



Colorado Scientific Society

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

Annual Past Presidents Dinner and Program

Friday, May 16th

Social Hour 4:30-5:30

Dinner 5:30 pm

Dear Colorado Scientific Society Member:

*We cordially invite you, along with your spouse and guests, to join us for
our annual Past-Presidents Dinner & Program at:*

White Fence Farm

6263 West Jewell Avenue

Lakewood, CO 80232

NE Corner of Jewell & Harlan Circle

*This is an evening to honor the Past Presidents of our Society, to show ap-
preciation for our members, and to enjoy an opportunity to get together
with our friends and colleagues.*

*Please RSVP your menu choices on the form (next page), and join us for a
special evening!*

*Lisa R. Fisher
Past-President, 2011*

*Pete Modreski
Past-President, 2012*

Everyone is Welcome!



Program

*A Continental Divide Adventure: Relocating the Route of the 1859 Survey
of the 40th Parallel Baseline to the "Summit of the Rocky Mountains"*

*Presented by
Pete Modreski, Past President 2012*

RSVP for Annual Past Presidents Dinner

Names of All Attending: _____

Phone _____

Email _____

of People Attending _____ x \$25 Total Enclosed \$_____

If more than one person attending, please note how many of each entrée!

_____ *Chicken Dinner*

_____ *Jumbo Deep Fried Shrimp*

_____ *Broiled Fillet of White Fish*

_____ *Vegetarian Selection*

Special Dietary Needs _____

_____ *I can aid attendance for a member on fixed income in the amount of \$_____*

_____ *Please contact me, I need aid in order to attend in the amount of \$_____*

_____ *I need a ride* _____ *I can drive* *Location*_____

Please Return Form & Payment By Wednesday May 14th, 2014!

*If you are mailing in your form, it won't reach us by Wednesday.
Please call so we can be sure to include you in the meal count!*

Email to:

pmodreski@usgs.gov

303-202-4766

(Email form, and mail or bring check)

Checks Payable to Colorado Scientific Society



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CSS President's Message by Scott Lundstrom

My message this month will only highlight the 2 exciting events for May for which you will find more information in other parts of this newsletter.

First, our next meeting in May is not at our usual time and place, but will be our annual past Presidents dinner at White Fence Farm in Lakewood on Friday, May 16 - all members and guests are invited who wish to sign up ahead. A big "thank you" to Lisa Fisher and Pete Modreski for arranging this dinner meeting. After dinner, Pete will give a presentation on: "A Continental Divide Adventure: Relocating the Route of the 1859 Survey of the 40th Parallel Baseline to the Summit of the Rocky Mountains."



Then only 2 weeks later, starting on Saturday May 31, is a 2 day overnight field trip, which Jim Cole and Marieke Dechesne will lead to the Colorado Headwaters Basin area of North and Middle Parks. As of late April, there were less than 10 spots left, so if there remain any spots available and you are interested, check with Cal Ruleman soon.

For our meeting of April 17, we had a great turnout for an excellent and very interesting presentation by Steve and Kathleen Holen of the Center for American Paleolithic Research on compelling evidence for mid-Wisconsin age presence of early man in North America, and the various methods and context in which to evaluate such evidence.

On the afternoon of April 21, Pete Modreski led a pre-Earth Day field trip of about 18 people to view fossil wood within the Denver Formation. I am sorry that I missed that trip while preparing to leave today for meetings and field work, so back to it. I look forward to our events of May, soon!



Where is this Rock? By Pete Modreski



April Photo: One guess was submitted that suggested it was near Moab. It looks like it might have been, but the rock just looks red because the photo was taken near sunset. In fact, the formation is a fin of jointed lava (Table Mountain Shoshonite) on the west side of North Table Mountain. Whether this rock tower is strictly from natural erosion along the columnar jointing of the lava, or whether quarry blasting has played a role, is uncertain to me.



May Photo: We began this series over a year ago with a picture of a pegmatite dike in Waterton Canyon. This month's photo is an interesting group of cross-cutting dikes; perhaps it won't be too hard for some of you to figure out exactly where this is.





Colorado Scientific Society Spring Field Trip 2014

Colorado Headwaters Basin –

Five mountain passes, cool rocks, and (maybe) moose!

