



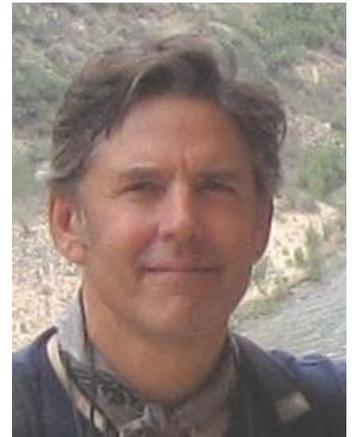
Colorado Scientific Society

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

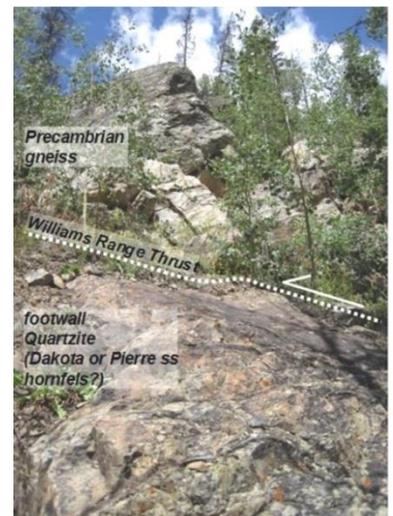
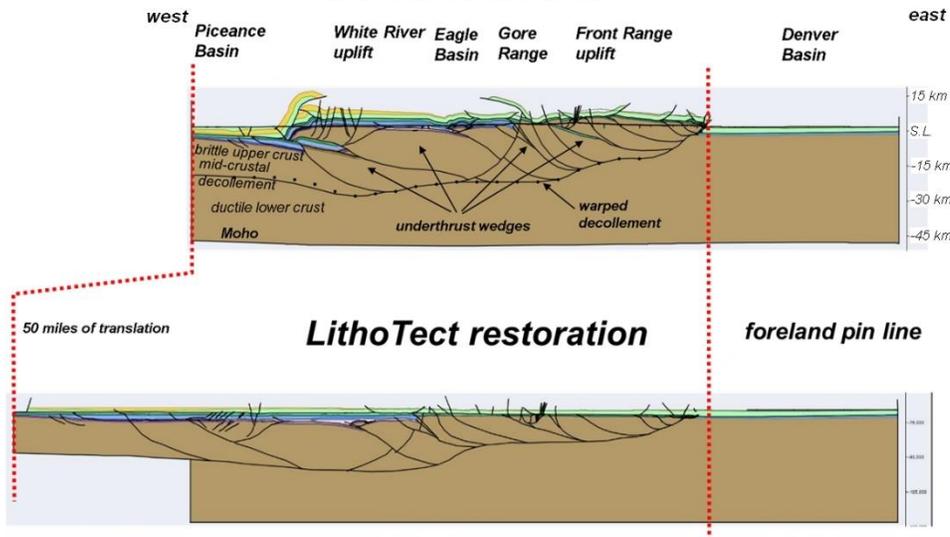
October Meeting, Thursday, Oct. 18, 2018, 7:00 p.m.
Shepherd of the Hills Presbyterian Church, 11500 W. 20th Ave., Lakewood CO
Social time beginning at 6:30; meeting & program at 7:00

Structural Geology across Colorado *by Ned Sterne*

Ned Sterne, an independent professional geologist, has been working on the Colorado Transect: a restorable cross section following I-70 across Colorado incorporating data from the mantle to the mountain tops.



central portion of the I-70 transect **deformed section**



at right – Williams Range thrust exposure along Route 6 near Keystone, looking north.



Colorado Scientific Society

Special Event – CSS Family Night at the Museum

Sunday, Oct. 21, 2018, 4 to 6 p.m.

Colorado School of Mines Geology Museum
1310 Maple St. (Maple & 13th Streets), Golden

(weekend parking is free on campus & Golden city streets)

Please come join us at this special Open House & Family Night at the CSM Museum!

Hosted by the Colorado Scientific Society and courtesy of the Museum. We'll have complimentary refreshments (pizza and other food, snacks, treats, non-alcoholic drinks *and* beer from the Golden City Brewery) for everyone. In addition to all the regular features of the museum, there will be some special activities--a mineral & rock scavenger hunt/treasure hunt—one for kids and one for adults. Bring your family, friends, and guests!

