



## Colorado Scientific Society

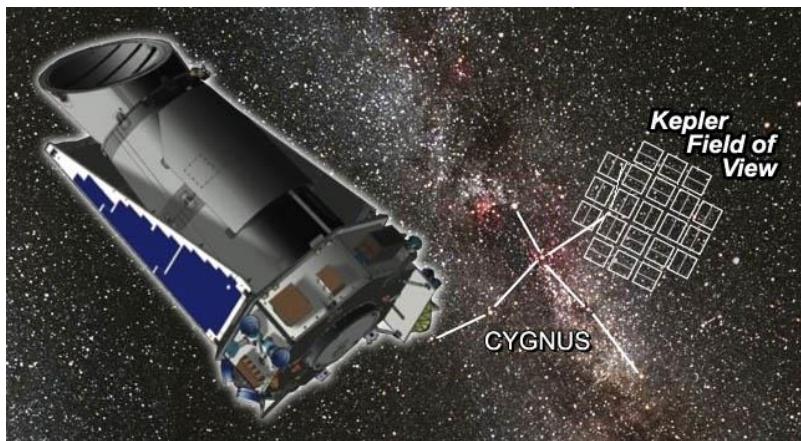
*The objective of the Society is to promote the knowledge and understanding of Earth science, and its application to human needs*

**Thursday, April 16 meeting, 7:00 p.m. (social time 6:30)**  
American Mountaineering Center auditorium, 710 10th St., Golden  
**Our Annual S.F. Emmons Lecture**  
**All are Welcome!**

# The Search for Earth-like Planets

**Dr. Tom Barclay**

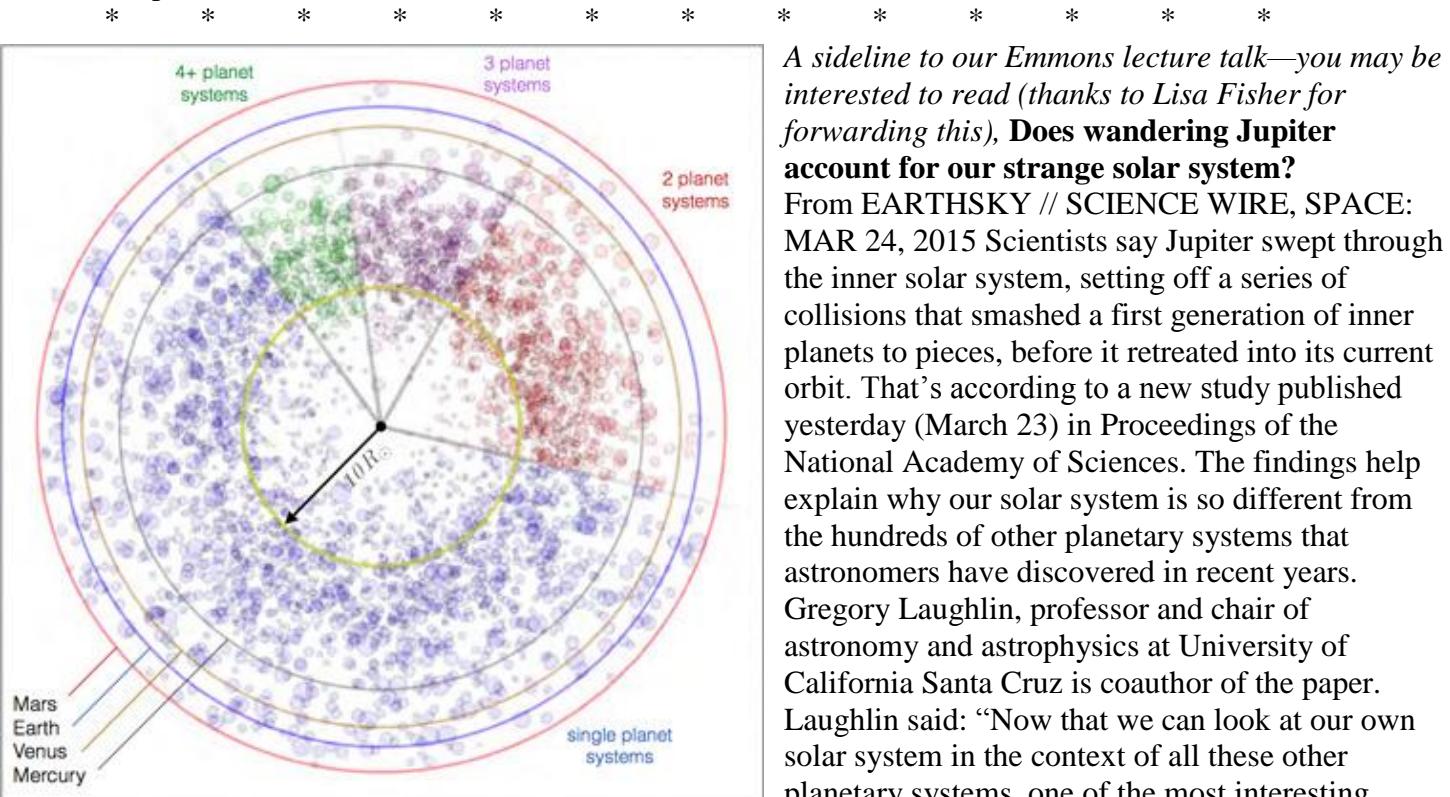
NASA Ames Research Center and the Bay Area  
Environmental Research Institute, California



