



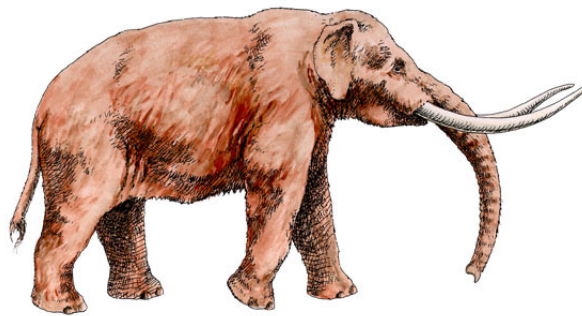
# Colorado Scientific Society

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

## The Snowmastodon Site: Discovery, Science, and Initial Results

by

*Dr. Jeff Pigati, USGS Denver, and  
Dr. Kirk Johnson, Denver Museum of Nature and Science*



Wednesday, February 16, 2011

Colorado School of Mines—Dept. of Geology and Geological Sciences  
Berthoud Hall, Room 241, Golden, Colorado  
Social half-hour – 6:30 p.m. Meeting time – 7:00 p.m.

# The Snowmastodon Site: Discovery, Science, and Initial Results

by

*Dr. Jeff Pigati, USGS Denver, and Dr. Kirk Johnson, Denver Museum of Nature and Science*

In October 2010, construction crews working to expand the capacity of a reservoir near Snowmass Village, Colorado unearthed several bones of a juvenile Columbian mammoth. The discovery set off a frenzy of excavation and scientific efforts in which members of the Denver Museum of Nature & Science (DMNS) recovered more than 600 bones comprising parts of up to ten American mastodons, four Columbian mammoths, four ice age bison, two deer, a Jefferson's ground sloth (the first recorded in Colorado), and several tiger salamanders. In addition to the vertebrate fossils, the site is host to exceptionally well-preserved plant, insect and aquatic invertebrate fossils - beetle parts are iridescent, plants are still green, and conifer cones are intact. The DMNS and USGS have partnered together in an enormous undertaking - to study the fauna, flora, and climate history of the Snowmass site in less than a year (the site will likely be underwater by November 2011). To date, several key research questions have emerged: (1) What does the Snowmass site, which is at 8874 feet above sea level, tell us about Pleistocene climate and biota at high elevations in the Ice Age Rockies? (2) What is the timespan represented by sediments at the site? (3) How and when did vegetation and climate change in the past? (4) What information can we ascertain regarding the ecology and life histories of the site's mammoths mastodons, and other megafauna? We will report on preliminary results of laboratory analyses (pollen, geochemistry, chronology) that are currently underway, and will also discuss the process of forming a team of top-flight scientists, what we/they plan to study, and what the results may tell us about past, present, and future life high in the Rocky Mountains.

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## President's Message from Lisa R. Fisher



Greetings! The thermometer has finally climbed above the freezing point after our deep cold spell. Maybe we will start to thaw out soon!

We were all very sorry to see that our Emmons speaker was stranded by the blizzard on the East Coast. Everyone tried their best to bring Dr. Thomas Strasser west, but there was just no way to get him here on time. We all expected it to be the other way 'round—that our winter speakers would not be able to get into Denver because of blizzards *here*. Fortunately, Dr. Strasser is rescheduling for later this spring, and we will announce that date shortly. I, for one, am looking forward to his talk on the new archaeological finds on Crete. I have always been interested in archaeology and anthropology, and groundbreaking news is always fun! I find it fascinating, though not surprising, that early humans were able to navigate the Mediterranean—maybe this is a chance to fight the “So easy a Cave Man can do it” image of our ancestors as stupid, ugly brutes.

I am also looking forward to this month's presentation by Jeff Pigati and Kirk Johnson on the recent Snowmass mammoth (“Snowy”!) discovery. What an amazing fossil discovery in our own backyard. William Brooks, our March speaker, brings a fascinating look at how the ancient Peruvians mined gold and other minerals—timely for me personally, as our own corporation begins its gold project. I think this presentation will open up quite a bit of discussion of mining related archeology coming to light in recent years. Come prepared!

