Pikes Peak Gem & Mineral Show, sponsored by the Colorado Springs Mineralogical Society. At Mortgage Solutions Financial Expo Center, 3650 N. Nevada Ave., Colorado Springs.

Fri.–Mon., July 21-24, Gold and Silver Deposits in Colorado, a symposium cosponsored by the Friends of the Colorado School of Mines Geology Museum and DREGS (Denver Region Exploration Geologists Society). “The event will feature two days of talks (July 22 - 23) and two days of field trips (July 21 and 24) to historic Colorado gold and silver mining areas.”

Upcoming Science Fairs – Looking for Judges. Judges (and other types of volunteers too) are being sought for several district, regional, and state science fairs:

Community Resources, Inc., can use more judges at the Denver Public Schools District Science Fair on the DU campus on **Saturday, January 21st**. 8 a.m. to noon. To volunteer, you may sign up online at <http://www.signupgenius.com/go/8050f4eada628a13-community> or, email or call Sue Edwards, Executive Director, Community Resources Inc., 720-424-6523, sue_edwards@dpsk12.org.

The 2017 Longs Peak Science and Engineering Fair will be on **Tuesday, February 14**, at the Island Grove Event Center, 425 N. 15th Avenue, Greeley (shuttle service will be available from UNC). “We are anticipating higher numbers of grade 5-12 students than we’ve ever had before. Over 400 student researchers from Weld, Larimer, & Jackson County will compete for a chance to move on to state-level competition. The students will present their creative project ideas! Please share this message with anyone who might have an interest in helping with the event, check your schedules and ask for time off that day from your classes or work so that you can lend your expertise to judging and/or project inspections that day. Qualifications: Interest in youth STEM education is a must; a degree in a STEM field is NOT needed or required. Volunteers needed (training provided day of fair) include Project Board Inspectors, 7:15am – 9:00am; Morning Judges, 8:00am – 12:30pm; Afternoon Judges, 12:15pm – 5:00pm; All-Day Judges, 8:00am – 5:00pm. Volunteers may register at www.lpsef.org.

The 2017 Denver Metro Regional Science & Engineering Fair will take place on the CU-Denver campus on **Friday, February 17**. “We are always looking for mentors, volunteers, and judges.” To register as a judge, see <http://denversciencefair.com/>. They ALSO need volunteers to help in advance on their Scientific Review Committee, as well as for Display and Safety, “Wayfinders”, and photographers—all this is on their web page.

The 2017 Colorado State Science & Engineering Fair “will be held on **Thursday, April 6** so mark your calendars now! We need you! Grand Awards Judging is an all-day event and judges need to be in attendance at the fair from 10 a.m. - 5:30 p.m.” To sign up as a Grand Award Judge (that’s the name for judges for the main competition) register online at <http://www.csef.colostate.edu/Judges.htm>. Volunteers are also needed for numerous categories of help in addition to judging; see their website for this too. **P.S., CSS members**, if someone would like to assist Chuck Weisenberg in reviewing earth science projects at the State Science Fair for the awards that the Society presents there, please contact Chuck, or contact CSS President Marith Reheis.

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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/>.

CU Geological Science Colloquium (Wednesdays, 4 p.m.) see <http://www.colorado.edu/geolsci/colloquium.htm>
CSU Dept. of Geoscience Seminars (Fridays, 4 p.m.), see <http://warnercnr.colostate.edu/geo-news-and-events/departments-seminars>

Van Tuyl Lecture Series, Colorado School of Mines, (Tuesdays, 4 p.m.): http://inside.mines.edu/GE_Lecture-Series
Denver Mining Club (Mondays, 11:30), see <http://www.denverminingclub.org/>
Denver Region Exploration Geologists Society (DREGS; 1st Monday, 7 p.m.), <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.
Rocky Mountain Map Society (RMMS; Denver Public Library, Gates Room, 3rd Tuesday, 5:30 p.m.), <http://rmmaps.org/>
Western Interior Paleontology Society (WIPS; Denver Museum of Nature & Science, 1st Monday, 7 p.m.), <http://westernpaleo.org/> .

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New CSS Officers for 2017 (elected at the December 21, 2016 meeting)

President..... Marith Reheis, 303-277-1843, marith16@gmail.com
 President Elect..... Bob Raynolds, bob.raynolds@dmns.org
 Past President..... Peter Barkmann, 303-384-2642, barkmann@mines.edu
 Secretary..... Lisa Fisher, 303-215-0480, lisa.fisher@alumni.mines.edu
 Treasurer..... Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov

Councilors

2015-2017: Bruce Geller, bgeller@mines.edu, 303-273-3823
 2015-2017 Pete Modreski, pmodreski@usgs.gov, 303-202-4766
 2016-2018: Linda Barton Cronoble, lbarton1611@gmail.com, 720-338-1237
 2016-2018: Melissa Foster, melissa.ann.foster@gmail.com, 707-498-2484
 2017-2019: Jim Reed, jim@rockware.com
 2017-2019: Chris Morrison, chris-morrison@comcast.net

Committee Chairpersons

Database Manager: Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov
 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 Chair: Linda Barton Cronoble, 720-338-1237, lbarton1611@gmail.com
 Membership Chair: open
 Newsletter Editor: Pete Modreski, 303-202-4766, pmodreski@aol.com or pmodreski@usgs.gov
 Outreach Chair: open
 Past Presidents' Best Paper Award, Peter Barkmann, 303-384-2642, barkmann@mines.edu
 Publicity Chair: open
 State Science Fair: Chuck Weisenberg, 303-238-8806, cweisnrg@msn.com
 Student Programs Chair: Melissa Foster, Melissa Foster, melissa.ann.foster@gmail.com, 707-498-2484
 Student Research Grants Chair: Peter Barkmann, 303-384-2642, barkmann@mines.edu
 Webmaster: Barb Warden, 303-278-2701, bwarden@tablemtn.com