Regular Sunday hours of the museum are 1 to 4 p.m. Come early if you like too; our CSS event will begin when the regular museum visitors leave. Some of the special features *always* at the museum include:

Mineral, rock, geology, and fossil displays

Displays focusing on Colorado's mining districts

Gold and silver (and platinum!) displays

Miss Colorado crown, and a silver pitcher and platter made of Colorado silver

Colorado State Rock, Mineral, and Gemstone (Marble, Rhodochrosite, Aquamarine)

Amazonite, Smoky Quartz, and Topaz from the Pikes Peak region

Meteorite displays, plus Apollo 15 and 17 Moon Rocks

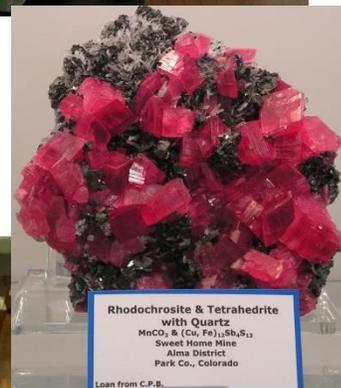
The Mine Tunnel, including a Fluorescent Mineral Display

Rare-Earth and Critical Minerals Display

The 1939 Irwin Hoffman murals depicting mining throughout history

The Museum Gift Shop

A display of "Minerals of the Early Solar System"!



October 2018 President's Message

Energy and Water

Issues of energy and water flow together in Colorado. Comingled challenges of conservation, economics, public policy, perception, and resource management are in our headlines. These invite innovative strategies for collaboration and the quest for science-based solutions. This is what we do.

Water is critical to the oil and natural gas extractive industry through produced water (considered by some a waste by-product), frac fluid flow-back water (considered by some a hazardous waste), and water injection (considered by some a cause of human induced earthquakes).

Water recycling can mitigate many of these impacts and concerns, reducing and reusing waste-water, reducing injected water volumes, and allowing a reduced environmental footprint for energy production.

Water is also critical to energy in terms of electricity generation. The Shoshone hydroelectric power plant on the Colorado River near Glenwood Springs holds one of the oldest in-stream water rights in the state and both generates energy and helps ensure in-stream flows in the Colorado River.

We generate energy by dropping trans-basin Colorado River water down onto the eastern plains, and we use pumped water as a battery by using "extra" electricity to raise water, then generate electricity when needed, by allowing it to flow back down hill through turbines above Georgetown and Twin Lakes.

As we strive to produce more energy with less environmental impact within the context of a dwindling water supply and growing demand for both, our major Colorado River reservoirs are below half full. Rising temperatures and falling snow packs herald an uncertain future for the 40 million people reliant on Colorado River water.

Colorado's scientists need to rise to the challenge with new techniques and innovative solutions including aquifer storage and recovery, enhanced recycling, urban lawn grass buy back (reducing suburban outdoor watering) and more.

Your Colorado Scientific Society Council is considering a future symposium bringing together representatives from the energy industry, the water utilities, and the water education communities to highlight these critical issues for our community. Stay tuned.

Bob Reynolds, CSS President

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Upcoming CSS activities:

Sun., Oct. 21, 4:00-6:00 p.m., CSS Family Night Open House at the Colorado School of Mines Geology Museum.

Thurs. Nov. 15, 7:00 p.m., Colorado Scientific Society November meeting, topic TBA. Shepherd of the Hills Church, Lakewood.

Thurs., Dec. 13, (plans still tentative), CSS Annual Meeting and President's Address, tentatively to be held in the Denver Museum of Nature and Science, Gates Planetarium.



Fred Olsen, 1943-2018

I have a sad notice to report in this newsletter. I had been planning to print a note about Fred Olsen, a Denver resident and CSS member for some years, who has just been honored by the International Astronomical Union – Minor Planet Center (IAU-MPC) by having had an asteroid name after him. The statement by the MPC reads,

“Frederick Olsen (b. 1943) worked all over the world as a hydrogeologist, mining exploration geologist, paleontologist, and teacher about the earth, the solar system and the universe. He also has an extensive collection of minerals, fossils and meteorites, and was a founding member of Colorado Meteorite Society. [Ref: *Minor Planet Circ.* 110639]”

The asteroid (minor planet), formerly catalogued as object 2012 VN106, was discovered by a Russian team (lead by T.V.

Kryachko) at the Zelenchukskaya Astrophysical Observatory in 2011-2012. It has now been officially named “Frederickolsen”, MPC catalog #437192, to honor Fred for his work with meteorites. This was just announced in September 2018, though I have not yet been able to find the exact reference to when and by whom the designation and announcement were made. You can read about minor planet Frederickolsen and access its detailed orbital information (it is in the main asteroid belt) at:

https://minorplanetcenter.net/db_search/show_object?object_id=437192 .

