

Colorado Scientific Society

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

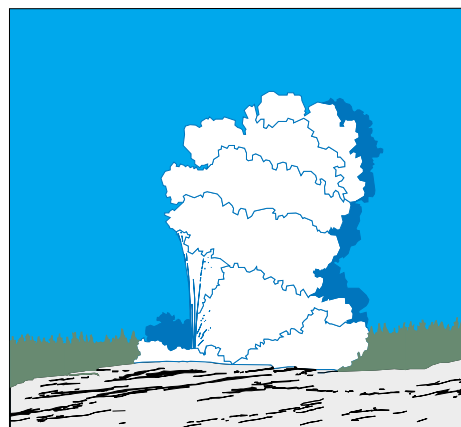
“Water, Water, Every Where, Nor Any Drop to Drink”: Possibilities for Microbial Life on a Gas Planet



*by Dianne Ahmann
Colorado School of Mines*

“The USGS in Yellowstone”

*by Lisa Morgan
U.S. Geological Survey*



Thursday, September 20, 2001

Colorado Mountaineering Center
710 10th Street (NE corner at Washington)
Golden, Colorado
Social half-hour – 7:00 pm
Meeting time – 7:30 pm



“Water, Water, Every Where, Nor Any Drop to Drink”¹: Possibilities for Microbial Life on a Gas Planet

by Dianne Ahmann

Liquid water has long been assumed to be an absolute requirement for the sustenance of life, primarily because of its excellent solvent properties. Intracellular water stabilizes and mobilizes cytoplasmic macromolecules, while extracellular water facilitates the transport of nutrients and wastes to and from cell surfaces and stabilizes the very cell envelopes themselves. Indeed, no life on Earth, in all its astonishing variety, has adapted to an environment devoid of liquid water.

Nevertheless, the role of water, and liquid water in particular, in sustaining life deserves closer examination. Consideration of the vast array of Earthly microorganisms that inhabit extreme environments, including salt-saturated brines, Antarctic ice sheets, dark hydrothermal vent fluids reaching temperatures of 150°C, and volcanic lava deficient in water as well as soluble nutrients, reveals that microorganisms have evolved elegant mechanisms to ameliorate the problems posed by external dryness. Evaluation of these mechanisms allows the apparent requirement for external liquid water to be understood more specifically as an intracellular requirement for certain chemical attributes of water, described by the idea of water potential, rather than a requirement for the liquid phase itself. Alternative environments that might lack a liquid phase, but provide water with properties essential for life, will be considered.

A second aspect of the apparent requirement for liquid water is the need for a fluid to dissolve and circulate essential nutrients among cellular life forms. Such circulation is necessary both for the needs of individual organisms and for the continual elemental recycling that enables entire ecosystems to function. Because many Earthly nutrients are bioavailable primarily as water-soluble molecules, liquid water has seemed essential in this role as well. Again, however, examination of known microbial communities calls this apparent requirement into question. Many resourceful microbes have developed ways, even here on Earth, to obtain energy, “fix” carbon to build cellular machinery, and dispose of waste products entirely in the gaseous phase. Consideration of these mechanisms, and the possibilities for development of ecological systems using these mechanisms exclusively, will conclude the discussion.

¹S.T. Coleridge, *Rime of the Ancient Mariner*



The USGS in Yellowstone

by Lisa Morgan

The latest research activities in the Yellowstone area are interesting and varied. Work involves scientists from the Denver offices as well as from the newly formed Rocky Mountain Science Center in Bozeman, Montana. For more info. on the new center see: <http://nrmsc.usgs.gov/>



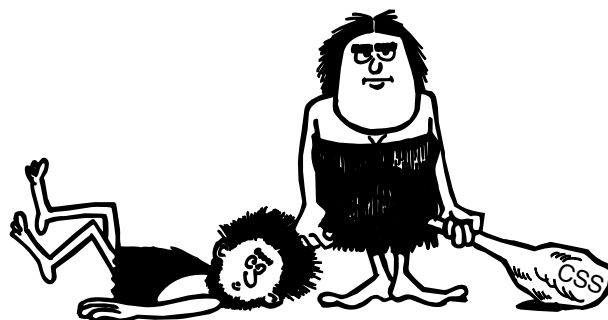
A View Through the Brown Cloud

Ahhh, September at last. The kiddies are back in school; Halloween decorations have been sighted at local stores; George W's "tax refund for America's workers" is arriving on your doorstep despite the efforts of *your* postal service to misplace it; the Denver Binkies are horsing around in a diaphragm; embarrassed "environmentalist at heart" geologists are secretly rooting for the opening of the Alaskan north slope so they can find employment; the end of the gummint's fiscal year draws nigh and anxious feds wonder if they'll see a budget before the Federal Center geese take flight and head north next spring, hopefully taking with them a layer of management. The heat wave continues and the scent of neighborhood BBQ grills persists, but a cooling trend has begun, so don't blink or you'll miss the fall colors.



