

# GEOLOGICAL SOCIETY OF MINNESOTA

## NEWS

FALL 2006  
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<http://www.gsmn.org>

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## DEPARTMENTAL NEWS FROM U of M

By Doug Zbikowski

### Leadership change in Geo Department

Dr. William Seyfried, Jr., who has served as head of the N. H. Winchell School of Earth Sciences, Department of Geology and Geophysics at the University of Minnesota (U of M) for thirteen years, has stepped down from that leadership post. Seyfried will remain a professor and researcher at the U of M, pursuing his ongoing work investigating geochemical processes involved in the chemical evolution of aqueous fluids in and on the Earth.

For twenty-seven years, Seyfried has studied how marine-oriented fluids and the Earth interact, participating in astonishing discoveries associated with seafloor hydrothermal vents. A frequent flier aboard the deep-diving ALVIN submarine, Seyfried (with the help of his aqueous geochemistry group) has played an important role in the development of novel chemical sensors that can indicate the chemistry of extremely hot vent waters *in-situ* (at the site.) This instrumentation has been applied at the Juan de Fuca Ridge (N.E. Pacific), East Pacific Rise (9-10°N), and the Galapagos Rift. Future investigations will include non-marine

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### Interim membership chair appointed following untimely death of Gail Marshall

Sandy Steffner has agreed to temporarily fill in and perform Membership Coordinator duties following the untimely death of our dear friend, Gail Marshall. (See page 3.)

Please send renewals, new memberships, and changes of address to:

**GSM**  
**c/o Sandy Steffner**  
**9619 Briar Circle**  
**Bloomington, MN 55437**

Anyone interested in serving as Membership Chair please call Roger Benepe, (651) 488-2402 or e-mail him at [charger4264\[at\]earthlink.net](mailto:charger4264[at]earthlink.net).

## ANNOUNCEMENTS

**Dick Ojakangas**, U of M professor and GSM spring 2006 field trip leader, reports that, "I have thrown away my crutches and knee immobilizer, as my severed quadriceps is healed. Many thanks to all of you who expressed concern in various ways. Your group makes a field trip FUN to be a part of. Thanks!"

**GSM NEWS** Editor: **Kathy Ahlers**  
(763) 789-7143  
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 (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:**

**Roger Benepe, President**  
**Janet Hopper, Vice President**  
**Dorothy Kuether, Secretary**  
**Ed Steffner, Treasurer**

Directors in addition to the officers listed above: Cindy Demers, Bill Farquhar, Kate Hintz, Gerald Paul, and Sandy Steffner.

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

**Sandy Steffner**  
**GSM Interim Membership Chair**  
**9619 Briar Circle**  
**Bloomington, MN 55437**  
**phone: (952) 831-5165**

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 DESK OF THE PRESIDENT

Hello all,

First, on a somber note, I speak for the board in offering sincere condolences to the family and friends (which includes many GSM members) of our GSM Membership Chair, Gail Marshall, who died on July 17. We miss Gail very much.

A big thank you to all of the members who helped staff the booth at the State Fair. This is our big venue for attracting new members every year. Those of you who did not get an opportunity to sign up for the booth this year, please consider doing so next year.

The two summer field trips were well-attended and got rave reviews. Now the hot steamy summer is well on its way to being over. We have finalized the lecture schedule for the upcoming year. All the lectures are going to be awesome. There are rumors of another field trip this fall sometime—we will have to wait and see.

With the new seminar season comes new board members. We have four openings, and three people have been nominated, so we still need a 4<sup>th</sup>. If you have ever considered serving on the board, now would be the time to act. If you are interested, please contact Bill Robbins or myself as soon as possible.

Finally, the fall banquet will be September 25 at the Grand City Buffet in St. Louis Park (same location as last year.) This time, all attendees must pay for their meal upon entering the restaurant. Mention that the drink is desired and pay for it at the same time. This should make for an orderly departure.

See you all there,

**Roger Benepe**  
**President, GSM**

## In Memorium – Gail Marshall

It is with heavy hearts that we announce the sudden death of our friend, travel companion, and fellow geology student Gail Marshall. On July 4<sup>th</sup> weekend, Gail was doing what she loved, camping with her grandkids at Gooseberry Falls when she collapsed. She died two weeks later (July 17) of pneumonia in a Duluth hospital. No services were held as Gail requested.

