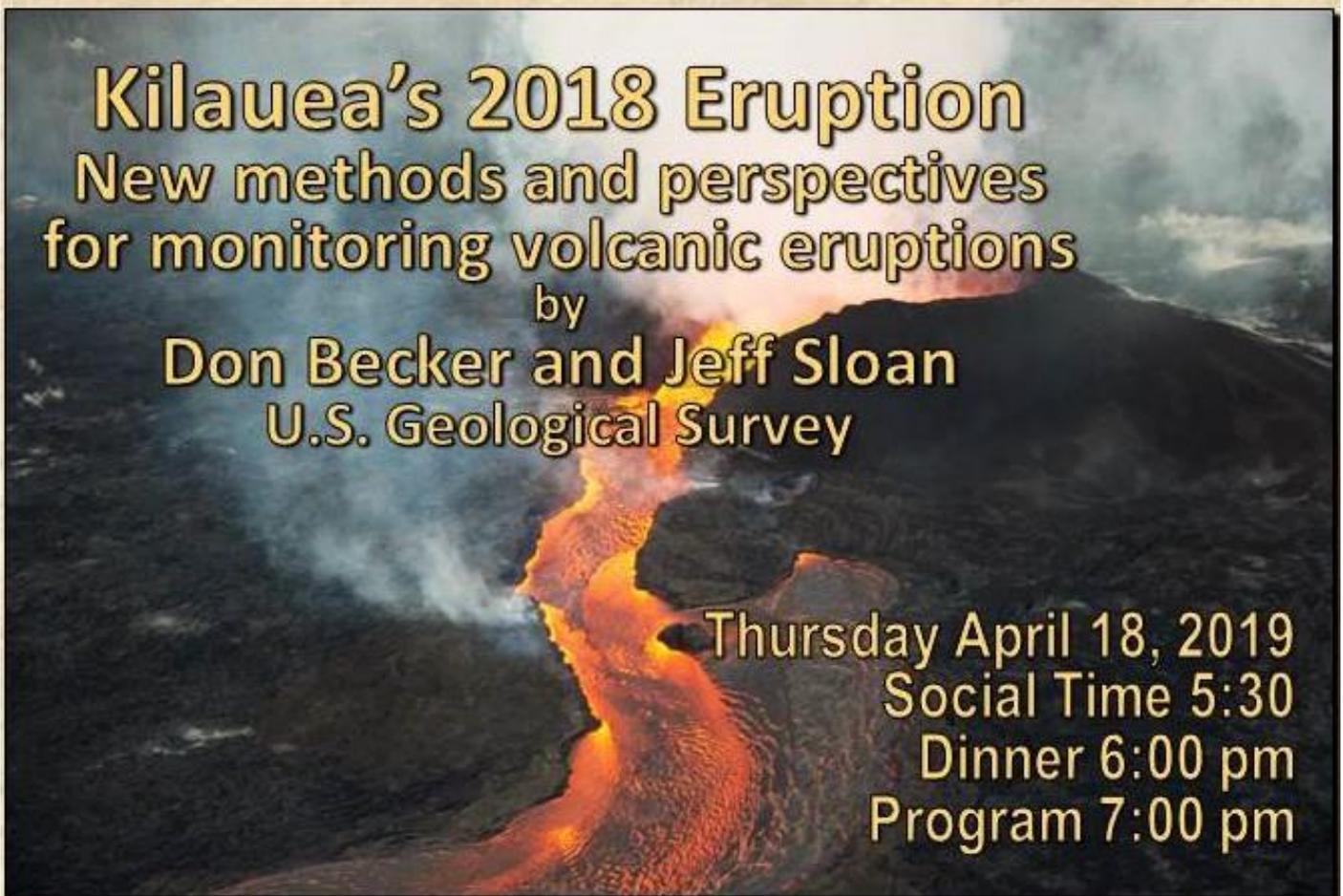




Colorado Scientific Society

Newsletter of the Society

April 2019



Kilauea's 2018 Eruption
New methods and perspectives
for monitoring volcanic eruptions
by
Don Becker and Jeff Sloan
U.S. Geological Survey

Thursday April 18, 2019
Social Time 5:30
Dinner 6:00 pm
Program 7:00 pm

Don Becker, USGS, is a videographer who was sent to Kilauea to film and document the 2018 eruption and earthquakes.