*Tom Barclay was recently named Director of the Kepler K2 mission, to continue the search for exoplanets using the Kepler spacecraft.*

Tom's abstract for his talk: Are we alone in the Universe? This is a question that has puzzled countless generations. While we are not yet in a position to say whether there is life out there, we are beginning to detect planets that remind us of home. The Kepler spacecraft has been used to identify several planets in the habitable zone of other stars - a region around a star where a planet could host liquid water at its surface given an appropriate atmosphere. Of particular note is Kepler-186f which is an Earth-sized planet that orbits within the habitable zone of a star that is smaller and cooler than the Sun. This talk will focus on the search for

Earth-like worlds, discuss what we know about the planets we have found and look at what we don't know right now but hope to learn from future NASA missions.



*A sideline to our Emmons lecture talk—you may be interested to read (thanks to Lisa Fisher for forwarding this), Does wandering Jupiter account for our strange solar system?*

From EARTHSKY // SCIENCE WIRE, SPACE: MAR 24, 2015 Scientists say Jupiter swept through the inner solar system, setting off a series of collisions that smashed a first generation of inner planets to pieces, before it retreated into its current orbit. That's according to a new study published yesterday (March 23) in Proceedings of the National Academy of Sciences. The findings help explain why our solar system is so different from the hundreds of other planetary systems that astronomers have discovered in recent years. Gregory Laughlin, professor and chair of astronomy and astrophysics at University of California Santa Cruz is coauthor of the paper. Laughlin said: "Now that we can look at our own solar system in the context of all these other planetary systems, one of the most interesting

features is the absence of planets inside the orbit of Mercury. The standard issue planetary system in our galaxy seems to be a set of super-Earths with alarmingly short orbital periods. Our solar system is looking increasingly like an oddball." Here's the link: [http://earthsky.org/space/wandering-jupiter-accounts-for-our-strange-solar-system?utm\\_source=EarthSky+News&utm\\_campaign=37095546fa-Email\\_News&utm\\_medium=email&utm\\_term=0\\_c643945d79-37095546fa-394017297](http://earthsky.org/space/wandering-jupiter-accounts-for-our-strange-solar-system?utm_source=EarthSky+News&utm_campaign=37095546fa-Email_News&utm_medium=email&utm_term=0_c643945d79-37095546fa-394017297)

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## **President's April message – Paul Morgan, Colorado Geological Survey**



This morning I looked at some very sad daffodils and tulips, bent to the ground under an inch or so of snow. This afternoon I have a beautiful view from the base of Lookout Mountain of the basalt-topped mesas behind Golden in bright sunshine against a blue sky. I think that I should not be growing flowers in my garden that do not belong in Colorado. My columbines are just waking from a long winter sleep and would not to anything so foolish as to bloom in March or April. However, I am anxious set foot in the field again as soon as I can safely do so.

My wife accuses me of having “frogs in my socks” and those frogs were jumping during our March meeting with action from the 1923 C.H. Birdseye USGS surveying expedition down the length of the Grand Canyon and historical photography that documented changes in Glacier Bay National Park, presented by Don Becker of the USGS. Don not only presented some remarkable historical video material and historical and modern photographic images, but he shared his great knowledge of the origins of the USGS photographic archives and the background on the material that he was presenting. The glacial retreat that he documented in photographs taken at different times from the same locations in Glacier Bay National Park showed the great magnitude of this phenomenon in the past 100 years. As video producer and archive manager for the USGS Don is a talented still and video photographer and is now documenting current USGS projects and active geological change.

In April 16 CSS moves from the Shepherd of the Hills Church to the American Mountaineering Center Auditorium, 710 10th St. in Golden, for the annual S. F. Emmons Lecture. The topic for this year’s lecture is The Search for Earth-Like Planets, to be presented by Dr. Tom Barclay from the NASA Ames Research Center and the Bay Area Environmental Research Institute. There should be no better expert to speak on this subject as Dr. Barclay has recently been appointed as Director of the Kepler K2 Mission to continue the search for exoplanets using the Kepler spacecraft. Earth-like planets may seem to be a long way away from Colorado geology, but I have recently seen an announcement for the first (to the best of my knowledge) scientific meeting in which the geology of the rocky exoplanets will be discussed in comparison with Earth and Venus (Comparative Tectonics and Geodynamics of Venus, Earth, and Rocky Exoplanets, Pasadena, California, May 4-6, <http://www.hou.usra.edu/meetings/geodyn2015/>). I guess it is never too soon to speculate.