Leaders: Jim Cole and Marieke Dechesne, USGS

Date: Saturday-Sunday, May 31-June 1, 2014

Departing from Federal Center Park and Ride (and Boulder too)

The cost for transportation and drinks provided will most likely be between \$20-30.

This trip is FULL.

DESCRIPTION

This two-day trip will showcase new insights into the Cenozoic geologic history of the western flank of the Front Range in Grand and Jackson Counties, north-central Colorado. We'll show evidence for widespread major uplift that occurred about 67-61 million years ago, in contrast to contemporaneous subsidence in the Denver Basin and South Park areas. Once the Colorado Headwaters Basin began to downwarp (approximately 61 Ma), subsidence was rapid and deep, and spectacular cannonball gravels were deposited in places. Distinctive volcanic porphyry cobbles are traced to source rocks in south-central Colorado, with intriguing implications for paleodrainage. We'll show evidence for faulting before and during basin filling, and show that many of the big folds and reverse faults in the area are mostly younger than the Paleogene sediments.

The middle Tertiary Period here is marked by diverse volcanic/intrusive rocks in the Rabbit Ears and Never Summer Ranges, and by high-energy stream deposits of boulder gravel and coarse sand eroded from volcanoes and mountain uplifts. The most recent 5 million years history shows evidence of renewed mountain uplift, drainage adjustments and integration, and landscape incision.

Saturday night lodging will be in Hot Sulphur Springs with an optional visit to the hot springs spa. Attendees must call and make their own reservations for Saturday night's lodging. Plan on providing your own breakfast and lunch for Saturday and Sunday.

Lodging options:

The Canyon Motel – (970) 725-3395

Hot Sulphur Springs Resort – (970) 725-3306

Ute Trail Motel – (970) 725-0123



Calendar of Events- May

Colorado Scientific Society's regular meetings are held the 3rd Thursday of the month at the Shepherd of the Hills Presbyterian Church, 11500 West 20th Ave., Lakewood, CO.

Unless otherwise advertised- Social time begins at 6:30 p.m. and talks start at 7:00 p.m.

For more information, contact Scott Lundstrom, 303-917-2849, pslundstrom@msn.com.

Upcoming CSS Meeting Presentations:

The Annual Past Presidents Dinner, Friday, May 16, White Fence Farm

All are members, along with spouses, friends or guests, are cordially invited to join us for our annual Past-Presidents Dinner & Program. It will be held this year at **White Fence Farm, 6263 West Jewell Ave., Lakewood, CO.,** located at the NE Corner of Jewell Ave. & Harlan Circle. This is an evening to honor and get to talk with the Past Presidents of our Society, to show appreciation for our members, and to enjoy an opportunity to get together with our friends and colleagues. **Social hour will begin at 4:30 p.m., with dinner at 5:30.** Included in this newsletter is a page listing the menu choices for the dinner, and a reservation form to return. All dinner choices will be \$25.00, with a "special desert" to be provided by CSS. Please return the reservation form (by email if you wish) by the requested date of May 14th as we must give the restaurant a dinner count. Please accept our apology for the typographical error about the dinner date that appeared in our email sent to members earlier; the dinner will definitely be on FRIDAY, MAY 16, not "Friday May 17" which was incorrect.

OTHER EVENTS:

Mon., May 12, 7:00 p.m., Cañon City Geology Club. Lecture—"Bats in South Central Colorado." Speaker— Amy Englert, Colorado Parks and Wildlife, at the Cañon City Geology Club, First United Methodist Church Fellowship Hall, northwest corner of 9th St and Main, Cañon City. For more information contact Cindy Smith, cindysmithrocks@me.com.

Tues., May 13, 10:30-11:30 a.m., USGS Rocky Mountain Seminar. Lecture—"Stratification of the Outer Core." Speaker— George Helffrich, Univ. of Bristol. Meeting in building 25 auditorium, Denver Federal Center, Lakewood.

Wed., May 14, 7:00 p.m., Western Interior Paleontological Society (WIPS). Lecture—"The Niobrara Chalk, "Nora" and Other Finds." Speaker— Tom Nolan. Meeting in Ricketson Auditorium, Denver Museum of Nature & Science. All are welcome. See—<http://westernpaleo.org/> for more information.