Gail never allowed asthma or lung cancer to keep her from GSM lectures or field trips where she often was official photographer for the group. Gail also served the Society as Membership Chair for almost 7 years and added her enthusiasm to other committees—including the Field Trip planning committee.

The Society will miss her fastidious eye for detail as well as her gracious personality. We will miss our precious friend.

--Diane Lentsch



Gail Marshall on a field trip with friends Diane Lentsch and Mary Kay Arthur. Photo courtesy Diane Lentsch

## Website update underway

By Alan Smith, GSM webmaster

We are in the process of updating the GSM web site. The old web is getting dated and is hard to maintain.

The new web will allow multiple people to add and/or change items from their PCs at home. This would allow a designated GSMer to put timely announcements on the site such as a last-minute lecture change. Other features might be a sign-up for e-mail notification about upcoming events and lectures, a sign-up for getting the newsletter via e-mail, posting documents for users to read, a blog, a discussion group, a Wiki and other items.

At first the new web site will be a supplement to the old site. As the new web site stabilizes and users get comfortable using it, the old web site will be replaced.

## Volunteer opportunities

We will start implementing the new web site sometime this fall. I will be looking for GSM members who are interested in maintaining a blog, a discussion board and additional content on the new web site. You may e-mail me through the website, or talk to me at a seminar if you might be interested.

## PARTY IN HONOR OF GAIL MARSHALL

Gail requested no memorial service or funeral, but specified that a party could be held in her honor. Gail's daughters are starting to plan a party, probably for springtime. If you would like to be informed as to when the party will be held, please send a note to:

**Kristi Marshall**  
**12232 Allen Dr**  
**Burnsville, MN 55337**

Or call and leave a message: (952) 894-2961

**DEPARTMENTAL NEWS FROM U OF M**  
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**Seyfried passes the baton** (continued)



hydrothermal vents on the floor of Yellowstone Lake, Wyoming. Seyfried has witnessed more than a decade of change as a science-college administrator, some good and some unfortunate. Science has become more globalized, with Internet communications allowing collaboration across great distances in real time. Meanwhile, U of M budgets have become tighter and there is now greater competition for both public and private funding dollars. However, Seyfried sees a promising future in which the academic prominence of the Winchell School might be advanced by emphasizing work in climate change, energy, geomicrobiology and biogeomorphology.

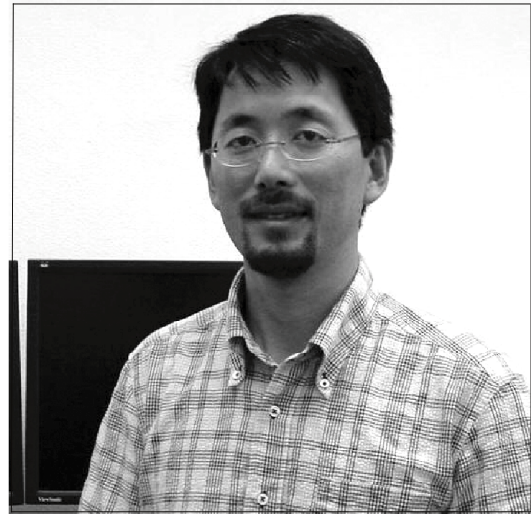
The newly appointed head of the Winchell School, Dr. David Kohlstedt—another world-class researcher and professor at the U of M—is already taking on administrative duties.

**New faculty member studies global climate change**

The oceans are important players in global climate change, because they hold large amounts of both heat and carbon. Dr. Katsumi Matsumoto uses computer numerical models to study the global climate system as it is affected by ocean circulation interacting with the atmosphere. Matsumoto received his PhD from Columbia University in 2000 and has served as an Assistant Professor in the U's Department of Geology and Geophysics for the past year.

The global climate system comprises an exceedingly complex natural network involving mechanisms of fluid interaction, biogeochemistry, and chemical exchange.

Upper ocean circulation patterns are strongly influenced by wind patterns. Deep ocean circulation is primarily density driven by variations of water temperature and salt content. Both ocean levels are influenced on large scales by Coriolis forces.



photos courtesy Doug Zbikowski

Vertical mixing between the levels can bring nutrients from the deep to the  
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## DEPARTMENTAL NEWS FROM U OF M

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near surface where plant and animal life can flourish and—with the optical properties of their bodies—change the reflectance of solar energy in the water. Also, cool water arriving at the surface soaks up more CO<sub>2</sub> from the atmosphere than does warm water, thus affecting the atmospheric content of this greenhouse gas.