In my last message, I promised to elaborate on CSS interests: The Colorado Scientific Society—What is it? What has it done? What is it going to do? I believe we surprised a lot of attendees at our GSA Topical Session this past November with our history of not only prominent members and their contributions, but our record of service to the scientific community. We continue to acknowledge our current members and their many and continuing contributions to our science. What of our current service to the science community? We have a long list of projects such as Student Grants, Science Fairs, and Educational Signs at locations of geological interest, and more. These are great! But what else can we do? What else do we need

to do to fulfill our mission and BE the Colorado Scientific Society? What are the needs of the community that we have yet to address? What are the needs of our own members? These are questions we will be addressing in the coming months.

One obvious need in the community is in the area of science education. There are gaps in science education at all levels, exacerbated by our current economic conditions. This is certainly an area where CSS as a Society and individual CSS members can contribute.

Take elementary school science for example. There have been many improvements since I was in grade school—I only remember three things from grade school science—one was a project on local birds, the second was making paper out of Kleenex (not quite sure what that one was supposed to accomplish!), the third was learning the names of the major skeletal bones. The rest of grade school science over those years was pretty much non-existent. At least some schools today are taking science more seriously. Many teachers are valiantly putting in great effort to be good science teachers, learning science topics and how to teach them to children in a way that will not only be clear and understandable, but fun. Yet science remains a difficult topic for many teachers to understand and teach. There are good programs out there presenting material and other assistance to and for teachers, and these programs need more scientist/engineer volunteers to help. I believe this is an opportunity for CSS and its members to become involved and make a difference in the future of science!

Local museums, parks, and open space groups often provide programs in science and nature for the general public. I am aware that several of our members volunteer on a regular basis with these programs, however there is always a demand for more volunteers.

You would think that the university level science programs would be in good shape—yet problems are appearing even at that level. Professionals involved with teaching are seeing a decline in student ability to use good reasoning skills. Abstract thinking is not taught or encouraged; much is still “cookbook” science! Professionals involved in hiring these young people with new degrees are seeing a decline in their skills and knowledge base, seemingly unprepared for normal starting positions. University geology programs across the country are variously de-emphasizing or outright dropping basic physical and historical geology, paleontology, optical/petrography, and especially field methods! While geological sciences are making more use of computer models and other new technologies, our base is still in the earth! You can't model something you don't fully understand, and all the interrelationships within earth science can be complex indeed.

Several industry professionals with the perspective of many combined years in industry, have made the following observations and comments: Many students have no real idea of what a working geologist does—even well-trained new hires exhibit the proverbial “deer caught in the headlights” look when initiated into the duties and expectations of the corporate science/engineering world. Many members of scientific faculty have, unfortunately, no experience in industry or the requirements and demands of the industry. The question is how can we prepare these students and better interact with the universities to prepare students for useful and rewarding careers? These are problems and questions currently being discussed within the GSA Associated Societies on the National level. This is certainly an avenue through which CSS members can make an outstanding contribution to higher-level education.

Young professionals entering the science fields may lack support of their peers and mentors. Even seasoned researchers may find themselves isolated from peers, or cut off from their normal avenues of research and support by lack of funding, government dictates, or other socio-economic factors. While the educational needs of these professionals are of a different sort than those of students, professional development and support is still a concern to address.

So where does that leave us, as CSS members? As a Society? What do we do? How do we want to move forward to contribute to solving some of these problems? Our monthly meetings and other activities provide one avenue for interaction and sharing of ideas between science professionals, students, and interested lay folk. Our grant program contributes to student research. Our outreach program carries out various projects for the public. All of that helps, but I think we can go further. We have put together a new mentorship program, currently in its infancy, to connect experienced professionals with students and young professionals. For this program to work, we need people to step up and become mentors, reach out to the younger folks, and build bridges within our science community. We need to use all of that accumulated experience and hard won wisdom to prepare the new generation of scientists! We recently joined the Geological Society of America as an Associated Society, where we can join with voice and efforts toward national and international solutions to these problems. We need our members to speak up, make suggestions, and join in this effort. What other programs can CSS expand or develop to address what we as a Society can do to make a real difference?

I believe that the CSS CAN make a difference, in these and other issues of concern to scientists and engineers. I believe we should continue to work through our current programs and develop new programs as needed to serve the needs of the scientific community. It is time for fresh approaches to old problems. I call on all of our members to make a little extra time to volunteer on one of these fronts. If we each give even a small effort, think what 400 of us can do if we work together!