In his career, Fred taught geology and physical sciences at Santa Fe College, Gainesville, FL, for some 15 years. He moved to Colorado in 1985, where he taught geology for several years at Metro State College. He founded Mineral and Fossil Supply, Inc., and, with John Curchin, established MeteoriteThinSections.com. Fred was widely known for his extensive collection and his knowledge and study of meteorites, and as noted above, he was a founder of the Colorado Meteorite Society (COMETS). Fred gave a talk to the Colorado Scientific Society in January 2012, on “Colorado Meteorites and the 2004 Berthoud Meteorite”. Fred had a particular interest in the Berthoud meteorite, which fell in Colorado on October 5, 2004. It is a eucrite, a stony meteorite of basaltic composition which belongs to the HED (howardite-eucrite-diogenite) group of meteorites, and which has been correlated with, by its composition, an inferred origin on the asteroid Vesta. Fred was instrumental in working with others from the Colorado Meteorite Society in purchasing and donating a 50-gram slice of the Berthoud Meteorite to the Colorado School of Mines Geology Museum, where it is now on display.

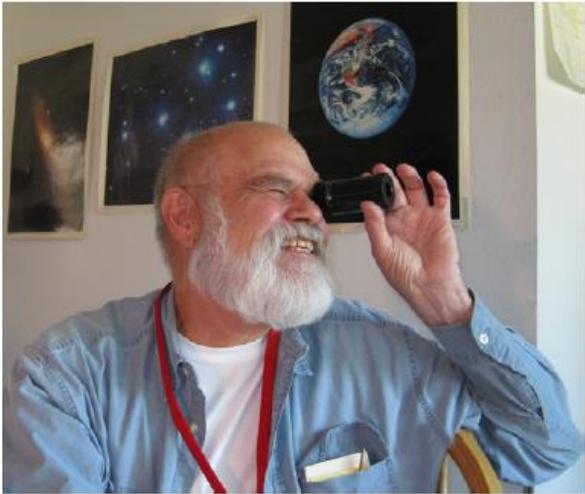
The sad part of my note is that we have just learned that Fred died an untimely death in a boating accident on the Oregon coast on October 12, 2018. He was very much liked and respected by his many friends and colleagues (among which I count myself one) and he will be very much missed.

---Pete Modreski

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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>



2018 AGI Factsheets Showcase Geoscience in Every State

ALEXANDRIA, Va. – The American Geosciences Institute (AGI) is pleased to announce the first update of Geoscience in Your State, a series of 50 factsheets which quantify vital contributions of geoscience (earth science) to the economy, environment, and public health and safety of every U.S. state. The main goal of this series is to inform the geoscience community and policy-makers about the impacts of geoscience in their respective regions.

AGI has gathered up-to-date information using sources that provide consistent, nationwide data wherever possible to generate this comprehensive, standardized set of factsheets. Unlike a lengthy report, these factsheets allow federal and state decision-makers to glean important facts about the role of geoscience and the government agencies that fund geoscience research in their states at a glance.

The factsheets highlight various ways that investing in geoscience benefits states. Geoscientists – scientists that study the Earth – are valuable members of each state's workforce, and their work provides decision-relevant information on water use, energy and minerals production, and natural hazards in each state. The factsheets also demonstrate the contributions of federal science agencies, such as the National Science Foundation (NSF), the U.S. Geological Survey (USGS), the National Aeronautics and Space Administration (NASA), and the National Ocean and Atmospheric Administration (NOAA).

Perhaps most importantly, the factsheets show how geoscience benefits every state. Water, minerals, and all forms of energy - natural resources that many of us take for granted – would not be safely accessible without geoscience. Geoscience also helps mitigate the risks of natural hazards like earthquakes, hurricanes, and droughts, as well as hazardous waste. Finally, geoscience creates jobs, attracts students and faculty to universities, and spurs research and innovation for the benefit of all.

AGI's Geoscience in Your State factsheets are freely available for download and public use at <http://bit.ly/AGIStateSheets>.

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Calendar of Coming Events

Thurs., Oct. 18, 4:00 p.m. Kristin Bergmann, Massachusetts Institute of Technology, "**Carbonates before Skeletons and the PreCambrian World.**" Van Tuyl lecture at Colorado School of Mines, Berthoud Hall Room 241, all welcome. Coming Van Tuyl talks:

October 25. James Hagadorn, Denver Museum. "New Data from the Strata: Rocky Mountain Extinctions."

November 1. Steve Keller, Colorado Geological Survey "Castle Rock Conglomerate."

Thurs., Oct. 18, 7:00 p.m., Colorado Scientific Society October meeting, "**Structural Geology across Colorado**" by Ned Sterne. Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood; all are welcome; social time begins at 6:30 p.m.

Sat., Oct. 20, 12 noon, **Littleton Gem & Mineral Club, silent and verbal auction.** Columbine Hills Church, 9700 Old Coal Mine Avenue, Littleton, CO. Seller setups (club retains 20% commission) at 11, silent auction begins at noon, verbal auction at 1 p.m., checkout starts at 3:30 p.m. All are welcome.

