



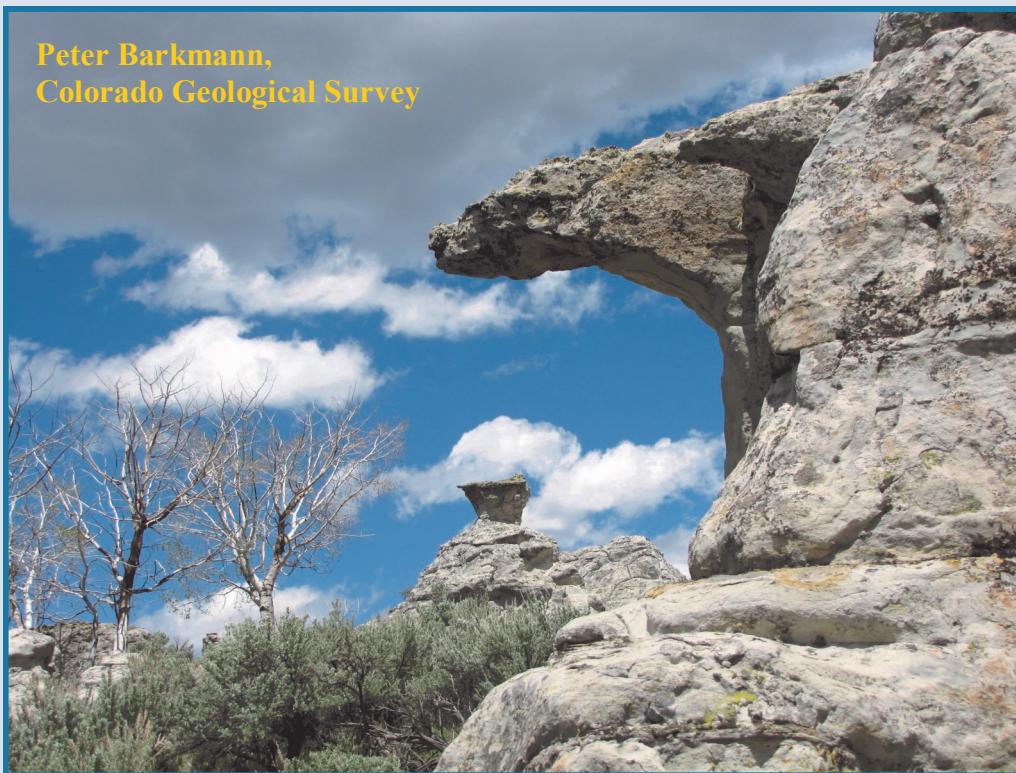
Colorado Scientific Society

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

November 21st Meeting

***THE JOYS OF MAPPING NORTHWEST COLORADO GEOLOGY:
SUBTLETIES, SLIDES AND SNAKES***

**Peter Barkmann,
Colorado Geological Survey**



ALSO: Three Student Research Competition Presenters

***Shepherd of the Hills Church,
11500 W. 20th. Ave. (at Simms St.),
Lakewood, Colorado***



Social half-hour—6:30 p.m. Meeting time—7:00 p.m.

Everyone is Welcome!

Abstract

Mapping efforts by the Colorado Geological Survey along the southeastern flank of the Sand Wash Basin in northwestern Colorado shed new light on the structural evolution of the basin. Well known Laramide structural features are being documented in greater detail while previously undocumented features come to light with careful mapping of subtle structural fabrics. Northwest-trending faulted folds dominate the structural grain and are cross-cut by a series of northeast-trending flexures. The flexures likely represent surface expressions of deeper faults. Although individual offsets on the northeast flexures tend to be small, less than 30m, the features do appear to compartmentalize the main northwest structural components delineating distinct structural domains. Relationships of the features demonstrate a history of Laramide compression with a clear Neogene overprint. Neogene features include scarps developed on a Quaternary landscape and a network of 24 Ma and 8 Ma igneous centers. The igneous centers fall close to intersections of the dominating northwest grain with northeast flexures.