Thurs., May 15, 7:30 p.m., Friends of Mineralogy, Colorado Chapter. Lecture—"Magmatic Epidote from the Cascades." Speaker—Ian Merkel, Mine Geologist, Henderson mine. Meeting in the VIP Room, Denver Museum of Nature and Science. All are welcome

May 31-June 1, CSS Spring Field Trip, Colorado Headwaters Basin

June 6-8, Pikes Peak Gem and Mineral Show, Western Museum of Mining & Industry, Colorado Springs, sponsored by the Colorado Springs Mineralogical Society

June 14, 2014, 9 am to 3 pm., GEODyssey's ANNUAL HOME SALE. Location—5339 West Ellsworth Drive, Golden, CO 80401 (ph: 303-279-5504) Help us reduce our inventory at our annual mineral and fossil "garage sale". Drinks and snacks provided. You can check out some representative specimens on our web site: www.geodysey-rocks.com. Directions: from west 6th Avenue, exit onto Indiana Street and go south on Indiana. Drive into Mesa View Estates. Turn right at the first street (McIntyre Circle) and right at the next street (Ellsworth Drive). We are about midway down the street on the left.

June 11-15, Mining History Association, Annual Conference, Trinidad, Colorado. This conference, hosted at Trinidad State Junior College, will touch on many aspects of mining history: geology, mining technology, social history, etc.; Raton Basin coal is the central theme. Full details about the technical program, field trips, and social functions are posted on the MHA website: www.mininghistoryassociation.org/TrinidadConference.htm.

July 12, CSS Family Field Trip, Devils Head and Topaz Point

Aug. 7-10, Contin-Tail Rock Show, Buena Vista Rodeo Grounds, Buena Vista, CO

Aug. 14-17, Woodland Park Rock, Gem & Jewelry Show, Woodland Park, CO

Aug. 15-17, Lake George Gem and Mineral Show, Lake George, CO, sponsored by the Lake George Gem & Mineral Club



Science News: Airborne Measurements Confirm Leaks from Oil and Gas Operations

During two days of intensive airborne measurements, oil and gas operations in Colorado's Front Range leaked nearly three times as much methane, a greenhouse gas, as predicted based on inventory estimates, and seven times as much benzene, a regulated air toxic. Emissions of other chemicals that contribute to summertime ozone pollution were about twice as high as estimates, according to the new article.

"These discrepancies are substantial," said lead author Gabrielle Petron, an atmospheric scientist with the Cooperative Institute for Research in Environmental Sciences, a joint institute of the University of Colorado Boulder and the National Oceanic and Atmospheric Administration. "Emission estimates or 'inventories' are the primary tool that policy makers and regulators use to evaluate air quality and climate impacts of various sources, including oil and gas sources. If they're off, it's important to know."

The new paper provides independent confirmation of findings from research performed from 2008-2010, also by Petron and her colleagues, on the magnitude of air pollutant emissions from oil and gas activities in northeastern Colorado. In the earlier study, the team used a mobile laboratory -- sophisticated chemical detection instruments packed into a car -- and an instrumented NOAA tall tower near Erie, Colorado, to measure atmospheric concentrations of several chemicals downwind of various sources, including oil and gas equipment, landfills and animal feedlots.

Back then, the scientists determined that methane emissions from oil and gas activities in the region were likely about twice as high as estimates from state and federal agencies, and benzene emissions were several times higher. In 2008, northeastern Colorado's Weld County had about 14,000 operating oil and gas wells, all located in a geological formation called the Denver-Julesburg Basin.

In May 2012, when measurements for the new analysis were collected, there were about 24,000 active oil and gas wells in Weld County. The new work relied on a different technique, too, called mass-balance. In 2012, Petron and her colleagues contracted with a small aircraft to measure the concentrations of methane and other chemicals in the air downwind and upwind of the Denver-Julesburg Basin. On the ground, NOAA wind profilers near Platteville and Greeley tracked around-the-clock wind speed and wind direction.

On two days in May 2012, conditions were ideal for mass-balance work. Petron and her team calculated that 26 metric tons of methane were emitted hourly in a region centered on Weld County. To estimate the fraction from oil and gas activities, the authors subtracted inventory estimates of methane emissions from other sources, including animal feedlots, landfills and wastewater treatment plants.

