



## GEOLOGICAL SOCIETY OF MINNESOTA

# NEWS

WINTER 2007  
VOLUME LXI, NO. 1  
<http://www.gsmn.org>

### CONTENTS:

• New! Precambrian Research Center	p. 1, 3
• U of M Geology Dept. seminar schedule	p. 3
• Geology on the beach (for families)	p. 4
• Our new president's message	p. 2
• Field trips	p. 6, 7
• April 9 <sup>th</sup> lecture – focus on Fox	p. 5
• Spring Banquet May 7	back cover
• Renewal form	p. 7
• Party in memory of Gail Marshall May 5	p. 6

### U of M DEPARTMENTAL NEWS

#### The Precambrian Research Center – A New Institute Devoted to Field Mapping at UMD

by Jim Miller, Minnesota Geological Survey,  
University of Minnesota

The Precambrian Research Center (PRC) is a new teaching and research institute being created at the University of Minnesota Duluth (UMD) that is focused on geological mapping of Precambrian rocks.

The creation of PRC attempts to satisfy an important, long-term need within the private and public sectors of the geological community, both locally and internationally, for geoscientists skilled in geological mapping and field studies of Precambrian geology.

A primary mission of the PRC will be to address this new demand by providing training and support to upper-level undergraduate students, graduate students, and professional geologists in modern methods of geological  
(continued on page 3)

### Teachers

Please plan ahead to use those discretionary dollars on your classroom geology presentation before it gets to be late spring and the end-of-school rush. Call Bill Farquhar now to get started on booking a classroom talk.

### Parents

If your child's curriculum includes earth science this year, feel free to remind your child's teacher about opportunities for them to bring in a guest speaker from the Geological Society of Minnesota. There is a fee—information is available at the GSM website, or by calling Bill Farquhar. And be sure the teacher knows that the regular evening GSM lectures at the U of M are free and open to the public; parents of kids who are especially interested in geology may wish to explore these for enrichment. Again, the website is a good resource. Bill's number is (763) 475-9349.

## ANNOUNCEMENTS

### Field Trip Planning Underway

Are you interested in helping organize field trips? Please let Janet know, and she can match you up with a planning person or group. You may contact Janet via e-mail through the GSM website: [www.gsmn.org](http://www.gsmn.org)

**GSM NEWS** Editor: Kathy Ahlers  
(763) 789-7143  
[ahler002\[at\]umn.edu](mailto:ahler002[at]umn.edu)

The purpose of this newsletter is to inform members and friends of the activities of the Geological Society of Minnesota. GSM NEWS is published four times a year: February 15, May 15, August 15, and November 15. GSM NEWS welcomes unsolicited Geology and Earth Science related articles (best: 300 words, up to 500 words long) and photographs.

Deadline for article submission is three weeks before the date of publication. Contact the editor if you have something to submit.

#### OFFICERS:

**Janet Hopper, President**  
**Ly Preece, Vice President**  
**Randy Strobel, Secretary**  
**Ed Steffner, Treasurer**

Directors in addition to the officers listed above are: Kate Hintz, Gerry Paul, Sandy Steffner, Joan Furlong, and Kathy Ahlers.

Send all GSM membership dues, change-of-address cards, and renewals to:

**Geological Society of Minnesota**  
P.O. Box 390555  
Edina, MN 55439-0555

GSM is a 501(c)3 nonprofit organization.

Membership levels are:

**\$10 Full-time students**  
**\$20 Individuals**  
**\$30 Families**

website: <http://www.gsmn.org>

Additional donations are always appreciated!

## FROM THE PRESIDENT'S DESK

The baton has been passed. It is a daunting responsibility to lead an organization that has been in existence for sixty-nine years. With the help of the rest of the board, I am sure we will continue to be a vibrant and interesting group.

Thank you very much to Roger Benepe, the outgoing president. And also thank you to the new officers, Ly Preece - VP, Randy Strobel - Secretary and Ed Steffner continuing as Treasurer. These positions were all decided at the December board meeting and potluck. Thank you to the Steffners for hosting; everyone seemed to have a great time.

The first half of the lecture series is complete and seemed to be well-attended. The second half is underway and has many interesting topics to be discussed. We will learn about the upper Mississippi, Venus, and sinkholes, among other things.

We are now planning the summer field trips. Randy Strobel is offering a trip on the geology of Minnehaha Falls, and Bill Robbins is organizing one in Wisconsin. Other organizers are needed, as well.

Steve Erickson is also hard at work planning next year's lecture series. The theme as it stands is "Current Research." Anyone with lecturer suggestions should contact Steve.

Doug Zbikowski is heading a push to try to get the Minnesota legislature to fund more historical geologic markers. He is also working on producing an interactive CD that will allow users to click on a state park or other location of geologic interest and to read the text on the marker.