WANTED: New CSS Members

Tired of seeing the same faces at every meeting? Hoping to meet the geologist of your dreams at our next family night? Don't give up hope! Stranger things have happened! But, in order for the planets to align, it will take a concerted effort of our current membership to recruit new members! Take a bath, clip your hair, and invite a friend to our next talk. Drag a colleague along with the bribe of a few beers afterwards down at Woody's Pizza. Blackmail a student into showing up because *you*, Dr. Flintbrain, think it would be *NICE*. Revitalize the economy by sagely wielding that tax "refund" and giving a membership as a gift. Use your imagination and we'll back you up...whatever it takes to grow our membership. Comrade Socialist Set? Colorful Smoky Stoners? Contact our membership chairperson, Jim Yount, 303-236-5397, jyount@usgs.gov, to join the Colorado Swinging Singles!.....er, you know..... *Colorado Scientific Society*.



World Wide Wow... "Click of the Month"

For those of you with internet access, here are a few interesting and/or useful links:

http://geosurvey.state.co.us/pubs/outreach_cal/GEOCALENDAR.htm

---here you will find a calendar of upcoming geologic events in Colorado with links (an annoying light blue) to talks sponsored by such organizations as RMAG, CSM, CU, DREGS, Dino Ridge, etc...

http://www.mines.edu/internet/prof_org.shtml

---a wonderful list of professional organizations and societies with links.

and this month's "mystery" URL:

<http://opposite.stsci.edu/pubinfo/PR/2001/23/index.html>

---enjoy!



From Michele Tuttle, CSS President:

I hope everyone had a great summer and, like myself, looking forward to another beautiful Colorado fall. The CSS field trip in August was the highlight of Society activities this summer. Many thanks to Sherm Marsh for organizing such a great trip. Sherm has resigned as our field-trip chair as he and his wife will be moving to Florida sometime next year. Please join me in thanking him for a job well done. I am sure I can speak for the folks that have gone on Sherm's field trips—we will undoubtedly miss those gourmet meals!!

September is our last regular meeting for the year. We have two great talks scheduled and I hope to see many of you there.

October 19th is our family night this year. Our speaker will be Dale Atkins, Avalanche forecaster with the Colorado Avalanche Information Center. Dale's presentation will be at 8:00 PM in room 108, Berthoud Hall, Colorado School of Mines. His talk is titled "Avalanches and their Impact on People and Industries." Look for his abstract in the October newsletter. We hope you can join us before his talk for his reception and our annual Family Night dinner in the Geology Museum, Berthoud Hall—the reception with hor d'oeuvres and beverages starts at 5:30 and dinner will be served at 6:30. For dinner reservations, please fill out the form at right.

We finish off the year with Student Night in November (Nov. 15th.) and our business meeting and Presidential Address in December (Dec. 13th.). It is hard to believe that the end of the year (and the holiday season) will be upon us so soon. After all, it is still officially summer!



Colorado Scientific Society 2001 Family Night

For reservations, please complete and return.

Name(s): _____

Number of tickets _____ @ \$20.00 for a total of \$_____.

Dinner will be buffet style and includes London broil and pasta primavera, garden salad, dilled carrots, twice-cooked potatoes, rolls, cheesecake, and beverages.

Make checks payable to Colorado Scientific Society and send by
October 16, 2001 to:

Michele Tuttle
U.S. Geological Survey
Box 25046, MS 973
Denver Colorado 80225

Phone: 303-236-1944
mtuttle@usgs.gov





Earth Science Meetings and Talks

Newsletter items must be received by the 4th of each month. This may include special events, open houses, etc...thanks!