Jeff Sloan works in the USGS UAS (Unmanned Aircraft Systems; i.e., "drones") program and will show how they were used at Kilauea. Expect to see a lot of great video "footage" of the eruption.

Mt. Vernon Canyon Club
24933 Clubhouse Circle
Golden, CO 80401
On Lookout Mountain



For Dinner Reservations and Information
www.coloscisoc.org or
Colorado.Scientific.Society@gmail.com

***April meeting - Thursday, April 18 – Past Presidents’ Dinner
Mt. Vernon Canyon Club, 24933 Clubhouse Circle, Golden
Please make reservations by Wednesday, April 10; see our website
for details & reservations form: <http://coloscisoc.org/>***

Don Becker, USGS, is a video producer with the Office of Communications and Publishing and is the manager of the USGS Video Archive and who has made films for the USGS for 43 years. Don has filmed in nearly every U.S. state, Canada, and Africa. He was sent to Hawaii by the Hawaiian Volcano Observatory for a two-week period to film and document the USGS scientists working the 2018 Kīlauea eruption and earthquake-damaged HVO building near the Halema`uma`u crater. Don has in the archive nearly all the USGS footage of the 2018 Kīlauea eruption, which lasted from around the end of April to early September 2018. Don will show footage acquired from the on-scene HVO scientists along with what he filmed, including spectacular, rare footage of an earthquake at the Jaggar Museum at the summit, and will present a brief history of the eruption using footage from the ground, helicopter, and UAS.



Don had the experience of a lifetime seeing an actual volcano eruption in progress, something that he had hoped to do since childhood. His first view of the erupting Fissure 8 in the Lower East Rift Zone (LERZ) was on an early morning helicopter overflight. He filmed the eruption from several angles from the air, then proceeded to film down the length of the 6-mile lava flow to the ocean entry. After landing on a remote road so he could get out of the helicopter to make room for animal rescue folks who quickly needed to use the helicopter to remove dogs from a house being overrun by the lava flow, he resumed the flight back to the forward operating base. He then went out with a ground crew to Leilani Estates and filmed the crew, fissure 8, and the lava flow from the ground. He did this same routine for several days, and then also spent several days at the summit filming the Halemaumau crater. While at the summit, he rode through several magnitude 5.4 earthquakes that were caused by rockfalls in the crater left empty by the drainage of the lava into the LERZ. Don then spent time filming with the UAS crew who were using their aircraft to document the physical changes to the Halema`uma`u crater and they were simultaneously recording level readings with a gas sensor on the aircraft. He got wonderful footage of the crew doing their setup and flights. During his time on Hawaii, Don got to experience filming the lava flow at night, which was an amazing sight. Don filmed a one-on-one interview at the summit Volcano House with Don Swanson, USGS, a Research Geologist at HVO, formerly of the Cascades Volcano Observatory where he worked intimately with the eruption of Mount St. Helens. The interview was interrupted on multiple occasions due to large earthquakes. Lastly, Don was asked to film the inside and outside of the HVO building, damaged

during the many earthquakes. At that time, the earthquakes were on an approximate 24-hour schedule, so when he was done at the HVO, he set up a camera just outside the Jaggar museum, on a tripod with the legs stretched far out so it could not tip over. As you will see, the resulting footage was spectacular; the next earthquake caused the sidewalk to open up and the rock wall begin to crumble. Don's hope is that you enjoy seeing the fierce beauty in the volcano eruption that caused so many local homeowners to lose everything that they owned and their lives to be changed forever.

* * * * *

USGS Unmanned Aircraft Systems (UAS) Response Supporting the Kilauea Volcano Activity

In May 2018, the USGS deployed equipment and trained personnel to provide UAS remote sensing data acquisition over the impacted area of the Mount Kilauea eruption in Hawaii. The UAS response team flew over 1,300 flights totaling more than 300 hours of aerial geospatial and gas emission data collection utilizing nearly 40 different UAS operators from across the nation for a period of four months. A USGS volcanologist guided mission planning in coordination with the UAS operations team lead to ensure tight integration of the team's efforts and the needs of the USGS Hawaiian Volcano Observatory (HVO), the National Park Service, Federal Emergency Management Agency (FEMA) and local emergency managers. The initial missions included providing visible and thermal imagery to monitor lava flows moving through residential areas and threatening critical infrastructure and to construct up-to-date digital elevation models of areas where lava flows had dramatically changed the topography. Measuring concentrations of hazardous gases were also a critical concern to emergency managers so the UAS payload was modified to collect gas data utilizing three different sensors. The Team was routinely asked to provide 24x7 surveillance including separate UAS operations (requiring three shifts) to cover FEMA and HVO data requests to provide situational awareness missions for emergency managers to assess spillovers and new lava channel breakouts.