Matsumoto works to sort out these interactions, and includes them in models simulating both the present world situation and conditions during past glacial-interglacial periods.

On Monday, October 23, at 7:30 PM, Dr. Matsumoto will give the GSM a seminar on his work entitled “Computer Modeling of the Ocean Carbon Cycle.” This seminar will discuss the role carbon plays in the climate system and should provide some helpful background for the November 20 seminar by Dr. Elizabeth Wilson, entitled “Impact of the Carbon Footprint.”

### **Teyssier in Switzerland**

Christian Teyssier, Geology professor and award-winning teacher from the U of M, reports that he is currently at the University of Lausanne in Switzerland, and that he continues his research on a variety of topics.

Teyssier studies the origin and significance of crustal melting and the formation of gneiss domes during orogeny, the reconstruction of paleoelevation in ancient mountain belts, and the erosion cycles that lead to rock exhumation localized along strike-slip faults. ♦



**Here is the first installment in a series on ways you can talk about rocks with kids to encourage their interest, along with some simplified answers. To those of us who are veteran rock pickers, this information is intuitive, but to kids, it's new and exciting!**



### **Talking about rocks with budding young geologists—Part One** **Where did this rock come from?**

By Kate Hintz,

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

Do you know any kids who bring home rocks? Foster that interest! Geology is a gateway science for young people because it involves so many disciplines. A child can hold a rock in his or her hand, and then use imagination to connect that rock to all kinds of scientific ideas that relate to it. Rock collecting may begin a lifelong hobby, or build into a career.

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The most basic principle is: ask about the rocks, 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

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## Where did this rock come from?

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we can find out.” Use this as an opportunity to learn together.

Begin your conversation with a compliment. “Cool (or pretty) rock! Tell me about it.”

Ask, “Where did you find it?” You’ll get answers like: at the beach, in the parking lot at Home Depot, in the backyard, at a garage sale, on the gravel road, or Grandma gave it to me. If it came from the beach or back yard, you might ask, “Were there lots of rocks there? Were they all the same kind? The same size? The same shape?”

**And how do you suppose the rock got there?** This can be tough to answer. Here’s a little background.

If the rock came from a Lake Superior beach and there is a rocky cliff nearby, you might ask if it looks like nearby rock. If so, it probably broke off and has not traveled far.

However, if there is no nearby bedrock or if it looks different, the rock originated elsewhere and was transported to the lake or beach by glaciers or by the force of water or waves. Just like big waves can knock you over, powerful wave action can cause rocks to roll along on the lake bottom or shore. Multiply one wave by thousands of waves per day and you end up with rocks miles from where they originated hundreds or thousands of years later.

To further illustrate the power of waves and water, you might note that waves are strong enough to change the shape of a beach. Does a beach look different after a storm? New rocks and debris? More sand? A different shape? Do the waves always come from the same direction?

If you find rocks in your backyard, their origins may reflect another geologic force—the glaciers. The last glaciers in our region retreated (melted) about 11,000 years ago and left behind evidence in the sediments we find in our backyards—boulders, pebbles, sand, and clay.

The glaciers transported rocks from hundreds to thousands of miles away.

Glaciers—large masses of slow-moving ice—scraped and eroded the bedrock material in the way that bulldozers would. As glaciers moved over the northlands, they deposited rocks far away from their original locations. That’s why today we find rocks, iron nodules, and agates in our backyards and farm fields.

Landscape rock (e.g., stones placed around shrubs at businesses) comes from quarries where sand and gravel is sifted and sorted by size, or where rock is broken off and crushed with powerful machines into small pieces. Quarries are often located where glaciers dumped huge quantities of sand and gravel.

The Minnesota Geological Survey has a web page with good images and descriptions of Minnesota rocks:

[http://www.geo.umn.edu/mgs/virt\\_egg/secondpg.htm](http://www.geo.umn.edu/mgs/virt_egg/secondpg.htm). Also, consider a visit to the Collections Gallery at the Science Museum of Minnesota in St. Paul. ♦



## Outreach program recruiting additional classroom presenters

By Bill Farquhar

The Geological Society of Minnesota (GSM) Outreach Program delivers classroom and science fair presentations in the greater Twin Cities area for elementary and middle school enrichment. This program is so successful that we need more presenters to be able to extend our offerings to more classrooms.