Colorado Scientific Society's regular meetings are held the third Thursday of the month at the Colorado Mountaineering Center in Golden (unless otherwise advertised). Social time begins at 7:00 p.m. and talks start at 7:30 p.m. For info., contact Michele Tuttle at (303) 236-1944 or mtuttle@usgs.gov

Colorado School of Mines Lectures For Heiland Lectures at 4:00 p.m. on Fridays, contact Michelle Szobody (303) 273-3451. Van Tuyl Lectures refreshments at 4:00 p.m., talk at 4:30 p.m. on Thursdays in Berthoud Hall, room 108: **Sept. 27 J. Douglas Walker**, University of Kansas, Lawrence, Kansas, *Structural development of the Jurassic magmatic arc in southwestern U.S.*

Colorado State University All seminars are located in the Natural Resources Building. For details, call 970-491-5661. <http://www.cnr.colostate.edu/ER/seminars/index.html> (not yet updated for fall)

Denver International Petroleum Society (DIPS) meets the 2nd Friday of each month at the Wynkoop Brewing Co., 18th and Wynkoop Sts. Reception begins at 11:30 a.m., lunch at 12 p.m., program at 12:30 p.m. Make reservations (required) by leaving message at (303) 623-5396. Reservations accepted after 8 a.m. on Friday until 10:30 a.m. on Wednesday prior to the meeting. Cancellations accepted until 11:00 am Wed. prior to the meeting. Cost: \$15 for lunches; talk only is available for \$2 (make checks payable to "D.I.P.S."). Contact Keith Murray at (303) 986-8554 for information.

Denver Mining Club meets every Thursday (except when noted) at Country Harvest Buffet at Villa Italia, 7200 W. Alameda Ave., Lakewood, 11:30 a.m.–1:00 p.m. **Sept. 13 Irv Parrish**, President, DMBW, Inc., *Pre-Columbian Gold, Part 4: Sources of Gold Production, the Dark Ages to the Discovery of the Americas*. **Sept. 20 Bruce Geller**, Mineralogist, Advanced Geologic Services, *Comments and Reflections on the Prospectors & Developers Association of Canada Conference, March 2001*. **Sept. 27 Alex Grizenko**, President, Lucent Diamonds Inc., *Synthetic and Color-enhanced Natural Diamonds: History, Present Technology, and Future Perspective*.

Denver Region Exploration Geologists' Society (DREGS) meets in the Consolidated Mutual Water Company Building, 12700 West 27th Avenue, Lakewood. Social hour 6:00-7:00 p.m. Technical presentation at 7:00 p.m. Meetings are normally scheduled for the first Monday of each month. For info. contact Jim Piper, (303) 932-0134, or the website <http://www.dregs.org>.

Denver Well Logging Society (DWLS) meets on the third Tuesday of each month, Sept. through May. Lunch and a technical talk at the Wynkoop Brewery begins at 11:30 a.m., 18th and Wynkoop Sts. in Denver. Call Elice Wickham at 303-573-2781 for reservations. **Sept. 18 Darrell Hoyer**, Hoyer Petrophysics, Fort Collins, CO, *Petrophysical Techniques Identify Lithology, Porosity and Fluids from Seismic Data*. Web page: <http://dwls.spwla.org>

Rocky Mountain Association of Geologists (RMAG) Reception at 11:30 a.m., lunch at 12:00 p.m., talk at 12:25 p.m. Reservations taken by recording at 303-623-5396 until 10:30 a.m., Wed. before the luncheon. Cancellations are taken until 11:00 a.m. on Wed. at 303-573-8621. Luncheon cost is \$20 payable to RMAG at the door. Reservations are not required for talk only---cost is \$3. Meeting location: Denver Petroleum Club, Anaconda Tower, 555-17th St., 37th floor.

USGS Geologic Division Colloquium Thursdays, 1:30 p.m., Foord Rm., Building 20, entrance W3, Denver Federal Center. **Sept. 13 Francisco Gutierrez**, University of Zaragoza, Spain, *Paleosubidence and Active Subidence Due to Evaporite Dissolution in Spain*; **Sept. 20 Erin Muths**, USGS, *Disease-related Amphibian Decline in Colorado*; **Sept. 27 Dennis Helsel**, USGS, *Mapping Probabilities of Contamination and Other Hazards*; **Oct. 25 Sara Oyler-McCance**, USGS, TBA. For information call Laura Strickland at 303-236-5302, or email: lstrickland@usgs.gov



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University of Colorado at Boulder, Geological Sciences Colloquium Wednesdays, 4:00-5:30 p.m., Benson Earth Sciences lecture hall, Rm. 180. Refreshments at 3:30 p.m. on the 3rd floor. **Sept. 12** Andy Davis, Geomega, Boulder, CO, *Investigation into the biodegradation of chlorinated solvents and pesticides at a site near Marseilles (France)*. For info., call 303-492-8141. Web page: <http://www.colorado.edu/GeolSci/hotlist.html>

University of Northern Colorado, Greeley, Earth Science Seminar Fridays, 4:00-5:00 p.m., Ross Hall, Rm. 3310. For a schedule, call UNC Dept. of Earth Sciences: 970-351-2647.