Jeff Sloan works in the USGS UAS (Unmanned Aircraft Systems; i.e., drones) program and will show how they were used at Kilauea. Drone(s) will be on display at the meeting.

* * * * *

Our upcoming meetings & field trips in 2019:

Thurs., April 18, Colo. Sci. Soc. April Meeting & **Past Presidents' Dinner** featuring a dual presentation: Don Becker (USGS) and Jeff Sloan (USGS) **Kilauea's 2018 eruption - new methods and perspectives for monitoring volcanic eruptions**. Planned for the Mount Vernon Canyon Club (formerly, Mt. Vernon Country Club), Lookout Mountain, Golden, CO.

Tuesday, May 14, Colo. Sci. Soc. annual Emmons Lecture and May meeting, to take place in conjunction with a 2.5-day USGS-CSM joint Mineral Resources Forum. The lecture will be a presentation by **Dr. Mark Barton**, Univ. of Arizona, Lowell Institute for Mineral Resources: **Synthesis, serendipity, and an open mind: timely approaches to timeless challenges in mineral deposits**. Exact time and location (on the CSM campus) TBA. More info will be forthcoming!

Sunday, May 19, CSS Spring Field Trip: **"Quaternary Geology of the Denver Basin"**. "A one-day field trip (about 8 a.m. to 5 p.m.) starting at the Morrison exit/Woolly Mammoth Park & Ride, with about 4 field stops relating to the Quaternary/Pleistocene geology of the Denver Basin. The trip will include a visit to the Magic Mountain archeological site, which has recently been in the news because of recent new excavations by DMNS.

CSS Fall Field Trip, Saturday and Sunday, September 14-15, 2019
Geology and Geoheritage of the Florissant-Cañon City-Florence area

A two-day field trip with an overnight in Cañon City. Visiting: Florissant Fossil Beds National Monument; Skyline Drive by Cañon City; Royal Gorge; the Florence coal, oil, and gas basin; and the Cope-Marsh quarries at Garden Park.

Fall 2019 CSS planned meeting dates: Sept. 19, Oct. 17, Nov. 21, Dec. 19. Details to come.

* * * * *

CSS Spring Field Trip, Sunday, May 19, 2019
Quaternary Geology of the Denver Basin

A one-day field trip starting at the I-70 Morrison exit/Woolly Mammoth Park and Ride, with stops relating to the Quaternary/Pleistocene geology of the Denver Basin. The trip will include visits to:

- Magic Mountain archeological site, Paleocultural Research Group
This has been in the news because of recent excavations by the Denver Museum of Nature and Science. Rolfe David Mandel will talk about the site's geology, stratigraphy, and Carbon-14 dates. – about 90 minutes
- Cheiftain mine (General Shale Brick, formerly Robinson Brick Co.) clay pit at Alameda & C-470; Jason McGraw of General Shale will do a focused on industrial minerals geology.) – about 90 minutes. Hard hats are not required but closed-toe shoes are.
- The White Ash and Loveland Mines, by Donna Anderson
Because there is no longer anything to see on the south side site but a bench and plaque, we will go to the park on North side of Hwy 6. This will be the lunch stop. Ned Stern will provide a new cross-section and maps of the White Ash Mine.
- Last stop at West Lake parking area on Clear Creek off Youngfield St., south of 42nd Ave. Dave Lindsey will talk on Clear Creek geology and Quaternary geology of South Platte basin, with a show and tell on evolution of Clear Creek.

If you wish to attend, please write to Cal Ruleman, 303-236-7804, cruleman@usgs.gov . We'll have more details in the May newsletter.