Presenters are either GSM members or advanced undergraduate or graduate students in geology or geophysics. Most schoolteachers are thankful for the assistance that these “experts” provide, and some teachers call us year after year

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## Outreach program

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because of the positive experiences they have had.

Geologic ideas and relationships are conveyed to students through stories, and with posters and specimens from the carefully chosen GSM collection of clearly identified rocks, minerals, and fossils. Minnesota rocks abound in the collection and are used as examples whenever possible.

After each talk, students enjoy close examination of the collection while the presenter answers questions. Students can also examine some geologic field tools: rock pick, chisel, hand loupe, map compass, magnets, etc.

This hands-on, participative portion has proven to be an exciting and memorable learning experience. In addition to using the specimens and other GSM supplied materials, presenters “speak from the heart,” weaving their own geologic knowledge and experiences to create successful presentations.

## More presenters needed

We need additional qualified presenters to join our team. Although the program has been tailored to school classrooms and science fair settings, we occasionally get requests from other organizations such as the Girl Scouts and Boy Scouts.

Presenters do not commit to any set number of presentations each year because each speaking opportunity is offered to the speaker pool independently, and there is no obligation until one arranges to do a particular program.

If these opportunities—to exercise your understanding of geology, to help children, sharpen your group speaking abilities, and broaden your teaching skills—interest you, please contact Outreach Director, Bill Farquhar at [bfarquhar16@hotmail.com](mailto:bfarquhar16@hotmail.com) to learn more. ♦

## 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.

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|----------|--|
| Sept. 25 | Banquet (see back cover for details; dinner 5:30, talk 7:00)<br>Lake Superior agate: Minnesota’s state gemstone<br>Scott Wolter, BS, Honorary MS, President of American Petrographic Service |
| Oct. 9   | Concepts of geologic time<br>Michael Middleton, PhD, University of Wisconsin, River Falls, WI  |
| Oct. 23  | Computer modeling of the ocean carbon cycle<br>Katsumi Matsumoto, PhD, Geology and Geophysics, U of M  |
| Nov. 6   | Fundamentals of geology: formation of igneous rocks in Minnesota<br>Jim Welsh, PhD, Gustavus Adolphus College, St. Peter, MN   |
| Nov. 20  | Ice sheets of Antarctica<br>Carrie Jennings, PhD, Minnesota Geological Survey  |
| Dec. 4   | Impact of the carbon footprint<br>Elizabeth Wilson, PhD, Humphrey Institute of Public Affairs, U of M  |
| -----    |  |
| Jan. 29  | Tornadoes in Minnesota—the geologic connection<br>Todd Krause, PhD, Warning Coordination Meteorologist, Chanhassen office, National Weather Service  |
| Feb. 12  | Fundamentals of geology: formation of metamorphic rocks in Minnesota<br>Jim Stout, PhD, Geology and Geophysics, U of M   |
| Feb. 26  | Geology of the Mississippi Delta<br>Chris Paola, PhD, St. Anthony Falls Laboratory, U of M   |
| Mar. 5   | Upper Mississippi River (tentative)<br>Karen Campbell, MS, St. Anthony Falls Hydro Center, U of M  |
| Mar. 26  | Iron Range: Challenges and opportunities: The story of geologic mapping to address land-use issues on the Mesabi Iron Range<br>Mark Jirsa, PhD, MSc, Minnesota Geological Survey             |
| Apr. 9   | Evolution in the fossil record<br>David Fox, PhD, Geology and Geophysics, U of M   |
| Apr. 23  | Venus, Earth’s sister planet<br>Vicki Hansen, PhD, Geology and Geophysics, U of M, Duluth  |
| May 7    | Kimble Memorial Banquet (dinner 5:30, talk 7:00)<br>Sinkholes in Woodbury, Minnesota<br>Calvin Alexander, PhD, Geology and Geophysics, U of M  |

*Plan to attend...*

## **Fall GSM Banquet**

**Mon., Sept. 25, 2006**

**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: Scott Wolter, President, American Petrographic Service

**“Lake Superior Agate—Minnesota’s State Gemstone”**

**NEW PROCEDURE--Please remember:**

**When arriving, pay for food and beverage at the door this year!**



Geological Society of MN  
c/o Kathy Ahlers  
P.O. Box 21196  
Minneapolis, MN 55421

**FIRST CLASS MAIL**