**Feb. 25–27, Denver Gem and Mineral Guild, Jewelry Gem & Mineral Show**  
Jefferson County Fairgrounds, 15200 W. 6th Ave. (Frontage Road), Golden, CO;  
10–6 Fri., 10–6 Sat., 11–5 Sun.; “Free Parking and Free Admission”. For more info.  
see <http://denvergem.org/Shows.html>

**Mar. 25–27, Fort Collins Rockhounds Club Gem and Mineral Show at The Ranch**  
in the Thomas M. McKee 4–H building, Larimer County Fairgrounds, 5280 Arena Circle, Loveland  
[new location for just this year; normally in downtown Fort Collins]. For more info see:  
<http://www.fortcollinsrockhounds.org/gemAndMineralShow.shtml>

The CSS would like to thank Becky Rucic at *Table Mountain Travel* for her valiant efforts trying to get our January speaker to Denver, but Mother Nature won that round.

Table Mountain Travel  
Becky Rucic  
Phone: 303 277 1580  
[becky@tablemountaintravel.com](mailto:becky@tablemountaintravel.com)  
8:30am- 5pm Monday- Friday



### Medlin Scholarship

The Coal Geology Division Antoinette Lierman Medlin Scholarship provides monetary support and recognition to deserving students in coal science. Monies from the scholarship are used towards successful completion of student’s research projects. Each year, one award is presented for the completion of laboratory/analytical research and a second award is presented for the completion of fieldwork. Full-time graduate students are strongly encouraged to submit applications for these scholarships. The deadline for submission is February 15, 2011. For complete information about the A.L. Medlin Award, refer to GSA Today, January 2011 issue. If you have any questions, please contact Sue M. Rimmer, Scholarship Committee Chair, at: [srimmer@siu.edu](mailto:srimmer@siu.edu)

### Good Clean Fun

Q: How do dinosaurs pass exams?

A: With extinction!

Q: What do you call a cowboy dinosaur?

A: Tyrannosaurus Tex!

Q: How do you ask a dinosaur to lunch?

A: Tea Rex?

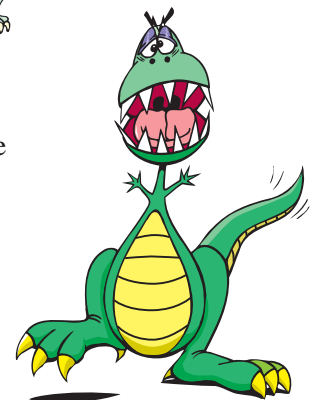
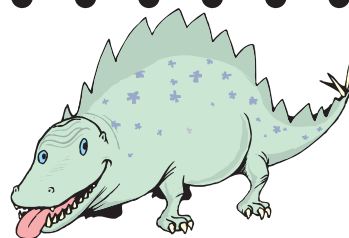
Q: Why did the Apatosaurus devour the factory?

A: Because she was a plant eater!

Q: What do you get when you cross a dinosaur with fireworks?

A: DINOMITE!

Talking to a group of primary school teachers about geology, and how to introduce it to the young, led to the inevitable discussion on dinosaurs...all kids are fascinated with dinosaurs! So I asked the teachers, if so many kids are interested in dinosaurs, why aren’t there more geologists...?  
The answer...most kids grow up!



### WIPS Fossil Club for Kids – Next Meeting February 20

Do you have a child or grandchild who is interested in fossils? If so, the WIPS Fossil Club is for them. We meet every third Sunday of the month, next meeting on Feb. 20. In January, we learned about brachiopods, and how to tell them from clams. In February, we will continue to learn more about fossils. The Fossil Club is available for WIPS families, suitable for children elementary school age and older. If interested in joining the Fossil Club, please contact Dennis Gertenbach at [gertenbach@comcast.net](mailto:gertenbach@comcast.net) or 303-709-8218 for more information.

**It's Darwin Week at CU-Boulder**, and you can get the full schedule here:  
<http://ssassatcu.blogspot.com/p/darwin-week.html>



Wednesday, February 9  
5:00 PM - Matt Young, CSM, on "Evolution Confers Morality" in Old Main Chapel

Our sense of morality is neither supernatural nor mysterious but rather is an evolved trait. It is likely innate rather than learned or cultural. Cooperation exists at all levels in the animal kingdom, and many nonhuman animals display a moral sense. Kin selection shows how a moral sense evolved and why it is applied most strongly to relatives and associates. Morality has evolved—imperfectly as always, but it evolved.