Petron and her team found that during those two days, oil and gas operations in the Denver-Julesburg Basin emitted about 19 metric tons of methane per hour, 75 percent of the total methane emissions. That's about three times as large as an hourly average estimate for oil and gas operations based on Environmental Protection Agency's (EPA's) Greenhouse Gas Reporting Program (itself based on industry-reported emissions).

Petron and her colleagues combined information from the mass-balance technique and detailed chemical analysis of air samples in the laboratory to come up with emissions estimates for volatile organic compounds, a class of chemicals that contributes to ozone pollution; and benzene, an air toxic.

Benzene emissions from oil and gas activities reported in the paper are significantly higher than state estimates: about 380 pounds (173 kilograms) per hour, compared with a state estimate of about 50 pounds (25 kilograms) per hour. Car and truck tailpipes are a known source of the toxic chemical; the new results suggest that oil and gas operations may also be a significant source.

Oil-and-gas-related emissions for a subset of volatile organic compounds (VOCs), which can contribute to ground-level ozone pollution, were about 25 metric tons per hour, compared to the state inventory, which amounts to 13.1 tons. Ozone at high levels can harm people's lungs and damage crops and other plants; the northern Front Range of Colorado has been out of compliance with federal health-based 8-hour ozone standards since 2007, according to the EPA. Another CIRES- and NOAA-led paper published last year showed that oil and natural gas activities were responsible for about half of the contributions of VOCs to ozone formation in northeastern Colorado.

This summer, dozens of atmospheric scientists from NASA, the National Center for Atmospheric Research, NOAA, CIRES and other will gather in the Front Range, to participate in an intensive study of the region's atmosphere, said NCAR scientist Gabriele Pfister. With research aircraft, balloon-borne measurements, mobile laboratories and other ground-based equipment, the scientists plan to further characterize the emissions of many possible sources, including motor vehicles, power plants, industrial activities, agriculture, wildfires and transported pollution.

"This summer's field experiment will provide us the information we need to understand all the key processes that contribute to air pollution in the Front Range," Pfister said.

Story Source:

The above story is based on materials provided by University of Colorado at Boulder. Note: Materials may be edited for content and length.



Pleas and Thank Yous

Thank You Pete for leading our Earth Day Hike!

Several Sci. Soc. members were among the ~18 people who accompanied Pete Modreski on an April 21 geology hike to look at fossil wood in the Denver Formation in “Ravines Open Space”, north of Jewell Ave. and west of Wright St., in Lakewood. This took us through the Paleocene part of the Denver Formation; another hike is planned soon to visit the Cretaceous lower part of the formation, which lies along the same ravine system, south of Wright St (please contact Pete if you'd like to come along).

Here is a photo from the hike.



Devils Head “Family Field Trip” for CSS, Saturday, July 12

We're planning this as our “Family Friendly” summer day trip for 2014. We'll combine a morning hike to the Devils Head fire lookout tower—a spectacular view of the Pikes Peak batholith country, including much of the land burned by the Hayman Fire, with a picnic lunch and casual crystal hunting expedition around the Topaz Point rest area, a short distance south of Devils Head. Both are located along the Rampart Range Road. We'll plan to meet at 8:00 a.m. in Sedalia, Colorado, then drive together to Devils Head.

“Devils head is a distinct granite rock outcropping in the Front Range west of Castle Rock. The outcropping is clearly visible from Castle Rock to Woodland Park. The outcropping is also home to the only fire lookout, in Colorado that is staffed by the National Forest Service. This grants it a spot on the National Register of Historic Places. This hike... offers historical significance, views of 100 miles in all directions, and a whole lot of fun! The hike is perhaps the best in the area to take kids on. The majority of this hike is shaded by mixed aspen and pine forest. There are plenty of shaded benches where you can take a break to cool off, and catch your breath. A sign even marks the halfway point for you. The trail gains 950 ft. in elevation over 1.4 miles, and ends with a climb up 143 stairs. A person in average shape should easily be able to complete this hike.”