Magic Mountain site; Colorado Encyclopedia, <https://coloradoencyclopedia.org/article/magic-mountain-archaeological-site>

* * * * *

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://coloscisoc.org/membership-payment/> . Or see <http://www.coloscisoc.org> . To pay by mail, send payments to: **Colorado Scientific Society, P.O. Box 150495, Lakewood CO 80215-0495**

* * * * *

Calendar of Coming Events
Calendar of Coming Events

Leonardo da Vinci at the Colorado School of Mines, Arthur Lakes Library: In addition to the **Leonardo da Vinci: 500 Years of Genius** exhibit now in progress at the Denver Museum of Nature and Science (see <https://secure1.dmns.org/leonardo-da-vinci-500-years-of-genius>), there is another excellent exhibit about his work, currently on display at the Lakes Library on the CSM campus. The **Machines of Change: The Da Vinci Machines** exhibit includes “over 60 authentic reproductions of machines and devices designed by Leonardo DaVinci were created using similar materials, building techniques and tools that Leonardo would have had access to in his time”, plus full-size reproductions of Leonardo’s most famous paintings. The exhibit, free to all visitors, is spaced around the corridors and reading rooms of the main floor of the library. Library hours are 8 a.m. to 8 p.m. most days, 12 to 6 weekends.

Tues., Apr. 9, 6:30 p.m., Golden Beer Talks, Christina Burri, Watershed Scientist, Denver Water, will discuss Denver Water’s proactive investments in forest and watershed health to protect the source water for 1.4 million people in the Denver Metro Area. She will share the lessons learned in being reactive to high intensity wildfires, such as the Hayman and Buffalo Creek fires, and how Denver Water is experiencing a return-on-investment on proactive forest and watershed

management”. Windy Saddle Café, 1110 Washington St., Golden. Doors open at 6; no charge other than food or drink you may purchase. For more info see <http://goldenbeertalks.org/> .

Wed., Apr. 10, 4:00 p.m., University of Colorado Earth Sciences Colloquium, “**Stromatolites**”, by Frank Corsetti, University of Southern California Benson Earth Science Building, Room 180, all are welcome; refreshments follow.

Fri., Apr. 12, 6:45 p.m., **North Jeffco Gem & Mineral Club Silent Auction**; all welcome (setup begins at 5:30). APEX Community Recreation Center, 6842 Wadsworth Blvd., Arvada. For more info, Bill Jones, 303-503-6288

Fri.-Sat.-Sun., Apr. 12-14, **Colorado Mineral and Fossil Spring Show**, Crown Plaza Hotel /Convention Center, 15500 E 40th Ave., Denver, Colorado, 10-6 Fri. & Sat., 10-5 Sun., free parking & admission.

Thurs., Apr. 18, Colorado Scientific Society annual dinner meeting, at Mount Vernon Canyon Club, 24933 Clubhouse Circle, Golden [Lookout Mountain] with a presentation, “**Kilauea’s 2018 eruption - new methods and perspectives for monitoring volcanic eruptions**”, by Jeff Sloan and Don Becker, USGS. You may attend the dinner, or just come afterward for the presentations. Social gathering at 5:30, dinner at 6:00, program at 7:00. To make reservations see www.coloscisoc.org .

Mon. & Tues., Apr. 22 & 23, a pair of short **Geology/Nature Hikes for Earth Day** (which of course is always April 22), on the **Table Mountains, Golden**. Monday, Apr. 22, a hike to the **waterfall on the east side of North Table Mountain**; meet at 5:00 p.m. at Tony Grampas Park, Salvia St. off W. 44th Ave., Golden. Tuesday, Apr. 23, a hike to the top of “**Castle Rock**” on **South Table Mountain**; meet at the trailhead at 18th St. & Beveledere St., Golden (take 19th St. east till it dead-ends at the foot of the mountain; jog left on Belevdere, park between 19th & 18th Streets. Let by USGS geologist Pete Modreski. Open to the public—anyone who would like to come. Each hike should take 2 hours or less, up & back; return by dusk. For more info or if weather is questionable, contact pmodreski@usgs.gov, off. 303-202-4766, cell 720-205-2553.

April 25-28, Dinosaur Ridge, 30th Anniversary Celebration: events, Thursday through Saturday, include Jurassic Park Movie Night at the Alamo Drafthouse; Walk with a Scientist Tours; Spotlight on Science talk at the Origin Hotel Red Rocks; Community Carnival in the Cretaceous; and 30th Anniversary Gala Event at Origin Hotel. For full information on all these events, see <http://dinoridge.org/tours-programs/30th-anniversary-celebration/> .

Sat., May 4, 11 a.m. to 2:45 p.m., **Colorado Mineral Society Silent Auction**; Holy Shepherd Lutheran Church, 920 Kipling St., Lakewood. Checkout begins at 2:45 p.m.; all are welcome; for more info, see www.coloradomineralsociety.org or contact Ben Geller, 303-550-5993 or email auction.coloradomineralsociety@gmail.com .