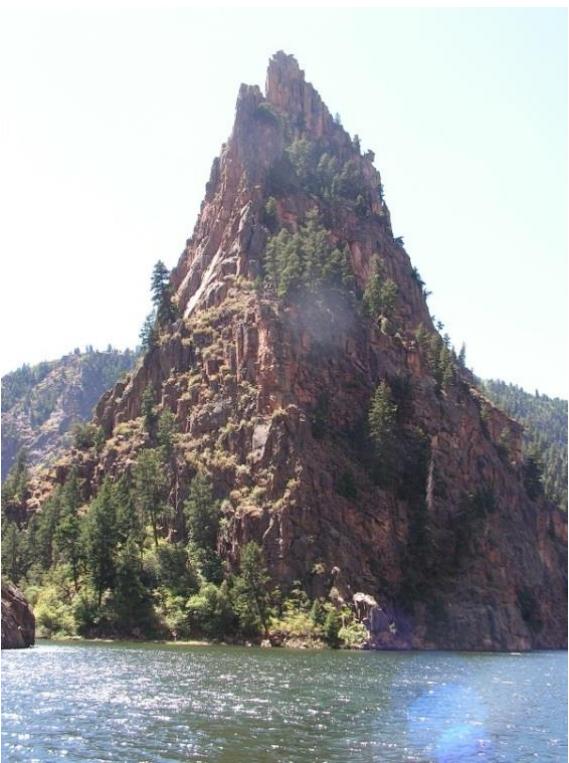
CSS will not be in the Shepherd of the Hills Church location again in May as the society honors past presidents with a dinner and there will also be a presentation by Dr. Martin Lockley of the University of Colorado. Dr. Lockley is famous for his studies and work to preserve dinosaur trackways worldwide: a title has not yet been confirmed but it will be something on dinosaur trackways.

As the field season approached CSS field trips are being planned. At least two are in preparation and as soon as details of these are confirmed they will be announced.

The Emmon’s Lecture will start at 7 p.m. on April 16 and there will be a social greeting time with light refreshments starting at 6:30. I look forward to seeing you there and there will be a prize for the first CSS member to publish a paper on the geology of an Earth-like exoplanet in a national or international journal.

Paul

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*March's Where is this Rock* was correctly identified by (once again!) Beth Simmons, who promptly responded with “Curecanti Needle”. It is a 700+ foot pinnacle of granite located in the canyon of the Gunnison River, now part of Curecanti National Recreation Area, and surrounded by the waters of Morrow Point Reservoir—the middle one of three reservoirs and dams that were constructed on the Gunnison river between 1945 and 1976. It is composed of the 1.4 Ga Curecanti Quartz Monzonite. You can read about it in “The Black Canyon of the Gunnison, Today and Yesterday”, by Wallace R. (Wally) Hansen, USGS Bulletin 1191 (1965), which happily is accessible online as a pdf file, <http://pubs.usgs.gov/bul/1191/report.pdf>. Wally Hansen is a past president (1966) of the Scientific Society; he lives in Denver and is still an (Honorary) CSS member. I'll excerpt this from pp. 33-34 of the Bulletin:

#### Curecanti Quartz Monzonite

“Curecanti Quartz Monzonite is widely exposed in the upper part of the Black Canyon where it forms one large central pluton and many smaller ones. It takes its name from Curecanti Needle, a spirelike monolith opposite the mouth of Curecanti Creek in a wildly picturesque section of canyon (fig. 11). Nearly-vertical

walls of flesh-colored quartz monzonite exceed a thousand feet in height. The needle itself is nearly 800 feet high. Good views of the area are had from Pioneer Lookout Point on the Black Mesa Road and from the north rim of Fitzpatrick Mesa.

“The main Curecanti pluton is a thick lens-shaped body 3 1/2 miles across, west to east, and 2 miles across, north to south. It has a roof and a floor, both exposed in the canyon walls. In general shape it is similar to a flattish laccolith (fig. 12), but it differs fundamentally from a laccolith by being wholly discordant in relation to the intruded rock, which is contorted biotite gneiss. The western part of the pluton extends below drainage- and appears to be deeply rooted. Physical conformation suggests that the quartz monzonite arose from depth beneath the western part of the pluton, gained access to a set of low-angle fractures in the country rock, then spread laterally by forcibly lifting its roof.

“The quartz monzonite is a relatively uniform rock, light gray to orange pink and medium grained. Hand specimens from the main pluton are virtually indistinguishable from specimens from the minor plutons. A distinguishing mineralogic feature of the main pluton, however, is a scattering of clear pink garnets a tenth of an inch or so across. These garnets are seen in nearly every outcrop of the main pluton, but they are lacking from nearly all of the minor ones.”

And I'll quote from Wikipedia, [http://en.wikipedia.org/wiki/Curecanti\\_Needle](http://en.wikipedia.org/wiki/Curecanti_Needle) , “Until 1882, viewing the remote Needle presented a challenge, but the arrival of the Denver & Rio Grande Western Railroad mainlines through the canyon significantly improved accessibility. The train ride along the Gunnison River soon earned a reputation for its scenery, and the Curecanti Needle was featured in railroad company logos from 1887 to 1926. The Curecanti National Recreation Area was named for the Needle; the word "Curecanti" itself is said to come from the name of a Ute Indian chief.

“In 1968, the Morrow Point Dam was completed about 6.2 miles (10.0 km) downstream from the Needle, and the elevated water level of the resulting Morrow Point Reservoir has somewhat changed the view from that shown on the 1884 photo at right. Trains no longer run through the Canyon, but the Curecanti Needle can be

viewed from the Pioneer Point overlook off State Highway 92, or during a Morrow Point Boat Tour, offered by the National Park Service.”

I've taken this boat tour (source of my photo) and I heartily recommend it—it's a wonderful little trip. The twice-daily, 1.5-hour boat tours run from early June until slightly after Labor Day (exact dates depend on weather and spring runoff) and one can make reservations by phone, (970) 641-2337, ext. 205, or at the Elk Creek Visitors Center, along US-50, 15 miles west of Gunnison. From the Pine Creek trailhead & parking area along US-50, a trail leads down 232 steps and a pleasant ¾ mile walk along the river following the old narrow-gauge route to reach the boat dock. See <http://www.nps.gov/cure/planyourvisit/boattour.htm>.