Biography

Peter Barkmann, Colorado Geological Survey



A native of arid Northern New Mexico, Peter Barkmann obtained a Bachelor of Science Degree in Geology from Western Washington University in 1976 and a Master of Science Degree in Geology from the University of Montana in 1984. His geological background spans minerals exploration; petroleum development and exploration, geothermal exploration; and water resources. For the past 27 years he has focused mainly on groundwater resources and environmental geology. Peter joined the Colorado Geological Survey in 2002 where he conducts regional water resource investigations, environmental assessments, and manages the Ground Water resources program. In addition, he has been contributing to geologic mapping efforts in the STATEMAP 1:24,000 Geologic mapping program. He is author of the recent Cross-sections of the fresh-water strata of the Denver Basin publication and co-author for the Bedrock Geologic Map of the Denver Basin, Artificial Recharge of Ground Water in Colorado-A Statewide Assessment, as well as the award winning Ground Water Atlas of Colorado.

Student Research Competition Presenters for the November Meeting, their Presentation Titles, and Abstracts

Jeffrey Hrnčir, Department of Physical and Environmental Sciences, Colorado Mesa University- **“The Green River Basin Kimberlitic Indicator Mineral Anomaly Revisited.”**

Abstract: The Green River Basin of southwestern Wyoming is host to one of the largest kimberlitic indicator mineral (KIM) anomalies in North America. The classic KIM's pyrope garnet and Cr-diopside, along with other mantle mineral grains and deep lithospheric xenoliths, are found in stream sediments, harvester ant mounds, pediment gravels, and the Bishop Conglomerate over a 2,000-km² region. Limited source rocks for KIM grains are known in lamprophyric diatreme breccias found in the extreme southern portion of the anomaly almost 90 kilometers to the south of the northernmost KIM grain occurrences. Geologic and sedimentologic characteristics unique to this basinal setting govern maximum transport distances and dispersal of KIM grains from host rock sources. For the first time, transport distances for KIM grains are reported for the Green River Basin through stream sediment sampling downstream of the Cedar Mountain lamprophyric diatremes and are compared to data compiled for other kimberlite fields in the Rocky Mountains. Although absolute maximum transport distances for KIM grains were not determined, the recovery of thousands of KIM grains over a distance of 1.4 km downstream of the DK diatreme suggests significantly greater maximum transport distances for grains in this sedimentologic setting than in regions of crystalline basement elsewhere in the Rockies. Furthermore, the retention of surficial features such as relict igneous matrix, partial kelyphite rims on pyrope garnet, and delicate euhedral projections on clinopyroxene grains demonstrates the buffering effects of the suspended sediment load on KIM grain abrasion during fluvial transport in periodic flash flooding events. For the first time, an estimated age assignment of ~34 Ma for the Cedar Mountain lamprophyric breccia pipes is proposed utilizing newly recognized age criteria provided by the abundance of Uinta Mountain Group quartzites within the breccia (incorporated from Bishop Conglomerate) and the appearance of deep lithospheric xenoliths and megacrystic KIM grains within intact basal Bishop Conglomerate exposures. The spatial coincidence of the KIM anomaly with the approximate trace of the Moxa Arch suggests deep-seated structural control over the emplacement of lamprophyric magmas, similar to what is seen in the Leucite Hills lamproite field to the northeast. The results of this study have important implications for future exploration in the basin and separate KIM anomalies found in sedimentary-dominated bedrock elsewhere on the Wyoming Craton.

Leif Anderson, Institute of Arctic and Alpine Research, University of Colorado, Boulder - **“The Effect of Interannual Variability Forced Glacial Advances on the Moraine Record: A Case Study from the Colorado Front Range During the Last Glacial Maximum.”**

Abstract: Valley glacier moraines are commonly used to infer mean climate conditions (annual precipitation and mean melt-season temperature) at the time of formation. However, recent research has demonstrated that even in steady climates, substantial decadal-scale fluctuations in glacier length also occur in response to stochastic, year-to-year variability in mass balance. All climates, steady or transient, include interannual variability. When interpreting moraine sequences it is therefore important to include the effect of interannual variability on glacier length because moraines can be 1) formed by interannual variability forced advances or 2) formed by advances forced by a combination of a climate change component and an interannual variability component. We address this issue for eleven LGM glaciers from the Colorado Front Range, USA. Using a linear glacier model that allows for a thorough exploration of parameter uncertainties, supplemented by a shallow-ice flowline model, our analyses suggest that i) individual LGM terminal moraines were formed by a combination of climate change and interannual variability forced advances; ii) estimates of mean climate using maximum LGM glacier geometries are ~10–15% too extreme; and iii) classic ‘recessional’ moraines may be formed by re-advances during the LGM as opposed to re-advances or standstills during deglaciation.