Difficulty: Moderate

Length: 2.8 miles / 4.5 km (round trip)

Duration: 1-3 hours

Family Friendly; Dog Friendly

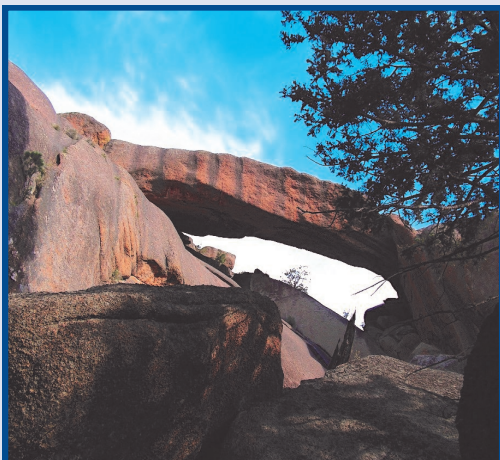
If planning to come, please contact Pete for exact information for our rendezvous location on July 12; pmodreski@usgs.gov, or 303-202-4766 (office), 720-205-2553 (cell). Because of the lightning hazard at the fire tower, we will not complete the hike if there is any danger of storms that morning.

*From— <http://www.everytrail.com/guide/devils-head-fire-lookout>



“Harmonica Arch” Hike, Sunday, Aug. 17.

Pete Modreski will lead this hike as a combined trip for CSS and FSS (Florissant Scientific Society) members. This spectacular granite arch—a quite out-of-the-way place and a bit hard to get to, at the edge of the Lost Creek Wilderness—was featured in our “Where Is This Rock” in our December 2013?? CSS newsletter. The hike will begin at the Goose Creek Trailhead, located at the end of Forest Road 211, about 15 miles west of Highway 126 north of Deckers, on the Wigwam Creek Road. The hike itself is about 2 miles each way, mostly on a good trail along Goose Creek, but the final portion, that will take us to near the base of the arch (I will reserve the longer and more difficult trail to the top of the arch for those skilled at bouldering and rock scrambling—not on this hike) is a more difficult scramble up a steep wooded slope, taking care to avoid some of the steep slickrock areas which could be dangerous. Please contact Pete if you wish to go, for exact directions and what we will decide as our meeting time at the trailhead.



2014 CSS Elected Positions

President:.....Scott Lundstrom, 303-917-2849, pslundstrom@msn.com
President Elect:.....Paul Morgan, 303-866-2611, paul.morgan@state.co.us
Treasurer:.....Don Sweetkind , 303-236-1828, dsweetkind@usgs.gov,
Secretary:.....Lisa Fisher, 303-215-0480, lisa.fisher@escalantemines.com
Past President.....Matt Sares, 303-866-3581 x8290, matt.sares@state.co.us

We are still seeking volunteers or nominations to fill several vacant posts. They are:

- ◆ **Outreach Chair**
- ◆ **Publicity Chair**
- ◆ **Hospitality Chair**
- ◆ **Program Chair**



We will also gladly accept volunteers to serve on any and all of our standing committees. If you have any questions regarding the duties of these positions, please call your favorite officer, councilor, or chair.

Please consider volunteering—many hands make lighter work and we would love to have a larger pool of ideas and contacts!

COUNCILORS

2013–2015: Marieke Dechesne, mdechesne@usgs.gov
2013–2015: Liz Pesce, pesce.e@gmail.com
2014–2016: Celia Greenman, celia.greenman@earthlink.net
2014–2016: Peter Barkmann, barkmann@mines.edu
2012–2014: Rebecca Flowers, rebecca.flowers@colorado.edu
2012–2014: Pete Modreski, pmodreski@aol.com

COMMITTEE CHAIRPERSONS

Best Paper Award: Matt Sares, 303-866-3581 x8290, matt.sares@state.co.us
Database Manager: Paul Morgan, 303-866-2611, paul.morgan@state.co.us
Field Trips: Cal Ruleman, 303-236-7804, cruleman@usgs.gov
History: Beth Simmons, cloverknoll@comcast.net
Hospitality: Open
Membership/Mentor: Liz Pesce, epesce@mines.edu
Memorial Funds: Matt Sares, 303-866-3581 x8290, matt.sares@state.co.us
Newsletter Editor: Linda Barton Cronoble, 720-338-1237, lbarton1611@gmail.com
Outreach: Open
Program: Open
Publicity: Open
State Science Fair: Chuck Weisenberg, 303-238-8806, cweisnrg@msn.com
Webmaster: Barb Warden, 303-278-2701, bwarden@tablemtn.com

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Lakewood, CO 80215-0495
<http://www.coloscisoc.org>



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

History

Outreach

Fund Raising

Newsletter

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>