—Janet Hopper ♦

## U of M departmental news (from page one)

mapping and map-making in glaciated Precambrian terrains. Our conceptual model for the PRC has received very strong support from the geological community in the US and Canada, including executives and geoscientists within the minerals industry, geological surveys, geological societies, and academia. Our goal to train geoscientists in the field study of Precambrian terranes involves five basic program elements, designed to provide specialized training at several levels:

1. A new summer geology field camp in the Precambrian of northeastern Minnesota, primarily aimed at undergraduate students, to begin in 2007.
2. Research assistantships and grants supporting field-based student research on Precambrian geology at UMD.
3. Continuing education for professional geologists in the form of workshops, short courses, and field experiences.
4. Upper-level geology courses at UMD in the areas of advanced field geologic mapping, digital map-making, and 3D visualization.
5. Various educational, outreach, mentoring and student career planning activities that promote geological field studies and resource stewardship in the Lake Superior region.

We plan to support these activities with funding from industry memberships to the PRC, as well as from state and federal grants.

For more information, visit the PRC website at: [www.d.umn.edu/prc](http://www.d.umn.edu/prc). ♦

---

## U of M Geology Department

Spring seminars 3:30 p.m. Thursdays in Pillsbury Hall on the U of M Minneapolis campus. Free and open to the public

### March 8

**Dr. Emily Walsh**, Cornell University,  
Department of Geology  
*The Western Gneiss Region of Norway:  
Geology of an Exhumed Ultrahigh-pressure  
Terrane*

**March 15- No seminar - spring break**

### March 22

**Dr. Aral Okay**, Eurasia Institute of Earth Sciences and Department of Geology, Istanbul Technical University  
*Neogene Extension and Strike-slip in Mid-crustal Rocks in the Aegean*

### March 27, Tuesday, 3:30 p.m., 110

#### Pillish

#### JOI/USSAC Distinguished Lecturer

**Dr. James Zachos**, University of California-Santa Cruz, Department of Earth Sciences  
*A Rapid Rise in Greenhouse Gas Concentrations 55 Million Years Ago: A Deep Sea Perspective on the Causes and Consequences*

### March 29

**Dr. William Ruddiman**, University of Virginia, Department of Environmental Sciences  
*The Early Anthropogenic Hypothesis: Challenges and Responses*

### April 5

**Dr. Walter Kiefer**, Lunar Planetary Institute  
*Mantle Convection and Melt Generation on Mars: Effects of Realistic Rheologies*

### April 12

**Dr. Laura Crossey**, University of New Mexico, Department of Earth and Planetary Sciences  
*CO<sub>2</sub>-rich Springs and Travertines of the Western US: Geochemistry and Geomicrobiology of "Continental Smokers"*

### April 19

#### as part of the IT Distinguished Women Scientists and Engineers Program

**Dr. Julie Stein**, University of Washington, Burke Museum of Natural History and Culture  
*Finding the Lewis and Clark Expedition: Why is it so Difficult?*

### April 26

**Dr. Adrian Lenardic**, Rice University, Department of Earth Sciences  
*40-60 and The Earth's Heat Loss*

### May 3

**Dr. Keith Koper**, St. Louis University, Department of Earth and Atmospheric Sciences  
*The Fine Scale Structure of Earth's Inner Core* ♦



## Talking Rocks with Kids: To the Sandy Beach!

By Kate Hintz,  
Collections Gallery Manager at the Science  
Museum of Minnesota, and GSM board  
member

Part of a continuing series about exploring geology with children

The most basic principle is: ask about the sand, and let the kids do the talking as they observe and describe—these are good science skills. If they ask you a question and you don't know the answer, be honest with the young collector. It's fair to reply, "That's a really good question; let's see if we can find out." Use this as an opportunity to learn together.

We're off to the beach to explore sand. Get out your magnifying lens, a magnet, and a bag for collecting. We're going to discover the diversity of sand. Sand can be white, black, gray, red, or green in color; fine or coarse in texture; and the grains can be angular or rounded. Sand grains can be rock, minerals, coral, or broken up bits of shells.

Winter in Minnesota really isn't beach weather, so let's first head to Mexico's Baja Peninsula. Coral reefs surround this region, and the sand is made of bits of coral.

Beach coral comes from chunks that break from the reef and from parrotfish that feed on the coral polyps and algae growing on coral and rocks. After they digest the algae, the remainder is excreted as sand, producing tons of coral-reef sand every year.

Summer is coming. Prep yourself for a trip to the North Shore to compare and contrast sands up and down the Lake Superior shore. On Duluth's Park Point, the sand is mostly quartz and white to tan in color and probably originated in ancient granite. As one travels up the coast, the sand is dark in color and many of the grains eroded from the nearby bedrock. Pull out

that magnet, run it under the sand placed on a white piece of paper, and you might find that there are some magnetite grains in the sand.