It is often assumed that century scale glacial standstills were required to form large (>10 m in relief) LGM terminal moraines. Our numerical model suggests that the longest standstills for the modeled glaciers lasted ~50 years. Historical records of interannual variability forced glacier advances, which formed >10 m terminal moraines provide modern validation to our conclusions. We expect interannual variability to play an important role in kilometer-scale glacier fluctuations and moraine emplacement in the past and present as well as in maritime, Alpine, and continental settings (e.g. Oerlemans, 2001).

Richard Zaggle, Colorado State University- **“Petrogenetic Analysis of the Wenatchee Ridge Orthogneiss in the North Cascade Mountains, Washington State.”**

Abstract: Petrogenetic analysis of the Wenatchee Ridge Orthogneiss (WRO) (Magloughlin & Evans, 1987) in the Nason Terrane of the North Cascade Mountains has been undertaken in order to gain insight into epidote-bearing TTG plutonism associated with mid-Cretaceous orogenesis in the North American Cordillera. Discriminant analysis indicates the WRO is very similar to Archean TTGs based upon characteristic geochemical values ($Yb < 1$, $Sr/Y > 150$, $La/Yb > 15$, $Y < 6$) and thus may provide insight into Archean crustal generation processes.

Samples were taken from within the pluton and from within the surrounding banded gneiss (Tabor et al., 1987). The pluton is chemically heterogeneous and samples all show some degree of foliation which is concordant with the foliation in country rocks. Samples range from leucotrochilite to granodiorite and contain oligoclase, quartz, muscovite, biotite, and epidote. SiO_2 is 56.3–76.8% and REE data show that the samples are highly depleted in HREEs, variably depleted in LREEs, and have an average Eu/Eu^* of 1.36 ± 0.5 . Though positive Eu anomalies are typically associated with plagioclase accumulation, the WRO appears to lack any correlation between plagioclase and Eu/Eu^* .

Geochemical results and the tectonic setting of the WRO indicate the initial magma may have formed as a partial melt of overthickened eclogitic crust. The subsequent LREE depletion and high positive Eu anomalies in the most evolved samples may be controlled by amphibole, epidote, and/or titanite fractionation. LA-ICP-MS analyses will indicate whether these phases had significant control on the REE signature of the WRO.

Deformation-driven differentiation would have controlled any fractionation of amphibole, epidote, and/or titanite in the WRO magma which has viscosities ≥ 106.8 Pa·s at 1000°C calculated using the method of Giordano et al. (2008). Differentiation likely occurred simultaneously with intrusion into a lower crustal zone of plastic strain, resulting in the WRO's heterogeneity, sheeted nature, and syn-tectonic fabric.





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CSS President's Message

by Matt Sares



The 125th meeting of the Geological Society of America has come and gone, and with it the many months of careful planning by CSS members. The CSS-sponsored field trip, topical session, and exhibit booth were all great successes. The Society's strong ties and interaction with GSA go back a long time and our connection was definitely evident this year. My congratulations to all the people involved, but specially for Beth Simmons, Liz Pesce, Lisa Fisher, and Libby Prueher for their leadership on organizing the field trip, booth, and session, respectively. A more detailed and full "Thank You" is included later in the newsletter.

Congratulations are also in order for the success of the American Institute of Professional Geologists' 50th Annual meeting. Although CSS did not have an official role at this meeting several members attended and presented papers at this national meeting.

At our meeting this month we have Part 2 of our Student Research Competition with three more presentations. The final awards for all our student presenters will be presented at the end of the meeting. Come to the meeting and support these exceptional students. Who knows – you may find your next employee!

December's meeting will be our annual business meeting. This is an important meeting in the CSS annual calendar as we elect officers and councilors of the Society for 2014. If you have a nomination for officer or councilor please contact CSS secretary Lisa Fisher, or elections nomination chair, Pete Modreski.

IN CASE YOU MISSED IT...

