



Colorado Scientific Society

*In pursuit of the promotion of knowledge,
understanding of science,
and its application to human needs.*

OWENS (DRY) LAKE, CALIFORNIA: A HUMAN-INDUCED DUST PROBLEM

Marith C. Reheis

THE CENTRAL IMPORTANCE OF GEOLOGIC IDEAS TO THE ISSUE OF SUSTAINABILITY

Peter Palmer

Tuesday, March 10, 1998

**Union Square Theatre in the Sheraton Hotel
360 Union Boulevard
Lakewood, Colorado**

**Social Hour: 7:00 p.m.
Meeting Time: 7:30 p.m.**

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Speakers' Abstracts

Owens (Dry) Lake, California: A Human-Induced Dust Problem

Marith C. Reheis

Global Change and Climate History Team, USGS, Denver

The dry bed of Owens Lake, on the east side of the Sierra Nevada, has produced enormous amounts of windblown dust since the desiccation of the lake due to water diversions by Los Angeles in the early 1900's. The lake bed is the largest single source in the United States of PM10 dust, which is regulated by the EPA because these small dust particles can be inhaled deeply into the human respiratory tract. Aerosols in Owens dust storms commonly contain significant amounts of arsenic. Owens dust storms also degrade visibility in three national parks and several national forests and wilderness areas, and cause suspension of operations at China Lake Naval Weapons Station resulting in millions of dollars in economic losses.

Salt-rich dust derived from the Owens Lake playa is deposited in significant quantities to distances of at least 40 km from the playa. Semi-annual measurements of dust 2 meters above the ground show that: (1) dust in Owens Valley is mainly derived from the playa, but is mixed with local sources, (2) dust flux is much higher in the winter than in the summer, and (3) Owens dust has soluble-salt content as high as 35 percent, much higher than that of dust elsewhere in the region. Significant quantities of salt-rich dust are probably being added to the soils in the region around Owens Lake playa, which may affect soil pH and vegetation. In addition, preliminary trace-element data suggest that dust sampled 100-300 km away from the playa may contain a significant component of Owens dust.

THE CENTRAL IMPORTANCE OF GEOLOGIC IDEAS TO THE ISSUE OF SUSTAINABILITY

Peter Palmer

President, Institute for Cambrian Studies

Can Earth handle the population of 10 BILLION people anticipated by 2050? At what level of consumption? Can it handle more if population is not brought under control by then? For how long? These are the central questions behind increasingly serious concerns about a sustainable future for humanity. Geological understandings that bring this problem into focus, and which we as geologists have long ago internalized, are clearly lacking in a majority of the public and many of our political and religious leaders.

The theme of "What should my neighbor know?" that underlies changing attitudes about science education is particularly apt with regard to the issue of sustainability. Our time and space context needs to be understood by all educated citizens. The ideas aren't difficult to grasp: We live on Spaceship Earth; there is no place else to go. Earth systems that involve issues such as climate and geographic change, groundwater recharge, and soil replenishment, operate on geologic time scales, not human ones. Non-renewable resources have limits; the oil window will begin to close by mid-century. Renewable resources can become unavailable through over use. The geological record of life on earth shows us that too-rapid environmental changes have potentially bad side effects on the biosphere. Each human being has a more or less measurable ecological footprint and the ecological area of Earth is finite.

Most of these issues do not have a technological fix. We, the geological community, should use every opportunity to broaden public understanding of our geological context. It may make a difference in the quality of life available for our grandchildren.



Interesting Websites

Each month we enhance our speakers' abstracts with information concerning websites that offer science over the Internet. This month, we direct your cyber-attention to sites related to research in the Owens Valley area of California. Marith Reheis, USGS, has been conducting research on dust composition and deposition rates there since the 1980s. You can read a description of her research at <http://geochange.er.usgs.gov/sw/impacts/geology/owens/>.

New Members

The Colorado Scientific Society welcomes the following new members:

Ned F. Hurley
Richard L. Reynolds
Steven W. Veatch

DUST TRAP SITES

Owens Valley

Museums and News

Friends of Dinosaur Ridge...for information call 697-DINO. Visitors' Center is located at 16831 West Alameda Parkway (north side of Alameda, just west of the C-470 overpass). Open 9 a.m. to 4 p.m. weekdays and weekends. Fireside chats are held at the Morrison Town Hall, 110 Stone Street in Morrison starting at 7 p.m.