## ***Where is this Rock? -- April***

For our April mystery picture we'll go back to something human-constructed—in stratigraphic order, even. We'll give “first credit” to whomever can correctly guess the “What”, and extra credit if you can also guess “Where”. Write to or call Pete Modreski, pmodreski@usgs.gov or 303-202-4766.



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### ***We are pleased to welcome these new CSS members:***

*Jessica Davey, Denver, CO, student member (joined last year but not acknowledged till now)*

*Dylan Dewitt, student member*

*Susan K Freeman, Colorado Springs CO*

*Brenda I Johnson, Denver CO*

*Frans Mollemans*

*Danielle Okin, Denver CO*

*Blake Rehen, Colorado Springs, CO, student member*

*Greg L Sweatt, Parker CO*

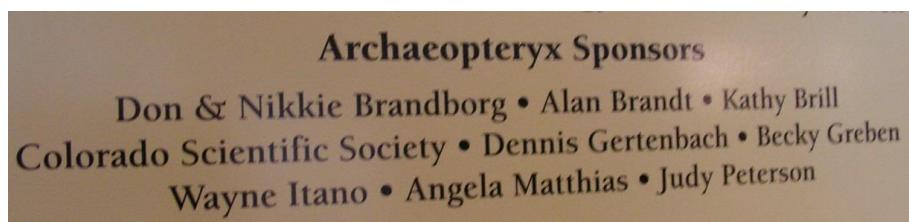
*Louis H Taylor, Littleton CO*

*Dave J Warren, Castle Rock CO*

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**CSS Outreach and Membership:** Linda Barton Cronoble prepared and staffed a CSS booth at the Western Interior Paleontology Society “Fossils and Flight” symposium on March 14-15. Her efforts were very successful; she signed up 8 new members, as well as collecting dues from 7 “old” members, and rediscovering one student member who had joined last year but apparently had never been placed on our mailing list (we apologize!). Linda has a lot of good conversations with people about the CSS too. *If anyone else has good ideas about other places/times where CSS could publicize our organization and what we do—please let us know and share your thoughts/ideas!*

Linda in action for CSS at →  
the WIPS Symposium



The WIPS “Founders Symposium” is held every other year, in the Green Center, on some theme relating to paleontology, and the Colorado Scientific Society has been a cosponsor of it for the last several years, each time contributing about \$300. As you see, this qualifies us as an “Archaeopteryx Level” sponsor!

## ***Beloved Brontosaurus makes a comeback***

**Jurassic giant's taxonomic status is restored.**

Nature, News, Ewen Callaway, 07 April, 2015

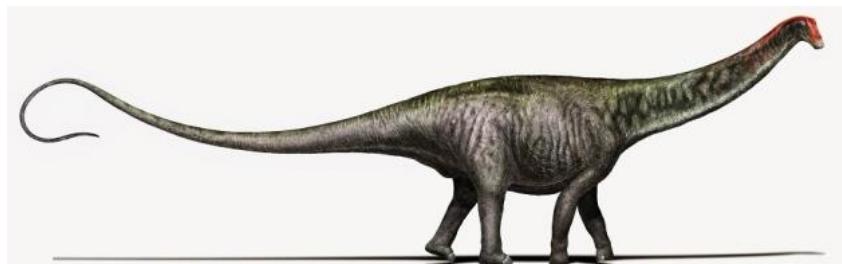
<http://www.nature.com/news/beloved-brontosaurus-makes-a-comeback-1.17257>

This news story in *Nature* reports that, according to a new paper by Emanuel Tschopp and colleagues, *Brontosaurus* has been restored as a valid dinosaur genus name, based on restudy of specimens. To quote from the article,

“Tschopp didn't set out to resurrect the *Brontosaurus* when he started analysing different specimens of diplodocid — the group to which *Apatosaurus*, *Diplodocus* and other giants belong. But he was interested in reviewing how the fossils had been classified and whether anatomical differences between specimens represented variation within species, or between species or genera. Tschopp and his colleagues analysed nearly 500 anatomical traits in dozens of specimens belonging to all of the 20 or so species of diplodocids to create a family tree. They spent five years amassing data, visiting 20 museums across Europe and the United States.

“Very broadly, their tree confirmed established ideas about the evolutionary relationships among diplodocids. But the scientists also concluded that *Apatosaurus* and *Brontosaurus* were different enough to belong in their own genera. Many of the anatomical differences between the two dinosaurs are obscure, Tschopp says, but *Apatosaurus*'s stouter neck is an obvious one. “Even though both are very robust and massive animals, *Apatosaurus* is even more so,” he adds.

“Tschopp and his team thought very carefully about their decision to reinstate *Brontosaurus*, and they expect some pushback. “We knew it would be a major finding because *Brontosaurus* is such a popular name,” he says. “I'm pretty sure there will be a scientific discussion around this. I hope there will be. That's how science works.”



Davide Bonadonna

“The first known *Brontosaurus* fossil was unearthed in the Morrison formation in Colorado.”