Student Research Competition Presenters for the October CSS Meeting, their Presentation Titles, and Abstracts

#1. Melissa A. Foster^{1,2}, Miriam Duhnforth³, and Robert S. Anderson^{1,2}

¹INSTAAR, University of Colorado, ²Dept. of Geological Sciences, University of Colorado, ³Dept. of Earth and Environmental Sciences, Ludwig-Maximilians-University, Munich, Germany.

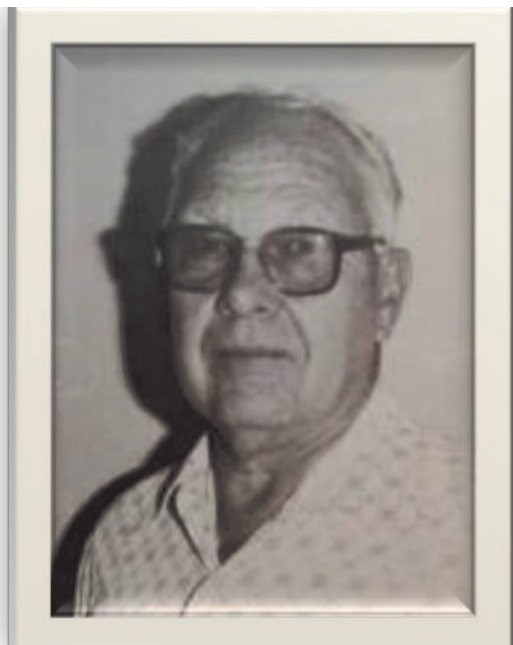
"Young Strath Terraces on Western High Plains Record Climate-Paced Variations in Sediment Supply from Colorado Front Range Rivers."

The formation of strath terraces along the Colorado Front Range records recent exhumation, as rivers incise vertically and laterally leaving thinly mantled gravel-capped surfaces behind. Approximately 6 alluvial units have been mapped along 300 km of the western High Plains based on soil development and elevation; each unit was thought to represent a fairly consistent elevation of the Denver basin during various stages of exhumation, driven by base-level fall of the South Platte River. Absolute dates, however, that can be compared to the existing relative age chronology exist at only a few locations so far.

Recent cosmogenic radionuclide (CRN) dates on terraces north of Boulder, CO, indicate that these surfaces are up to an order of magnitude younger than the correlative alluvial units to the south of Boulder. We present new CRN data from middle Pleistocene surface that yield a date of ~ 91 ka, far younger than expected based on correlation, but in accord with the 10Be-based age (95 ka) of the Rocky Flats surface just above it.

The new dates on strath surfaces in the western High Plains are consistent with a fluvial history marked by long periods of aggradation and lateral planation, punctuated by brief episodes of rapid incision through soft shale underlying the Boulder area. This model supports a "top-down" approach in which fluvial incision and aggradation are driven by variable sediment production from source basins in the adjacent crystalline Front Range: glacial and periglacial climates produce high sediment yields leading to aggradation and lateral planation; extreme interglacial climates correspond with low sediment supply, leading to vertical bedrock incision. Under this model: (1) strath terraces cannot be correlated based on elevation alone, (2) exhumation of the Denver basin is likely spatially and temporally variable due to climatically-driven variations in sediment supply, and (3) Front Range rivers likely experienced a complex and basin-specific history of aggradation and incision over the Quaternary.

A TRIBUTE



Thomas August Steven
1917–2013

On October 17, 2013, CSS' "most senior" past president passed away. In May of 2007, the Colorado Scientific Society sponsored a one-day symposium on the volcanic geology of Colorado. The symposium was dedicated to Tom Steven, USGS retired, whose work provided the foundation of our understanding of Colorado's volcanic history. Tom was President for CSS in 1959 and was bestowed honorary membership in 1974. In addition to Tom's work with CSS he was also well known for his many other achievements such as:

- Geologist, U.S. Geological Survey, 1942-1985; Rehired annuitant, 1985-1987. Emeritus, 1987-2000
- Recognized expert in the regional geology of the Rocky Mountains and in volcanic rocks and associated ore deposits. Author of many publications resulting from work in North Park, Colorado, San Juan volcanic field, Colorado, and Marysville volcanic field, Utah
- Graduate of San Jose State College and University of California at Los Angeles
- Meritorious Service Award of U. S. Department of Interior; 43-year service to the U.S. Geological Survey
- Educated at Southern Methodist University and Harvard University
- Geology assistant, Geology Department, Southern Methodist University. Teacher, Texas A & M. 1942-1980
- Worked on structural relationships between a stable platform and a mobile belt, Trans-Pecos region of West Texas; mineral potential of various districts in California, Idaho, Nevada, New Mexico, and Utah; uranium deposits on the Colorado Plateau; glacial deposits in Montana; general geology of northeastern Nevada
- Fellow, Geological Society of America; Member, American Association of Petroleum Geologists, Rocky Mountain Association of Geologists, Geological Society of Washington, American Association for the Advancement of Science
- When he was 86 years old he co-founded the Florissant Scientific Society, a loosely knit group of avid geological observers that still meet (in his memory now) once a month somewhere in Colorado.
- Tom was also an avid fisherman.

Our thoughts and prayers are with his widow Grace. We will miss our best friend!



IN CASE YOU MISSED IT.....

Student Research Competition Presenters for the October CSS Meeting, their Presentation Titles, and Abstracts

#2. A.L. Hantsche, "Rare Earth Analysis of Anhydrite Veins and Source Magmas from the Ertsberg Mining District, Papua, Indonesia."

Abstract- The Ertsberg Mining District in Papua, Indonesia is home to the supergiant Grasberg porphyry copper deposit, the Kucing Liar skarn deposit, and several other major Cu+Au ore bodies. These deposits formed when magmatic fluids moved towards the surface along a fluid pressure gradient, mineralizing the surrounding country rock. This project concerns the chemistry of veins - extension fractures mineralized by the passage of hydrothermal fluids. The Rare Earth Element (REE) content of ninety-six anhydrite vein samples were analyzed by ICP-MS and compared to REE patterns of thirty-five district intrusive bodies.

The igneous rocks have La/Yb ratios that range from 5 to 13. The anhydrite REE patterns were divided into categories based on La/Yb ratio: 1) high [>13], 2) "igneous" [5 to 13], 3) low [<5], and 4) very low when REE abundances were below detection. The igneous rocks lack Eu anomalies, but the anhydrite has both positive and negative anomalies.

Anhydrite samples from the Ertsberg District have La/Yb values ranging from 2 to more than 150. Experiments and theory indicate ligand complexation stabilizes LREE in aqueous solutions at high temperatures. This causes the La/Yb ratio of a fluid precipitating anhydrite to increase from below parental magmatic values (La/Yb < 5) to higher values (La/Yb > 13) as anhydrite precipitates during fracture flow.

Studies conclude that Eu in high temperature fluids exists solely as Eu²⁺. Eu²⁺ fractionates preferentially into anhydrite compared to the other REE, resulting in a positive Eu anomaly. Over time, this Eu depletion causes a negative Eu anomaly in late stage anhydrite.

The REE patterns of anhydrite record the chemical evolution of magmatic fluids during flow along open fractures causing anhydrite veining. REE pattern variations in anhydrite appear to be an indicator of relative distance from the fluid source, with positive Eu anomalies and low La/Yb ratios nearer the source and negative Eu anomalies and higher La/Yb in distal occurrences.





Calendar of Events- November

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 Matt Sares, tel. 303-717-3983, matt.sares@state.co.us

Upcoming CSS Meeting presentations:

November 21st: Peter Barkmann - "The Joys of Mapping Northwest Colorado Geology: Subtleties, Slides and Snakes" with two Student Research Competition presentations and awards.

December 19th : CSS Business Meeting and President's Address, Matthew Sares - "Exploring Areas of Natural Acid Rock Drainage in Colorado".

CSS ANNUAL MEETING ANNOUNCEMENT

The Colorado Scientific Society's Annual Business Meeting shall take place at 7:00 PM on December 19, 2013, at Shepherd of the Hills Church, 11500 W. 20th. Ave. (at Simms St.), Lakewood

At this meeting, the President shall deliver his or her presidential address. Officers' and selected committee chairperson's reports to the Society shall be presented, and officers and councilors of the Society for the ensuing year shall be elected. Nominations for President-Elect, Officers, Councilors will be accepted by mail, email, or in person at any time before or during the annual meeting (preferably before!), to Pete Modreski, chair of nominating committee, or Lisa Fisher, secretary. Nominations will be announced in the December newsletter prior to the business meeting. Volunteers will be accepted for committee chairs or members.