Matt Young is Senior Lecturer in physics at the Colorado School of Mines, a regular contributor to the influential evolution blog *The Panda's Thumb*, and President of Colorado Citizens for Science. His most recent book, written with Fairview teacher Paul Strode, is *Why Evolution Works (and Creationism Fails)*. Formerly, he was a Physicist at the National Institute of Standards and Technology and held faculty positions at Rensselaer Polytechnic Institute and the University of Waterloo. He has published roughly 100 scientific papers and reports; written three books on optics, technical writing, and science and religion; and coedited the book *Why Intelligent Design Fails*.

For more information on Dr. Young's interests, books, and research, see: <http://inside.mines.edu/%7Emmyoung/>



## GIS Colorado 2011 Scholarship Announcement

GIS Colorado is pleased to offer scholarships to deserving Colorado university or college students this calendar year. We are offering two \$750 scholarships: one to a deserving undergraduate student, and one to a deserving graduate student.

The scholarships are intended for full-time undergraduates enrolled in an associates or baccalaureate degree program with GIS as a major or minor emphasis of study, or graduate students enrolled in a full-time graduate degree or graduate certificate program. Students must be attending an accredited higher education institution (junior college, college or university) throughout Colorado either as a resident or an online student.

The academic scholarships are designed for students exhibiting academic excellence in the geospatial technologies fields: Geographic Information Systems (GIS), Remote Sensing, Global Positioning Systems (GPS), or related disciplines. The scholarship awards can be used to offset any costs the student may incur while pursuing their college credentials, whether it be for tuition, books, data, fieldwork, or to help pay for travel to attend any GIS Colorado sponsored gathering.

Applications should be submitted electronically in PDF format and are due to the GIS Colorado scholarship committee to [scholarships@giscolorado.com](mailto:scholarships@giscolorado.com) by **March 15, 2011**.

The scholarship application package should include:

1. Completed application form
2. Transcripts indicating current grade point average (GPA). Unofficial copies are acceptable.
3. Two (2) letters of recommendation; at least one (1) letter from a professor (graduate or undergraduate) or high school teacher (undergraduate). Letters of recommendation may also be sent directly to [scholarships@giscolorado.com](mailto:scholarships@giscolorado.com), please include the student name in the subject field.
4. Short essay on "How GIS is changing the world" and "How I will integrate GIS into my career." Limit two (2) pages. Incomplete or late applications may be disqualified.



The GIS Colorado scholarship committee and one GIS Colorado board of director's officer will review and determine scholarship awards prior to the GIS Colorado Spring Meeting. The winners will be announced at the GIS Colorado Spring meeting and scholarship awards will be presented at the July 2011 GIS Colorado meeting. Awards funds will be sent in September after the student verifies their fall registration and enrollment in GIS classes at an accredited institution.

Check the GIS Colorado web site after Jan. 31, 2011 for the application document, [www.giscolorado.com](http://www.giscolorado.com).

For additional information, please contact:

Chair, GIS Colorado Scholarship Committee, Email: [scholarships@giscolorado.com](mailto:scholarships@giscolorado.com)

## CSM Geology Museum Year in Review for 2010

By Bruce Geller

Our Geology Museum continues to evolve into a real gem. My third year at the helm of the Museum has seen further challenges and has produced great pride. We co-sponsored the Creede Mineral Symposium, which was a three-day event held last September in southwest Colorado at the Creede Underground Museum and attended by 71 participants. I held weekly meetings with our Collections managers and volunteers. Many new volunteers and Student Aids were recruited and oriented. We now have our own Facebook fan page with over 360 friends.



Attendance, donations box, and Gift Shop revenues increased, despite the national recession. We held a Book Sale and two Garage Sales, which were very successful. Several security measures were emplaced. Significant cash and specimen donations continued, with many impressive loans. In short, our Museum is becoming nationally recognized for its quality displays and staff.

We applied for and received a grant from the Golden Civic Foundation, hosted numerous receptions, identified many specimens, and obtained a moon rock from former Governors Vanderhoof and Ritter. Check it out in our new basement display!