As you travel to beaches around the globe, collect a little of the sand. Examine it under a microscope or hand lens. You'll be surprised at the beauty you see! ♦

## More Beach and Sand Fun

### Product Find: "Space Sand"

Sand that never gets wet! Space sand mimics the hydrophobic (water-fearing) properties of sand on Mars. It clumps together under water so you can play with it and sculpt it, but it's completely dry the instant it leaves the water! Since Space Sand repels water, it's a great tool for studying water surface tension. Ages 4+

<http://www.areyougame.com/interact/search.asp?g=space+sand>  
<http://www.discovershis.com/space-sand.html> (and others)

### Geomorphology notes

from:  
<http://www.kqed.org/w/coastalclash/classroom-science.html>

- Winter storms increase the energy of wave action, resulting in movement of beach sand to sand beds offshore
- Summer wave action is more gentle and offshore sand is carried inward toward the shore to form beaches
- The loss of beaches opens the possibility for wave action against cliff systems to promote the breakdown of the cliffs
- Any human activity that adds to the loss of beaches will increase cliff erosion processes
- El Nino climatic variations result in stronger winter waves, more reduction in beach sand, and more erosion of cliffs

### Resources:

- \* "Sandy Beach Process" by Genny Anderson, 2003.  
[www.biosbcc.net](http://www.biosbcc.net)
- \* "Living With Coastal Change, Coastal Basics" [coastalchange.ucsd.edu](http://coastalchange.ucsd.edu) Coastal Morphology Group -- Scripps Institute of Oceanography, Regents of the University of California and the Kavli Institute, 2002-2003.
- \* "El Nino Sea-Level Rise Wreaks Havoc in California's San Francisco Bay Region" [www.geopubs.wr.usgs.gov](http://www.geopubs.wr.usgs.gov) U.S. Geological Survey  
--Ed.

**Explore the Merging of  
Genetics and Paleontology  
with David Fox, Ph.D.  
on April 9th**

By Doug Zbikowski



As part of GSMs lecture series on the theme of geoscience and the informed citizen, the evening seminar for Mon., April 9 will feature *Evolution in the Fossil Record*, a presentation by David Fox, Ph.D.

Fox, an assistant professor in the Department of Geology and Geophysics at the University of Minnesota, will illustrate the modern study of evolution with two example areas related to his research.

The first is a collection of insights about the Cambrian explosion brought on by his research on the geochemistry of brachiopods. Fox has worked collaboratively with others on this project, including Dr. Anthony Runkel at the Minnesota Geological Survey.

It has always been a mystery how so much variation in life forms, both species and features, could occur in such a geologically brief time. Brachiopod variation may exhibit developmental patterns analogous to more general trends, aiding understanding of the broader evolution of life during that period.

The second example involves the transition of life from marine to terrestrial species and the reverse.

How do the mechanisms of genetics allow and constrain these adaptive transitions, which have occurred since the initial transition from marine to land in the late Devonian period (about 375 million years ago) and repeatedly throughout the Cenozoic period (the last 66 million years)? How are the genetic modules for fins and limbs expressed in context with the body? How many antecedent features do humans genetically archive? Can environmental stress trigger a genetic response?

The modern merging of the fields of genetics and paleontology is producing the powerful new tool of developmental genetics, which will further resolve outstanding questions about the evolution of life. Fox will show us this exciting new approach, explaining fascinating relationships only speculated about just a few years ago.

The Monday evening seminars, as always, are free and open to the public. For location and parking details, please see the GSM website ([www.gsmn.org](http://www.gsmn.org)) and go to "Winter Lectures." ♦

## Minnehaha Falls Field Trip(s) with Randy Strobel and Joan Furlong

On Sat., April 21 and Sun., April 22, we will be leading three identical trips at Minnehaha Falls Park in Minneapolis. The Saturday trip will be from 2 p.m. until about 5 p.m. The Sunday trips will be from 11 a.m. to 2 p.m., and from 2 p.m. to 5 p.m. Each group will be limited to approximately 15 participants, since some of the stops we will be visiting are quite small.

The trip will begin with an overview of the Paleozoic and Quaternary geological history of the area. We will examine the Ordovician sedimentary rocks found in the park including the St. Peter Sandstone, Glenwood shale, and Platteville limestone.

We will discuss the sedimentary environments each formed in and examine how they differentially weather when exposed at the surface.

Next, we will discuss the glacial and post-glacial history of the Mississippi River, St. Anthony Falls, and Minnehaha Falls that is displayed on two GSM plaques overlooking Minnehaha Falls.

We will descend into the upper glen of the Minnehaha creek and ask why the widths of the upper glen and the lower glen are so very different. Related to this question, we will explore an abandoned waterfall that was once a branch of St. Anthony Falls.