Thurs., Nov. 7, Heritage Lecture at the Western Museum of Mining and Industry, Colorado Springs: "Our newest exhibit Lost Miner! Mine Health, Safety and Rescue is up and will be on display through the end of the year. In addition, our second Heritage Lecture related to the new exhibit is scheduled for November 7th. American drilling team captain Jeff Hart will discuss the trials and joys of working to recover the 33 trapped Chilean miners in 2010! DO NOT miss this once in a lifetime chance to meet the man whose hard work and skill reached these miners first! No charge, but please RSVP to: rsvp@wmmi.org and see <http://www.wmmi.org/home> for more information.

Thurs., Nov. 14, 7:30 p.m., Friends of Mineralogy, Colorado Chapter, bimonthly meeting; The Alkaline Granite Minerals of the Golden Horn Batholith, Washington Pass, Northern Cascade Mountains, Washington; by Dr. Markus Raschke, University of Colorado, Physics and Chemistry Depts. Meeting in the VIP Room, Denver Museum of Nature and Science; all are welcome to attend.

Sat., Nov. 16, Littleton Gem and Mineral Club Annual Silent Auction, 12 noon - 5 p.m., at Columbine Hills Church, 9700 Old Coal Mine Avenue, Littleton. "Set-up will begin at 11:00 a.m. with the auction beginning at 12:00 p.m. Non-members are asked to not bring more than 12 specimens to sell. The club retains twenty (20) percent of the selling price. The verbal auction and a short business meeting will start at 1:00 p.m. There will be minerals, gems, jewelry, fossils, books and much more available for bidding at the silent auction. Food and drinks will be provided by the club and its members. For more information please email Ruth Zartman at ruthzart@yahoo.com or call (303) 973-0405. All are invited to attend.

Thurs., Nov. 21, 4:00 p.m., Van Tuyl lecture series, Colorado School of Mines, Berthoud Hall Room ; Christine Siddoway, Colorado College: "A Vestige of the Neoproterozoic in the Colorado Front Range: Sandstone Dikes and Source Rocks Along the Ute Pass Fault.", by Dr. Christine Siddoway, Colorado College. All are welcome; refreshments served. See: http://geology.mines.edu/GE_Lecture-Series for a full list of this weekly lecture series.





Science News

Assessing the Martian Atmosphere: MAVEN Prepares for Launch

November 1, 2013 by Chris Gebhardt



The 37.5-foot long, unmanned Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft is currently set to lift off atop a United Launch Alliance (ULA) Atlas V 401 at 1:28 p.m. Eastern on Nov. 18 but NASA has set a 20-day launch window following that date in the event of delays.

MAVEN will be the space agency's first scientific mission to Mars since successfully landing the Curiosity Mars rover on the surface of the planet in August 2012. Unlike Curiosity, MAVEN is an orbital mission, designed to circle the planet from above to search for clues as to "how the sun may have stripped Mars of most of its atmosphere, turning a planet once possibly habitable to microbial life into a cold and barren desert world," according to NASA.

"The MAVEN mission is a significant step toward unraveling the planetary puzzle about Mars' past and present environments. The knowledge we gain will build on past and current missions examining Mars and will help inform future missions to send humans to Mars," John Grunsfeld, associate administrator for NASA's Science Mission Directorate in Washington, said in a statement.

The MAVEN spacecraft will travel through interplanetary space for about 10 months before arriving at its destination next September. After locking into a preliminary orbit around Mars, mission engineers will spend five weeks testing the probe's instruments and science mapping sequences while positioning it in its final science-mapping orbit, NASA said.

MAVEN's primary mission will last a year, during which it will "study the nature of the red planet's upper atmosphere, how solar activity contributes to atmospheric loss, and the role that escape of gas from the atmosphere to space has played through time," the space agency said.

The probe will carry three suites of scientific instruments designed to measure the planet's ionosphere and the effect of the solar wind on it, determine the "global characteristics of the upper atmosphere and ionosphere," and measure the composition and isotopes of neutral gases and ions.