We created a non-profit “Friends of the CSM Geology Museum” (FCSMGM) that boasts over 64 members from around the world. The FCSMGM members have recently ratified their own by-laws, held an annual meeting, and spent two days in the field, visiting two copper mines in southwestern New Mexico. If you are interested in joining a fun group of dedicated Museum enthusiasts, with the knowledge that you are helping support our collections, then pick up one of the FCSMGM membership applications. FCSMGM members receive invitations to special lectures, workshops, tours, trips, and social events; receive 20% discounts in our Gift Shop, and an e-mail newsletter.

At our annual open house in September, we debuted 10 exhibits, largely the work of our Collections Managers, Ed Raines and Tom Hughes, as well as those who loaned us their personal treasures. Our Creede mining district display won first prize at the Denver Gem and Mineral Show, out of 19 museums.

As for coming attractions, we hope to have our third Geology Museum Book Sale February 21–25, and we will gladly accept your book and journal donations. Presently we have hundreds of fine books, journals, maps, folios, and other items that we will include in the sale. Most items are individually priced. Prices will drop 50% every day of the sale on most items, other than some very rare pieces. This is held in the room across the hall from our Museum entrance, everyday of that week, from 9 A.M. to 4 P.M.

I invite your club to request a private tour of our Museum. Simply submit three dates/times (daytimes, evenings, or even weekends) and I will check my availability. Then you can notify your members of the date/time we’ve agreed upon, and together we can enjoy a visit of our facility.

In closing, I view every day working in our Museum as another typical/atypical day. Our improvements are astounding, but I must acknowledge the help and support that I’ve received from our Advisory Council, Student Aids, volunteers, FCSMGM members, donors, specimen loaners, guests, faculty, administrators, and other supporters. Our Museum is open seven days a week, admission is free, but fees for parking are required in our lots and on campus streets Monday through Fridays. Further information is available on our website [http://www.mines.edu/Geology\\_Museum](http://www.mines.edu/Geology_Museum), or phone me at 303-273-3823. Come see YOUR amazing collection!



**Upcoming CSS March talk** – Wm. E. Brooks, on Thursday March 24, Berthoud Hall, CSM.  
Topic: Ancient Mining in Peru.



## Earth Science Meetings and Talks

*Newsletter items must be received by the 25th of each month.*



**Colorado Scientific Society's** regular meetings are held the 3rd Thursday of the month at the Colorado School of Mines in Golden (unless otherwise advertised). Social time begins at 6:30 p.m. and talks start at 7:00 p.m. For more information, contact Lisa Fisher, at 303-215-0480, [lisa.fisher@escalantemines.com](mailto:lisa.fisher@escalantemines.com)

**CO-AIPG Feb. 15** *Dr. Eric Nelson, Prof. Emeritus, CSM*, "Mineral exploration in Peru: The role of structural geology." 11:30 AM social gathering; Noon lunch & subsequent talk. Meetings at the Petroleum Club (3rd Floor in the Denver Athletic Club building), 1325 Glenarm Street, Denver. Make an advance reservation so that seating and food prep. are adequate to cover attendance. Cost is \$25 with advance reservation and \$30 at the door. Paid parking is available along the street (metered) or in the adjacent parking lots and parking structure. Contact Jim Russell by Noon on January 14 for reservations at 303-278-4456 (home), 303-815-3901 (cell), or via e-mail at [summitdatasvcs@msn.com](mailto:summitdatasvcs@msn.com).

**Colorado School of Mines, Van Tuyl Lectures** Thursdays from 4–5 p.m. in Berthoud Hall room 241. **Feb. 10** *Prof. Steve Kesler, University of Michigan*, "Timing and extent of hydrothermal activity around the Bushveld Complex." **Feb. 17** Kirk R. Johnson, Denver Museum of Nature and Science, "The Cretaceous-Tertiary (K-T) boundary extinction and the ongoing debate over its cause." **Feb. 24** *Dr. Warren Hamilton, Professor Emeritus, CSM* "The Spectacular Subduction, Extensional, and Strike-Slip Geology of Southeastern California." <http://www.mines.edu/academic/geology>

**Colorado State University, Dept of Geosciences**, Rm 320 Warner College of Natural Resources Bldg., Mondays, 4:00 pm. 970-491-5661. **Feb. 7**, *Dr. Craig Jones, CU Boulder*, "Exploring an alternative explanation for the Laramide Orogeny." **Feb. 14**, *Dr. Meghan S. Miller, USC*, "From structure to dynamics: new insights into the Western U.S. from the Earthscope USArray Project." **Feb. 21**, *Dr. Kirk Johnson, DMNS (rescheduled)*, "The Cretaceous-Tertiary (K-T) Boundary extinction and the ongoing debate over its cause." <http://warnercnr.colostate.edu/geo-training/>