The complete original article is:

Tschopp E., Mateus O., and Benson, R.B.J. (2015) A specimen-level phylogenetic analysis and taxonomic revision of Diplodocidae (Dinosauria, Sauropoda): PeerJ 3:e857 <https://dx.doi.org/10.7717/peerj.857>

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## ***Lasers Map the Earth that Moved in Colorado's Epic Floods***

Nick Stockton – Wired - Science, March 31, 2015

[http://www.wired.com/2015/03/lasers-map-earth-moved-colorados-epic-floods/?mbid=synd\\_slate](http://www.wired.com/2015/03/lasers-map-earth-moved-colorados-epic-floods/?mbid=synd_slate)

This online article is an interesting followup to our Fall 2014 field trip that looked at the effects of floods and debris flows from the 2013 floods in the Boulder area. This present study used LiDAR data acquired before and after the 2013 floods. Excerpts from the news story:

“The 2013 storm in Colorado was all kinds of historic. One week of steady precipitation broke daily, monthly, and yearly rainfall records all over the state. The flooding tore away roads, rails, and homes, and forced more than 12,000 people to evacuate. But the rains made their mark on the mountains, too. The stalled storm scraped away hundreds—maybe even thousands—of years of rock, dirt, and sand that had accumulated in the mountain

range's creased valleys. ... Depending on the steepness of the slope, the Front Range of the Colorado Rockies is weathering away at a rate of about 20-60 millimeters every 1000 years. ... The portion of flooded mountain area mapped showed 114,000 cubic meters of missing material. ... By combining the typical rate of weathering with the total volume of material the storm flushed away, the Andersons calculated that the storm had flushed out about 400 years worth of material from the mountains—unheard of for the Rockies, and a clear indicator of this one-time event's impact."

You can read more about this work at, <http://www.geosociety.org/news/pr/2015/15-23.htm> and <http://www.sciencedaily.com/releases/2015/03/150330122134.htm>. The full paper is: S. W. Anderson, S. P. Anderson, and R. S. Anderson (2015) Exhumation by debris flows in the 2013 Colorado Front Range storm: *Geology*, 2015; DOI:[10.1130/G36507.1](https://doi.org/10.1130/G36507.1) (published online March 27, 2015; not yet published in print form).

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## ***Save the Date: CSS Annual Past Presidents' Dinner and Lecture, May 13***

Our annual Past Presidents Dinner—an opportunity to recognize and introduce past presidents of the Colorado Scientific Society—has been scheduled for Wednesday, May 13, 5:30 p.m., at White Fence Farm, 6263 West Jewell Avenue, Lakewood CO. We will have a presentation to follow the dinner: "**Tracking Dinosaurs in the Wild West and Beyond**", by Dr. Martin Lockley, University of Colorado. All members of the society, spouses, family, and guests, are invited to attend. Full information will be in our May newsletter.

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## ***CSS Laramie Mountains Field Trip Being Planned:*** Emmett Evanoff (University of

Northern Colorado) has offered to organize and lead a two-day field trip for CSS "along the Laramie Mountains in Wyoming to look at the Cenozoic rocks and geomorphology of the range. This should be of interest to Colorado geologists for the Laramie Mountains preserve the mid Cenozoic topography that the Colorado Mountains had before they were modified in the Late Cenozoic by regional uplift and glaciations. The Laramie Mountains have had less Late Cenozoic uplift and no glaciations, so the late Eocene through Miocene rocks still onlap onto the range. Two days would allow us to see the huge mid-Cenozoic paleovalleys in the northern Laramie Mountains." Dates and other arrangements have not yet been finalized; the most likely time will be late August, perhaps Aug. 22-23 or 29-30; we'll have more information in a future newsletter.

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## ***Calendar of Coming Events***

**Wed., Apr. 8**, 4:00 p.m., CU Geological Sciences Seminar, Boulder, "**A window on Rodinia paleoenvironments provided by Sandstone Injectites of the Colorado Front Range**", by Christine Siddoway, Colorado College. Benson Earth Sciences Building Auditorium (room 180).

**Wed., Apr. 8**, 6:30 p.m., continuing this year's "**Fracking Sense**" lecture/discussion series at CU, **Dr. Tony Ingraffea**, Cornell University, in conversation with Professor Patty Limerick; "What are the opportunities, challenges, rewards, and burdens presented to university-based academics who enter into the conflict-rich terrain of unconventional oil and gas development? What is the underlying benefit to society when professors make different choices between taking a position or serving as referee on a controversial issue? While this conversation will very much be focused on familiar issues raised by hydraulic fracturing, it will be distinctive, and perhaps unique, in its honest and good-natured exchange of views on the roles professors play in current social, political, and cultural conflicts." Mathematic Building 100, CU Boulder campus. See

[www.centerwest.org](http://www.centerwest.org) . All are welcome, no admission charge. Final presentation in the series will be April 28, Dr. Matthew Cotton, "The Politics of Shale Gas in the United Kingdom"; Wolf Law building, Wittemyer Courtroom, CU Boulder Campus.

**Fri., Apr. 10**, , 6:45 p.m., **North Jeffco Gem & Mineral Club Silent Auction**; Apex Community Center, 6842 Wadsworth Blvd., Arvada, CO. All welcome; a fun evening; great rocks to buy, and good refreshments!

**Tues., Apr. 14**, 10:30 a.m., USGS Rocky Mountain Science Seminar; **Magma intrusion rates and crustal degassing at Yellowstone: Insights from gas chemistry, isotopes, and emissions**, by Jake Lowenstern, USGS Menlo Park. In Building 25 Auditorium (use entrance E-15), Denver Federal Center, Lakewood CO. All are welcome.