MAVEN, which arrived in Florida in August, was built by NASA partner and ULA member Lockheed Martin. The solar-powered spacecraft will weigh more than 5,600 pounds with a full load of fuel at launch and around 1,990 pounds during its mission, when it will operate on as little as 1135 watts of solar power when Mars is at its furthest distance from the Sun. MAVEN has a high-gain antenna which will be used to communicate with Earth twice a week.

The MAVEN mission is being led by principal investigator Dr. Bruce Jakosky of the University of Colorado, which is providing two of the probe's science instruments. The University of California at Berkeley Space Sciences Laboratory is also supplying four science instruments, and NASA's Goddard Space Flight Center in Greenbelt, Md., which is also managing the project, will have two science instruments aboard the spacecraft.

Lockheed Martin will provide mission operations in addition to building the probe itself. NASA's Jet Propulsion Laboratory in Pasadena, Calif. will conduct program management, communications, and navigation support duties via the Mars Program Office and its Deep Space Network operations, the space agency said.

NASA will live stream the launch of MAVEN online on Nov. 18 starting at 11 a.m. Eastern.

Citation- <http://www.nasa.gov/MAVEN>

Pleas and Thank Yous



MARK YOUR CALENDAR: Rock-Out for the Ridge Dinner, Raffle, Silent and Live Auctions, Friday, November 8, from 6-9 pm at:

**Pinehurst Country Club
6255 West Quincy Ave.
Denver, CO.**

Please make checks to: Rock Out for the Ridge

**Mail to: Friends of Dinosaur Ridge
16831 West Alameda Parkway
Morrison, CO. 80465**

If you have questions or would like to use a credit card, call Clare Marshall 303-697-3466 x 106.

It's Time to Pay Dues for 2013...

Membership dues for the coming year (2013) are now being accepted. You will find a dues payment form in this newsletter or on the CSS Web site: www.coloscisoc.org/membership/dues.html. Dues payments are \$20 for regular members; \$10 for corresponding members (outside the Colorado Front Range area), and \$5 for students. You may pay your dues by mailing a check to the CSS, or pay with a credit card using PayPal on the CSS website. If you are uncertain if you owe dues or of your member status, contact CSS Treasurer Don Sweetkind by phone at 303-236-1828 or by e-mail at dsweetkind@usgs.gov. As you pay your dues, please consider making an additional contribution to one of our Memorial Funds, which support our student research grants program, or the Endowment Fund, which we use to defray operating costs. Any contributions made in calendar year 2013 (checks dated before 1 January 2014), will be credited toward the 2013 tax year.

PLEASE support our future scientists by generously supporting the Colorado Scientific Society. Thank you!!



GSA Meeting Report

CSS would like to acknowledge and congratulate our **Past President Vince Matthews, the Chair of this 125th meeting of GSA**, for his efforts and making this meeting a success! Thanks also to our President Matt Sares for his support and assistance in all phases of this effort.

CSS Exhibit Booth: Our greatest thanks to Liz Pesce! She did an outstanding job with the booth.

Our CSS booth was a success! We had many visitors, high interest – especially from students and young professionals, and great conversations. The most common comment from local people was that they didn't know we existed, some joined on the spot, and many took membership forms with them. Field trips elicited high discussion, and we may want to add additional short local trips to our main more extensive spring and fall trips. The booth looked terrific and ran well thanks to the exceptional efforts of Liz Pesce, who took care of the planning and running of the booth this year. Additional thanks to Pete Modreski, who supplied the booth frame and assisted Liz with setup and breakdown, Lisa Fisher and Libby Prueher who assisted with setup, and to the following people who helped Liz man the booth: Thom Fisher, Libby Prueher, Ben Harrison, Matt Sares, Lisa Fisher, Celia Greenman, and Lew Kleinhans.

Field Trip: A success due to the phenomenal efforts of Beth Simmons!

The CSS field trip was attended by ~30 people from all over the world. The attendees enjoyed the trip and the weather held! Our thanks to Leader Beth Simmons, the drivers and stop leaders: Kathy Honda, Linda Barton, Pete Modreski, Jane Dianich, Cindy Smith, Dan Genard, Scott Minor, Chris Fridrich, Cal Ruleman, Bob Hartzell, Fred Olsen, Debbie Baldwin. Additional CSS members involved in the planning committee included Bruce Bryant, Vince Matthews, Jack Reed, Lisa Fisher, Thom Fisher, and Jack Krajewski.