**DIPS (Denver Intl. Petroleum Society) Feb. 11** *T.B. Berge, P.G., Pangean Resources LLC*, "Global Resource Play Development." Wynkoop Brewing Company, 1634 18th Street, Denver. Gather at 11:30 am; Lunch served at Noon; Lunch price: \$15.00 for members and \$18 for non-members; \$3 talk only. Please e-mail Bob Zilinski, at [rezilin@aol.com](mailto:rezilin@aol.com) or call him at 303-885-0615 to make reservations before Wednesday, Noon, Feb. 9.

**Denver Mining Club Feb. 14** *Guy Johnson, Technology Applications & Marketing*, "Ground Rules (New caterpillar video on mining and sustainability)." **Feb. 28** *Bruce Geller, Director, CSM Geology Museum*, "2010 Beijing Exhibition—Mineral Treasures of the World, Geological Museum of China." The DMC meets every Monday at the Littleton Country Buffet near Bowles and Wadsworth (8100 W. Crestline Ave., in the shopping center) 11:30–1:00. Purchase of lunch required. <http://www.denverminingclub.org>

**Rocky Mountain Association of Geologists (RMAG) Mar. 3** *Lee Billingsley*, "Turner Sandstone, Powder River Basin, Wyoming, USA." Special Early Evening Event at 5 P.M. Reservations by recording at 303-623-5396 until 10:30 a.m., prior Wed. Luncheon \$30. Talk only (no res.)—\$5. Location: Denver Marriott City Ctr., 17th & California. **Upcoming:** The RMAG and DGS Present: 17h Annual 3-D Seismic Symposium, "Out in Front." <http://www.rmag.org/events>.

**Rocky Mountain SEPM Feb. 22** *Mason Dykstra, CSM*, "Deepwater Tidalites: Modern occurrence and ancient preservation." Reception at 11:30 p.m., lunch at 11:45 p.m., speaker at 12:15 p.m. Reservations: [luncheons@rmssepm.org](mailto:luncheons@rmssepm.org), before noon of preceding Friday. \$20.00 lunch, \$5 talk only. Wynkoop Brewing Company, 1634 18th St., Denver. <http://www.rms-sepm.org/luncheons.shtml>

**USGS Rocky Mountain Area Seminar Series Feb. 22** *Steve Gunderson, Colorado Dept. of Public Health and Environment*, "Water Quality Control Division and water quality issues in Colorado." **Mar. 8** *Dan Muhs, USGS Denver*, "Last interglacial sea level and global warming: a lesson for the future?" Tuesdays at 10:30 a.m., Building 25 Lecture Hall, Denver Federal Center (Kipling St. & 6th Ave., Lakewood, CO; use the lg. parking lot east of Bldg. 25, and enter near center of building via main entrance on east side). Contact: Peter J. Modreski, USGS, 303-202-4766, [pmodreski@usgs.gov](mailto:pmodreski@usgs.gov)

**Univ. of Colorado, Boulder, Geol. Sciences Colloquium Feb. 9** *Scott Barboza, AAPG Distinguished Lecturer*, "Mud Volcanoes: A Dynamic Model Motivated by Observations Offshore Eastern Trinidad." **Feb. 16** *Karl Wirth, Macalester College*, "Teaching Interventions that Promote Student Learning." **Feb. 23** *Dick Bishop, Houston*, "Impact of the oil trade on the global economy and the role of giant fields in predicting supply." **Mar. 2** *Peter Van der Beek, Univ. of Joseph Fourier, Grenoble, France*, "TBA." Weds., 4:00 p.m., Benson Earth Sci. Auditorium, Rm. 180. Refreshments at 3:30 p.m. on the 3rd floor. <http://www.colorado.edu/geosci/>

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Webmaster:	Table Mountain Web Design, 303-278-2701, <a href="mailto:bwarden@tablemntn.com">bwarden@tablemntn.com</a>



**\*\* STOP! Do NOT recycle this until after the talk! Please help us with publicity by posting at least the front page of this Newsletter on a bulletin board. Thank you!**