Finally, we will take an approximately one-mile hike along the lower glen of Minnehaha creek discussing river meandering, cut-banks, point bars, and mass wasting along the way. At the river we will examine the small delta where Minnehaha creek enters the Mississippi river.

There once were several plaques in the park describing much of the geology we will be discussing. Most have been vandalized. However, Doug Zbikowski has located the original text that was on these plaques. We will be pausing at each of the vandalized plaques and reading the original text.

Sign-up sheets for these field trips will be available at each GSM meeting prior to the trips on the same table as the Video/DVD library. Please sign up as early as you can. If there is sufficient demand, we can add additional trips on another weekend.

If you are unable to sign up at the meetings, you can sign up by emailing me (Randy.Strobel@metrostate.edu) your name, phone, and preferred day/time. ♦

## PARTY IN HONOR OF GAIL MARSHALL

The party to honor and celebrate Gail Marshall, our late friend and GSM membership chair, will be held in the afternoon on **Sat., May 5** in Burnsville. Gail's daughters are coordinating the gathering, which will include the option of bringing some food and/or beverage to share, but Kristi stressed that it is not necessary to bring something—everyone who knew Gail and wishes to attend is welcome.

Details will be sent to those of you who have let Kristi know of your interest. Please write to, call or e-mail Kristi if you would like to receive an invitation. ♦

**Kristi Marshall**  
12232 Allen Dr  
Burnsville, MN 55337  
(952) 894-2961  
Kristidizygirl@aol.com

### Wisconsin Field Trip - tentative

One-day field trip

Possibly on Sat., May 19, 2007

Leader—tbd

Bus from Minneapolis-St. Paul to the Wisconsin Dells area

We would see the Upper Dells, the formation of sedimentary rocks in that area, contribution of glaciers to formation of the Dells, and other features.

Please contact Bill Robbins if you have interest in attending and/or helping to organize this trip so that you will receive e-mail updates as the plans solidify. 651-739-1146  
robbs.wb[at]comcast.net ♦

### 2006-2007 GSM Seminar Schedule

Mondays at 7:30 p.m. (except banquets)

(Please check the GSM website for specific U of M classroom location information and possible last-minute schedule changes.)

Seminars are free and open to the public. Children old enough to listen quietly are welcome to attend accompanied by a parent or guardian.

- Mar. 26 Iron Range: Challenges and opportunities: The story of geologic mapping to address land-use issues on the Mesabi Iron Range  
Mark Jirsa, PhD, MSc, Minnesota Geological Survey
- Apr. 9 Evolution in the fossil record  
David Fox, PhD, Geology and Geophysics, U of M
- Apr. 23 Venus, Earth's sister planet  
Vicki Hansen, PhD, Geology and Geophysics, U of M, Duluth
- May 7 Kimble Memorial Banquet (dinner 5:30, talk 7:00)  
Sinkholes in Woodbury, Minnesota  
Calvin Alexander, PhD, Geology and Geophysics, U of M

### Membership Application/Renewal Form

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone number(s) \_\_\_\_\_

Email (for updates & field trip notices) \_\_\_\_\_

New membership

Renewal—see rates below (membership year runs Oct. 1 – Sept. 30)

Gift membership

\_\_\_\_\_ Additional tax deductible donation to further GSM's educational goals

\_\_\_\_\_ Total enclosed

Please make check or money order payable to:

**Geological Society of Minnesota**

P.O. Box 390555

Edina, MN 55439-0555

GSM is a 501(c)3 nonprofit organization. Membership levels are:

**\$10 Full-time students**

**\$20 Individuals**

**\$30 Families**

website: <http://www.gsmn.org>

Additional donations are always appreciated!

Plan to attend...

## Spring GSM Banquet

Mon., May 7, 2007

5:30 p.m. meal / 7:00 p.m. talk

\*\*\*SAME LOCATION AS LAST YEAR\*\*\*

Grand City Buffet

9812 Highway 7, St. Louis Park

(in strip mall at NE corner of Interstate 169 and Hwy. 7)

952-912-0888

Speaker: **Prof. E. Calvin Alexander**, University of Minnesota

### "Sinkholes in Woodbury, Minnesota"

[NEW PROCEDURE]

[When arriving, please remember to pay for food and beverage at the door!]

Please check your mailing label. If the date is 10/1/2006, this is the last newsletter you will receive until you renew. Don't miss out - renew now, and thank you in advance for your renewal!



Geological Society of Minnesota  
P.O. Box 390555  
Edina, MN 55439-0555



FIRST CLASS MAIL

If label says 10/1/2006, this is the last newsletter that you will receive unless/until you renew! Thank you in advance for your support!

10/1/2006

Harvey THORLEIFSON  
1011 5th Street SE  
Minneapolis, MN 55414