Sat., Oct. 20, please note: A fall Mineral and Book Sale at the CSM Geology Museum, originally scheduled for October 20, has been postponed until a later date, to be announced.

Sun., Oct. 21, 2:00 p.m., the Florissant Scientific Society (informal group, anyone is always invited to attend) is having its "Last hurrah for the season?" field trip. "Meet at the Central City Parkway road cut (up top of the hill, off the exit from I-70) at 2 p.m. We will count and measure rocks in the morainal (??) deposit there. Sounds exciting, doesn't it? I-70 west to the exit for Central City (Casino) Parkway, get off and go up the hill to pull off at the top." The weather looks favorable for this. The group has had two previous field trips to this location—examining the "Quaternary boulder gravel" deposit

there and trying to test hypotheses as to whether it is glacial moraine or alluvial. For more info and a map to the site, contact Beth Simmons, cloverknoll@comcast.net.

Sun., Oct. 21, 4:00-6:00 p.m., the **Colorado Scientific Society** and the **Colorado School of Mines Geology Museum** are hosting a **Colo. Sci. Soc. Family Night at the Museum**. Refreshments, view all museum exhibits and gift shop, special activities for kids and for adults. All are welcome! The Open House will begin as soon as the regular museum hours (1 to 4 p.m.) end that day. Please come, and bring your friends and family. The Museum is at 1310 Maple St., Golden (on campus, Maple & 13th Streets; weekend parking is free in campus lots & on city streets).

Fri., Nov. 9, Colorado Science Conference for Professional Development. Held at the Denver Mart, 451 E. 58th Ave., Denver; for all science educators. For full information and registration website see <http://coloradoscienceconference.org/>.

Nov. 10-11, 39th annual New Mexico Mineral Symposium, at New Mexico Institute of Mining & Technology, Socorro, NM; see <https://geoinfo.nmt.edu/museum/minsymp/home.cfm>.

Wed., Nov. 14, 7:30 p.m., **Friends of Mineralogy, Colorado Chapter** bimonthly meeting; “**Still Crazy (about Franklin) after all these years: The minerals of Franklin and Sterling Hill, New Jersey**”, by Carl (Bob) Carnein. Lakeview Event Center, 7864 W. Jewell Ave., Lakewood CO; all welcome.

Thurs., Nov. 15, 3:00 p.m., Denver Museum of Nature & Science, Earth Science Colloquium, **Mammals Inherit the Earth: How the K/Pg Mass Extinction Killed off Dinosaurs and Opened the Way for Mammals**, by Greg Wilson, University of Washington. VIP Room, 3–4 p.m. Museum admission not required. See <http://www.dmns.org/science/research/earth-sciences/> for the schedule of DMNS Colloquia for the rest of the year. Coming talks:

Mon., Dec. 3, The Improbable Fossil Record of Jellyfish and Their Kin, by Graham Young, Manitoba Museum. VIP Room, 3–4 p.m.

Thurs. Nov. 15, 7:00 p.m., Colorado Scientific Society November meeting, topic TBA. Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood.

Nov. 16-18, Denver Area Mineral Dealers Show, Jefferson County Fairgrounds, Golden CO. Free admission, public welcome.

For more lecture series during the year see:

Colorado Beer Talks (2nd Tuesday, 6-8 p.m.), Windy Saddle Café, 1110 Washington Avenue, Golden, “Golden’s grassroots version of TED talks, Expand your mind with a beer in your hand”, <http://goldenbeertalks.org/>

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 Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood CO, except when noted.

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, day of the week varies. Museum admission is not required; see

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

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.

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 Paleontology Society (WIPS; Denver Museum of Nature & Science, 2nd Monday, 7 p.m.), <http://westernpaleo.org/> . Meetings are held either in the Ricketson Auditorium or the Planetarium at the Denver Museum of Nature & Science, unless otherwise noted

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2018 CSS Officers

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

Councilors

- 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
- 2018-2020: Pete Modreski, pmodreski@aol.com, 720-205-2553
- 2018-2020: Matt Rhoades, rhoadesgeo1@gmail.com

Committee Chairpersons

- Database Manager: Paul Morgan, 303-384-2648, morgan@mines.edu
- 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: Mary-Margaret Coates, geotechedit@gmail.com
- Membership Chair: Bob Raynolds, bob.raynolds@dmns.org
- Newsletter & Publicity: Pete Modreski, 303-202-4766, pmodreski@aol.com or pmodreski@usgs.gov
- Outreach: Joe Mestichelli, joseph.mestichelli@gmail.com
- Past Presidents' Best Paper Award, Marith Reheis, 303-277-1843, marith16@gmail.com
- State Science Fair: 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: Marith Reheis, 303-277-1843, marith16@gmail.com
- Webmaster: Chris Morrison, chris-morrison@comcast.net

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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/> .