Thurs., May 9, 7:30 p.m., Friends of Mineralogy, Colorado Chapter, bimonthly meeting: featuring David Stout, **Rhodochrosite from the Capillitas mine, Argentina**,. Meeting in Berthoud Hall, Room 109, Colorado School of Mines campus, Golden. All are welcome.

Fri., May 10, 2:00 p.m., Denver Museum of Nature & Science, Earth Sciences Colloquium, [note 2 p.m. start time; a 2nd talk follows at 3:00] “**The dinosaur resurrection: Modern birds, and their rise from Chicxulub’s ashes**”; Dan Field, Univ. of Cambridge. VIP Room, DMNS; all are welcome, museum admission is not required.
3:00 p.m.: **The end-Permian mass extinction from a high southern palaeolatititude perspective**, by Chris Fielding, Univ. of Nebraska.

Tues., May 14, Colorado Scientific Society annual Emmons Lecture, by **Dr. Mark Barton**, Univ. of Arizona, Lowell Institute for Mineral Resources, **Synthesis, serendipity, and an open mind: timely approaches to timeless challenges in mineral deposits**; exact location on the CSM campus, TBA. This public presentation will take place in conjunction with a 2.5-day USGS-CSM joint Mineral Resources Forum.

Tues., May 16, 10:30 a.m., USGS Rocky Mountain Science Seminar, *It's not just about nitrogen and phosphorus: Why sulfur in agriculture is a growing concern.* Eve-Lyn Hinckley, CU-Boulder. Building 25 auditorium, Denver Federal Center; visitors are welcome. Enter Building 25 at entrance E-14, by the security guard's station.

Sun., May 19, Friends of Mineralogy, Colorado Chapter, Silent (+Vocal) Auction. Noon to 4 p.m. (setup begins at 11 a.m.), Clements Community Center, 1580 Yarrow St., Lakewood CO. All are welcome to attend.

Tues., May 30, 10:30 a.m., USGS Rocky Mountain Science Seminar, *Levering published geological information in Macrostrat to test Earth systems hypotheses:* Shanan Peters, Univ. Wisconsin, Madison.. Building 25 auditorium, Denver Federal Center; visitors are welcome. Enter Building 25 at entrance E-14, by the security guard's station.

Fri.-Sat.-Sun., May 31-June 2, Pikes Peak Gem & Mineral Show, Norris-Penrose Event Center, 1045 Lower Gold Camp Road, Colorado Springs, CO 80905. Sponsored by the Colorado Springs Mineralogical Society. Hours: noon-7 pm Fri., 10-5 Sat, 10-4 Sun. Adult admission \$5.

* * * * *

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 Paleontological Society (WIPS); beginning January 2019, WIPS will meet on the 1st Monday of the month, 7 p.m., at Lowry Conference Center, 1061 Akron Way, Denver. See <http://westernpaleo.org/>.

* * * * *

2019 Colorado Scientific Society Officers, Councilors, and Committee Chairs

Officers

President..... Tom Casadevall, tcasadev@gmail.com, 720-244-7052
President-elect Jim Paces, jamespaces@comcast.net
Past President..... Bob Raynolds, bob.raynolds@dmns.org
Secretary..... Lisa Fisher, 303-215-0480, lisa.fisher@alumni.mines.edu
Treasurer..... Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov, or
dsweetkind@gmail.com

Councilors

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
2019-2021: Linda Barton Cronoble, lbarton1611@gmail.com, 720-338-1237
2019-2021: Yvette Kuiper, ykuiper@mines.edu, 303-273-3105

Committee Chairs

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, office 303-202-4766, cell 720-205-2553, pmodreski@aol.com
Outreach: Linda Barton Cronoble, lbarton1611@gmail.com, 720-338-1237
Past Presidents' Best Paper Award: Bob Raynolds, bob.raynolds@dmns.org
State Science Fair Awards: Chuck Weisenberg, 303-238-8806, cweisnrg@msn.com
Student Programs Chair: Melissa Foster, melissa.ann.foster@gmail.com, 707-498-2484
Student Research Grants Chair: Bob Raynolds, bob.raynolds@dmns.org
Webmaster: Chris Morrison, chris-morrison@comcast.net

* * * * *

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/>. If you use facebook—please go there and “like” the CSS! (Just search there for Colorado Scientific Society.)

And once more: to pay dues online, please go to:

<http://coloscisoc.org/membership-payment/>

Thank you!