**Tues., Apr. 14**, 3:00 p.m., VIP Room, DMNS Earth Science Seminar, "**The life cycle of a field geologist: Time travel to the Mesozoic**", by Mark Kirschbaum, Colorado School of Mines. All are welcome.

**Wed., Apr. 15**, 4:00 p.m., CU Geological Sciences Seminar, Boulder, **Alternative Earths: Explaining Persistent Inhabitation on a Dynamic Early Earth**, by Tim Lyons, UC-Riverside. Benson Earth Sciences Building Auditorium (room 180).

**Thurs., Apr. 16**, 7:00 p.m., **The Colorado Scientific Society's 2015 Emmons Lecture** will be at the American Mountaineering Center auditorium, 710 10<sup>th</sup> St., Golden, at approx. 7 p.m. The speaker will be Dr. Tom Barclay, NASA Ames Research Center and the Bay Area Environmental Research Institute; his topic will be "**The Search for Earth-like Planets**".

**Tues., Apr. 21**, 4:00-7:00 p.m., **Day-before-Earth-Day Geology & Nature Hike on South Table Mountain**, Golden, CO, to the top of the "Castle Rock" overlook. Led by USGS geologist Dr. Pete Modreski. Meet at 4:00 p.m. at the trailhead near the intersection of 18th St. and Belvedere St. in Golden (follow 19th St. east until it ends at the base of South Table Mountain). The easy-paced loop hike will follow a good but steep trail to the top, about 2 miles round trip and about 500 feet elevation gain. We'll view and discuss the lava flows that cap the mesa, the sedimentary rocks beneath them, how the present landscape developed, and plant communities on the mesa. All are welcome; contact pmmodreski@usgs.gov, office 303-202-4766 or cell 720-205-2553 with any questions or in case of inclement weather.

**April 24-26, Colorado (Spring) Mineral and Fossil Show**, Ramada Plaza Hotel (formerly Holiday Inn - Central Denver), 4849 Bannock St, Denver, CO; 10-6 Fri. & Sat., 10-5 Sun.; see [http://www.mzexpos.com/colorado\\_spring.html](http://www.mzexpos.com/colorado_spring.html)

**April 25-26, Mineral, Fossil, and Book Sale**, Colorado School of Mines Geology Museum, 1310 Maple St., CSM campus, Golden; 9 a.m. – 4 p.m. All are welcome; "most prices will be reduced during the course of the event".

**Tues., Apr. 28**, 10:30 a.m., USGS Rocky Mountain Science Seminar; **Colorado's stratigraphy: Do all the pages fit into 8 chapters?**, by Bob Raynolds, Denver Museum of Nature and Science. Building 25 Auditorium, Denver Federal Center; all are welcome.

**Wed., Apr. 29**, 7:00 p.m., Dinosaur Ridge Evening Lecture, **Meat-Eating Dinosaurs**. "Join us for an evening lecture on theropods, meat-eating dinosaurs! Have you ever wondered about which of these awesome creatures lived in your backyard? Come on over this evening to see a presentation done by Erin LaCount on what theropods are and what we know about these critters! FREE! 7:00-8:30 p.m. at the Dinosaur Ridge Visitor Center (C470 and Alameda Parkway). Recommended for adults only (12 years and older)".

**Sat., May 2**, 11:00 a.m. – 3:00 p.m., **Colorado Mineral Society Silent Auction**; Holy Shepherd Lutheran Church, 920 Kipling St., Lakewood. All are welcome. “There will also be a children’s auction, along with a live auction that will be held at 1:00pm. Door prizes and refreshments.”

**Thurs., May 7**, 7:00 p.m.: The Friends of the Colorado School of Mines Geology Museum "First Thursday" lecture series continues with "**Mineral Zoning in the Silverton Mining District**" by Dr. John Dreier. In the Geology Museum Conference Room (GRL 201), 1310 Maple Street, Golden, CO 80401. Socializing and munchies begin at 6:30 PM; the talk will start at 7:00. Admission is free and all are welcome.

**Sat., May 9**, 10 a.m. – 2 p.m., first "**Dinosaur Discovery Day**" of the year at Dinosaur Ridge, Morrison; also featuring Boy Scout Day. Guides are stationed all along the ridge to show and explain the fossils and geology, plus educational booths and activities by the Visitors Center. Walk up & down the ridge, or ride a tour bus for \$4. See [www.dinoridge.org](http://www.dinoridge.org).

**Sat., May 9**, 12:00-3:00 p.m., **Friends of Mineralogy Silent Auction, Clements Community Center, Lakewood CO**, 1580 Yarrow St., 1 block west of Wadsworth and 1/2 block north of Colfax. Minerals, rocks, books, gems, etc. Live auction of high-quality donated items at about 1 p.m. Refreshments. All are welcome.

**May 9-10, Grand Junction Gem & Mineral Club, 68<sup>th</sup> Annual Gem Mineral, & Jewelry Show**; Two Rivers Convention Center, Grand Junction.

**Tues., May 12**, 3:00 p.m., VIP Room, DMNS Earth Science Seminar, "**Early Earth vs. The origin of life**", by Steve Mojzsis, U. of Colorado.