Morrison Natural History Museum...4 p.m., Wednesday through Sunday. The Museum is located on State Highway 8, 1/2 mile south of Morrison. Fireside chats are cosponsored periodically by Friends of Dinosaur Ridge (see above).

Earth Science Meetings and Talks

Colorado Scientific Society's regular meetings are held the 2nd Tuesday of the month (unless otherwise advertised). Social time begins at 7:00 p.m. and program is at 7:30 p.m. For information, contact Eric Erslev at (970) 491-6375 or erslev@cnr.colorado.edu.

Denver International Petroleum Society (DIPS) meets the 2nd Friday of each month at the Wynkoop Brewing Co., 18th and Wynkoop Streets. Reception begins at 11:30 a.m., luncheon at 12 p.m., program at 12:30 p.m. Make reservations (required) by calling Kristine Peterson (303) 980-6770. 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 Wednesday prior to the meeting. Cost: \$13 for lunches; talk only is available for \$2 (make checks payable to "DIPS"). Contact Keith Murray at (303) 986-8554 for information.

Denver Region Exploration Geologists' Society (DREGS) meets in the Mutual Consolidated Water 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 information



contact Jim Cappa, (303) 866-2611.

Colorado School of Mines Van Tuyl Lectures, Berthoud Hall, room 108, 4:30 p.m.
For information call the Dept. of Geology at (303) 273-3800.

Colorado School of Mines Carl Heiland Lectures

For information contact Michelle Szobody (303) 273-3451. Refreshments are served immediately following the lecture.

March 13 - Frederick Paillet, USGS, Metals Hall, Green Center, **"Two adventures in practical borehole geophysics: Acoustic waveguide theory and electromagnetic soundings"**

Colorado State University Geology Lectures

All presentations are at 4:00 p.m. in room NR 316, with the exception of the AAPG Distinguished Lecture, which will be at NOON. For information, contact Linda Hinshaw at (970) 491-6081.

Denver Mining Club meets Thursdays from 11:30 a.m. to 1:00 p.m. at the Country Harvest Buffet at Villa Italia, 7200 W. Alameda Avenue, Lakewood. For more information contact Dick Beach at (303) 986-6535.

USGS Geologic Division Colloquium talks are held in the Eugene Foord conference room, Bldg. 20, Denver Federal Center. Contact Pat Poole (303) 236-5446 for exact times and additional information.

March 12 - Malcolm Ross: **"Plates in Motion"**

March 19 - Jeff Wynn: **"The Wabar meteorite impact site, Empty Quarter, Saudi Arabia--getting there was half the fun"**



Invitation to Join the Colorado Scientific Society

The Society is dedicated to the advancement of science through open forums and activities. We sponsor lectures, field trips, student scholarship grants, and discussions of scientific matters of public concern.

I hereby apply for _____ membership in the Colorado Scientific Society.
(Regular, Corresponding, Student)

(Last Name)	(First Name)	(Middle)	
(Address)	(Telephone, with area code)	(e-mail)	
(City)	(State)	(Zip)	
(Company/Agency/University)			
(Mailing address if different than above)			
School	Degree	Year	Major

Main Scientific Interests

DUES—Your dues are for the calendar year and help support the newsletter, monthly meetings, two field trips each year, family night, and the Emmons Lecture.

Regular Member (\$15)	_____
Corresponding (outside Denver metro area) Member (\$10)	_____
Student Member (\$5)	_____

Please make your dues payable to Colorado Scientific Society. Thank you!!

The success of certain Colorado Scientific activities depend on your volunteer help. Please circle those activities for which you can provide assistance. We will pass your name on to the appropriate Committee Chairperson.

<i>Arrangements</i>	<i>Fund Raising</i>	<i>Newsletter</i>	<i>Publicity</i>
<i>Best Paper Award</i>	<i>History</i>	<i>Outreach</i>	<i>Science Fairs</i>
<i>Field Trips</i>	<i>Membership</i>	<i>Program</i>	<i>Web Site</i>

I certify that all statements in this application are correct and, I agree to promote the objectives of the Society and to abide by its Constitution, Bylaws, and Rules.

Applicant's signature

Date

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



Colorado Scientific Society Officers, Councilors, and Chairpersons

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**** NOTE: Please help us with publicity by posting copies of the Newsletter on bulletin boards.**