Topical Session: Lisa Fisher and Libby Prueher

Our CSS topical session was held Wednesday afternoon, and we had good attendance for that late time slot. The talks were very well researched and presented, and well received. We had several positive comments from the crowd. Our thanks to the speakers: Matt Sares, Jonathan White, Whitey Hagadorn, Kristin Jacob, Libby Prueher, Paul Morgan, Peter Barkman, Vince Matthews, Edward Stern, Eric Ersley, and Lisa Fisher. The Member's Forum met at the Pi Bar (\$3.14 happy hour drinks!), and we enjoyed great geology conversation.

FALL DOINGS



If you look closely at Beth Simmons (in red coat), you can see our special guest to her right-- Arthur Lakes!

CSS/GSA Field Trip- by Linda Barton Cronoble
"Colorado Geology Then and Now, 1901 to 2013," followed the route of the Societies' 1901 trip through central Colorado. About 27 of us met at the Colorado Convention Center the morning of October 24th for this historic three day adventure. The drivers were: Beth Simmons, Kathy Honda, and Linda Barton Cronoble. The stops included: Canyon City Dinosaur Quarries, Royal Gorge, Priest Canyon Walcott Fossil Fish Site, Poncha Springs Gravel Quarry, Brown's Canyon Fluorite District, Hecla Junction Tuff Flow, Twin Lakes, The National Mining Museum in Leadville, Glenwood Springs, Dotsero Volcano, Vail Pass, Loveland Pass, Phoenix Mine, Idaho Springs Heritage Visitor's Center, and the Rosco Historic Placer Mine.



Where is this Rock? By Pete Modreski

I'm just sending the picture with (cooly) no identifying name of course, so, you can try to guess what/where it is!



September Where is this rock?

This is the Old Prospector statue. It once stood atop the Mining Exchange Building, at 15th and Arapahoe Streets, Denver, built in 1891. The statue is 12 feet high, weighs 490 pounds, and is made of (that was one of my questions) copper, hence the greenish patina. When the Mining Exchange building was razed in 1962-63 the statue was preserved and now sits on the south side of 15th Street, between Arapahoe and Curtis Streets, one block off the 16th Street Mall. Sculpted by Alphonse Pelzer, it is said to be modeled after "flamboyant and colorful 'Colonel' John William Straughn, Civil War veteran, prospector, and wheelwright".



2013 CSS Elected Positions

President:.....Matt Sares, 303-866-3581 x8290, matt.sares@state.co.us
President Elect:..... Scott Lundstrom, 303-917-2849, pslundstrom@msn.com
Treasurer:.....Don Sweetkind , 303-236-1828, dsweetkind@usgs.gov,
Secretary:.....Lisa Fisher, 303-215-0480, lisa.fisher@escalantemines.com
Past President.....Pete Modreski, 720-205-2553, pmodreski@aol.com.

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

♦ Outreach Chair

♦ Publicity 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
2011–2013: Celia Greenman, celia.greenman@earthlink.net
2011–2013: Ben Harrison, 303–417–9633, benjh@earthlink.net
2012–2014: Paul Morgan, 303–866–2611, paul.morgan@state.co.us
2012–2014: Rebecca Flowers, 303–492–5135, rebecca.flowers@colorado.edu

COMMITTEE CHAIRPERSONS

Best Paper Award: Pete Modreski, 720-205-2553, pmodreski@aol.com
Database Manager: Emily Taylor, 303–236–8253, emtaylor@usgs.gov
Field Trips: Cal Ruleman, 303–236–7804, cruleman@usgs.gov
History: Beth Simmons, cloverknoll@comcast.net
Hospitality: Ben Harrison, 303-417-9633, benjh@earthlink.net
Membership/Mentor: Liz Pesce, epesce@mines.edu
Memorial Funds: Pete Modreski, 720-205-2553, pmodreski@aol.com
Newsletter Editor: Linda Barton Cronoble, 720-338-6201, lbarton1611@gmail.com
Outreach: Open
Program: Open
Publicity: Open
State Science Fair: Chuck Weisenberg, 303–238–8806, cweisenbrg@msn.com
Webmaster: Barb Warden, 303-278-2701, bwarden@tablemtn.com



Colorado Scientific Society
P.O. Box 150495
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>