**Wed., May 13, Colorado Scientific Society, Annual Past Presidents' Dinner**, with a presentation by Dr. Martin Lockley on "**Tracking Dinosaurs in the Wild West and Beyond**", at White Fence Farm, Lakewood.

**May 14**, 7:00 p.m., **FM Colorado Chapter bimonthly meeting**; speaker, Mandy Hutchinson, "Carbonatites". Denver Museum of Nature & Science, VIP Room.

**May 16-17, Cheyenne, WY Mineral, Fossil, Gem & Rock Show**, hosted by Cheyenne Mineral & Gem Society; Archer Complex – Building M, south of I-80 exit #370, 6 miles east of Cheyenne; 9-6 Sat., 10-4 Sun.

**May 21-23, Geological Society of America, Rocky Mountain Section Meeting, Casper, WY.**

**May 31-June 3, American Association of Petroleum Geologists Annual Meeting, Denver, CO.**

**June 5-7, Pikes Peak Gem and Mineral Show**, at Western Museum of Mining & Industry, Colorado Springs; 9-5 Fri. & Sat., 9-4 Sun.; adult admission to show & museum is \$5. Sponsored by the Colorado Springs Mineralogical Society; theme is "Topaz from Around the World".

**June 11-14, "Contin-Tail at Fairplay"**, a new "rock swap" type show; see [www.coloradorocks.org](http://www.coloradorocks.org) or [gretunnicliff@yahoo.com](mailto:gretunnicliff@yahoo.com)

**June 19-21, "Dinosaur Train" comes to Dinosaur Ridge**. "Based on the television program Dinosaur Train™, an officially licensed event with characters, music and themes from educational show will be held at the Dinosaur Ridge Visitor Center. Activities will be directed at 2 to 7 year olds but siblings and adults can play and ride along too." For more information see [www.dinoridge.org](http://www.dinoridge.org).

**June 21, “Geology Train” on Cumbres & Toltec Scenic Railroad, Antonito, CO.** “On June 21st, join a cadre of distinguished geologists for a truly extraordinary day on the Cumbres and Toltec Scenic Railroad! Explore the Toltec Gorge Rock as you've never seen it before. Walk through Rock Tunnel and then photograph the train as she comes through the tunnel. Receive a mile by mile Geologic Rail Log. This special train will stop at many outcrops and rail cuts along the right of way, to mingle, marvel and collect photographs, samples and experiences only accessible on the train route.” For details see <http://cumbrestoltec.com/geology-train/> . [Cost is approximately \$161.]

**July 10-12, Durango, CO Gem and Mineral Show,** La Plata County Fairgrounds, sponsored by Four Corners Gem & Mineral Club; 10 a.m. – 6 p.m. Fri. & Sat., 10-5 Sun. Free admission..

**July 10-13, Gunnison Mining & Minerals Symposium,** sponsored by Friends of CSM Geology Museum; hosted at the Western State Colorado University campus, Gunnison CO. “Presentations on the mining history, geology, and minerals of the Gunnison Basin and surrounding mountains. Multiple guided field trips and opportunities for mineral collecting”. For more information see the Friends facebook page, <https://www.facebook.com/LikeCSMGeoMuseum> .

**July 16-18, Rocky Mountain Federation of Mineralogical Societies Convention and Mineral and Gem Show, Cody, Wyoming.**

**July 31-Aug. 2, Creede Rock & Mineral Show;** 10 a.m. – 5 p.m., free admission; at the Underground Mining Museum, Creede, CO. See [www.creederocks.com](http://www.creederocks.com) .

**Aug. 13-16, Contin-Tail Rock Swap/Gem & Mineral Show,** Buena Vista, CO

**Aug 21-23, Lake George Gem and Mineral Show** (sponsored by the Lake George Gem and Mineral Club) and the **Woodland Park Gem, Mineral, and Jewelry Show**, Aug. 20-23.

**Sep. 12-20, Denver Coliseum Mineral, Fossil, and Gem Show,** see <http://www.coliseumshow.com/> .

**Sep. 13-20, Colorado (Fall) Mineral and Fossil Show,** Ramada Plaza Hotel (formerly Holiday Inn - Central Denver), 4849 Bannock St, Denver, CO; see [http://www.mzexpos.com/colorado\\_fall.html](http://www.mzexpos.com/colorado_fall.html) .

**Sep. 18-20, Denver Gem and Mineral show,** at The Denver Mart, 58<sup>th</sup> Ave. and I-25 (ext 215), sponsored by the Greater Denver Area Gem and Mineral Council; dealers, exhibits by clubs, individuals and museums nationwide, lectures, demonstrations, and kids' activities; theme, “Minerals of the American Southwest”. 9-6 Fri., 10-6 Sat., 10-5 Sun. See <http://www.denvermineralshow.com/> .

**Sept. 24,** Friends of Mineralogy Colorado Chapter bimonthly meeting; speaker TBA.

**Nov. 1-4, Geological Society of American Annual Meeting, Baltimore, MD.**

**Nov. 12,** FM Colorado Chapter bimonthly meeting; speaker, Dan Wray, **Cave Minerals in 3-D.**

**Nov. 14-15, New Mexico Mineral Symposium, Socorro, NM;** see <https://geoinfo.nmt.edu/museum/minsymp/home.cfm> for details.