Denver Gem & Mineral Show, Sept. 14-16, 2001 at the Denver Merchandise Mart - Expo Hall, I-25 and 58th Avenue--plus satellite shows at the Holiday Inn-North, etc., etc., September 12-16, featuring gems, minerals, fossils, jewelry, museum exhibits, talks, etc! For more information call 303-233-2516 or visit: www.denvermineralshow.com.



STATE GEOLOGIST ELECTED PRESIDENT OF AASG

Vicki Cowart, State Geologist and Director of the Colorado Geologic Survey, was recently elected President of the Association of American State Geologists (AASG). Cowart, who earned a Master's Degree in Geophysics from the Colorado School of Mines, was appointed Colorado's State Geologist in 1993 - the first woman to hold that position. She is also the first female to head AASG, an organization whose membership consists of directors of geological surveys in 50 states and Puerto Rico.

The primary objective of AASG is to coordinate the efforts of state geological surveys and to expand the areas in which state surveys work cooperatively with federal entities. One project of particular importance to Colorado, and a project in which AASG played a key role, is the National Cooperative Geologic Mapping Program.

The geologic mapping project began in 1992 after AASG helped create a federal grant program to match state funds. Cowart said that only 20% of Colorado had been mapped at a useful scale when she began her job as State Geologist. In addition, the maps that had been created concentrated on lightly populated mountainous areas and were geared to locating mineral and other resources.

Today, the funding available for all states to map has increased and Colorado's individual grant has almost doubled, which allows the Colorado Geological Survey to produce seven maps each year.

Although Cowart said she is pleased with progress on the project, she adds, "We're still playing catch-up. Someday we'd like to be ahead of the bulldozers."

During her 2001-2002 term as President, Cowart will chair the AASG Executive Committee. Cowart has also served as Vice President and Statistician for AASG.

Cowart's other professional activities include being a Board Member and Program Chair of the Colorado Women's Forum and she is the immediate Past President of the Colorado School of Mines Alumni Association. She is a member and former President of the Association for Women Geoscientists and a member of the Alliance of Professional Women, the Denver Geophysical Society, the Society of Exploration Geophysicists, the American Geophysical Union, the American Institute of Professional Geologists and the Rocky Mountain Association of Geologists.



Colorado Scientific Society
P.O. Box 150495
Lakewood, CO 80215-0495

<http://shell.rmi.net/~css/>

The 2001 CSS Family night will be



held Friday, October 19th.

Colorado Scientific Society Officers, Councilors, and Chairpersons

OFFICERS

President: Michele Tuttle, USGS, 303-236-1944
President-Elect: Eric Nelson, CSM, 303-273-3811
Treasurer: Michael N. Machette, USGS, 303-273-8612
Secretary: Stephen F. Personius, USGS, 303-273-8611
Past President: Mark Hudson, USGS, 303-236-7446

COUNCILORS

1999-2001: Emmett Evanoff, CU, 303-492-8069
1999-2001: Steve Sonnenberg, 303-839-3012
2000-2002: Bob Fleming, 303-279-8122
2000-2002: Scott Lundstrom, USGS, 303-236-7944
2001-2003: Graham Closs, CSM, 303-273-3856
2001-2003: Parker Calkin, CU, 303-442-2184

COMMITTEE CHAIRPERSONS

Best Paper Award:	Karl Kellogg, USGS, 303-236-1305
Database Manager:	Cyndi Rice, USGS, 303-236-1989
Email distribution:	Randy Schumann, USGS, 303-236-1525
Field Trips:	Sherm Marsh, USGS-retired, 303-986-0939
Graphics:	Lee-Ann Bradley, USGS, 303-273-8613
History:	Marjorie E. MacLachlan, USGS-retired, 303-986-7192
Membership:	Jim Yount, USGS, 303-236-5397
Memorial Funds:	Mark Hudson, USGS, 303-236-7446
Memorial Funds Treasurer:	Michael N. Machette, USGS, 303-273-8612
Newsletter Editor:	Lisa Ramirez Bader, USGS, 303-236-5547
Outreach:	Pete Modreski, USGS, 303-236-5639
Program:	Martin Goldhaber, CSM, 303-236-1921
Publicity:	Libby Prueher, rckoi@eudoramail.com
Science Fair:	Chuck Weisenberg, 303-238-8806
Webmaster:	Bill Wingle, Qubit Technology, wwingle@qubit.net , 303-716-7826



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