**Nov. 20-22, Denver Area Mineral Dealers Show,** Jefferson County Fairgrounds.

***Special exhibits continuing in 2015:***

**Molybdenum and the History of the Climax Mine**, at the Western Museum of Mining & Industry, Colorado Springs, Feb. 12<sup>th</sup> through May 31st, 2015. See <http://www.wmmi.org/exhibits>

**Steps in Stone: Walking Through Time**, at the University of Colorado Museum of Natural History, CU campus, Boulder. “A new exhibition that features real fossil tracks and trackways from the University of Colorado Museum of Natural History collections”. Open 9-5 weekdays, 9-4 Saturdays, 10-4 Sundays; closed on university holidays. Exhibit runs through December 2015; see <http://cumuseum.colorado.edu/>.

***For more lecture series during the year see:***

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/department-seminars>

Van Tuyl Lecture Series, Colorado School of Mines, (Tuesdays, 4 p.m.) see  
[http://inside.mines.edu/GE\\_Lecture-Series](http://inside.mines.edu/GE_Lecture-Series)

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

Denver Region Exploration Geologists Society (DREGS; 1<sup>st</sup> Monday, 7 p.m.), <http://www.dregs.org/index.html>  
Western Interior Paleontology Society (WIPS; 1<sup>st</sup> Monday, 7 p.m.), <http://westernpaleo.org/>

\* \* \* \* \*

## **2015 CSS Elected Officers**

President.....Paul Morgan, 303-384-2648, morgan@mines.edu  
President Elect.....Peter Barkman, 303-384-2642, barkmann@mines.edu  
Treasurer.....Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov  
Secretary.....Lisa Fisher, 303-215-0480, lisa.fisher@escalantemines.com  
Past President.....Scott Lundstrom, 303-917-2849, pslundstrom@msn.com

## **Councilors**

2013-2015: Marieke Dechesne, 303-236-1289, mariekedechesne@gmail.com  
2013-2015: Liz Pesce, pesce.e@gmail.com  
2014-2016: Celia Greenman, celia.greenman@earthlink.net  
2014-2016: (vacant position, to be filled)  
2015-2017: Bruce Geller, 303-273-3823, bgeller@mines.edu  
2015-2017 Pete Modreski, 303-202-4766, pmodreski@aol.com

## **Committee Chairpersons**

Best Student Paper Competition: Scott Lundstrom, 303-917-2849, pslundstrom@msn.com  
Database Manager: Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov  
Field Trips: Cal Ruleman, 303-236-7804, cruleman@usgs.gov  
History: Beth Simmons, cloverknoll@comcast.net  
Hospitality: Jack Krajewski, gjjack08@gmail.com  
Membership/Mentor: Liz Pesce, pesce.e@gmail.com  
Student Research Grants: Scott Lundstrom, 303-917-2849; csslund15@gmail.com  
Newsletter Editor: Pete Modreski, 303-202-4766, pmodreski@aol  
Outreach: Linda Barton Cronoble, 720-338-1237, lbarton1611@gmail.com  
Program: Open  
Publicity: Open  
State Science Fair: Chuck Weisenberg, 303-238-8806, cweisnbrig@msn.com  
Webmaster: Barb Warden, 303-278-2701, bwarden@tablemtn.com

**Colorado Scientific Society, P.O. Box 150495, Lakewood CO 80215-0495**

**Our website:** <http://www.coloscisoc.org>

**Upcoming CSS meetings** (normally at Shepherd of the Hills Church, 11500 W. 20<sup>th</sup> Ave., Lakewood):

September 17  
October 15  
November 19  
December 17

\* \* \* \* \*

***Our reminder again – please pay dues for 2015 if you haven’t yet!*** A dues form is in this newsletter and on our website, <http://www.coloscisoc.org/membership/dues.html>. Dues payments are \$20 for regular members, \$10 for corresponding members (outside the Colorado Front Range area) and **only** \$5 for students. You may pay dues by mailing 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 and 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).



# Colorado Scientific Society

## Application and Membership Update Dues and Funds Contributions

Date \_\_\_\_\_

New Member \_\_\_\_\_

Renewing Member \_\_\_\_\_

(email address)

(Telephone)

(Last Name)

(First Name)

(Initial)

(Address)

The success of most Society activities depends on volunteer help. Please circle any activities for which you can provide assistance. We will pass your name on to the appropriate Committee Chairperson.

Field Trips  
Fund Raising

History  
Newsletter

Outreach  
Program/Talks

### Annual Dues (January – December)

Regular Members \$20

Corresponding Members \$10

Student Members \$5

**Memorial Funds:** These funds support research grants to graduate students in the Earth Sciences throughout the nation. *Please note if contribution is made in the memory of an individual.*

Ogden Tweto Memorial Fund

Steven Oriel Memorial Fund

Edwin Eckel Memorial Fund

Bill Pierce-Heart Mountain Fund

George Snyder Memorial Fund

Chuck Pillmore Memorial Fund

### Endowment Fund:

This fund is used to support the Society's monthly meetings and newsletter, field trips, family night, annual Emmons Lecture, invited speaker honorarium, and special activities.

**TOTAL CONTRIBUTIONS (DUES AND FUNDS):** \_\_\_\_\_

Please make your checks payable to the:  
*Colorado Scientific Society*

Send this form & your check to:  
**Colorado Scientific Society**  
**P.O. Box 150495**  
**Lakewood, CO 80215-0495**

Or register and pay on-line using PayPal at:

<http://www.coloscisoc.org/membership/duespaypal.htm>