THE GEOLOGICAL SOCIETY OF AMERICA

The Hydrogeologist

Newsletter of the
GSA Hydrogeology Division

October 2005
Issue No. 63

Salt Lake City 2005: Water Along the Wasatch

by Joe Donovan
2005 Hydrogeology Division
Technical Program Chair

The Salt Palace Convention Center, Salt Lake City, Utah. Home of October's GSA Meeting. (Photo courtesy Salt Palace Convention Center).

After a seemingly endless period of organizing details, the schedule is now set for the Hydrogeology Division program at the 2005 GSA Annual Meeting, October16-19, in Salt Lake City, and it is packed full! In years past, we have become accustomed to having each meeting grow larger than the previous one, and in 2005 this trend continues — the largest program that the Division has ever assembled is slated for SLC. The Division is sponsoring or co-sponsoring 27 different Topical Sessions (including 8 with full-day oral sessions and 15 with poster sessions), two Pardee Keynote Symposia, and four Discipline Sessions. That's a total of 36 half-day oral sessions spread over the four days of the meeting. This large and diverse program was made possible thanks to tireless work by a terrific group of convenors. The abstract count is 456 oral and 159 poster presentations. We hope you will understand the challenges we have had in scheduling this program in the most effective way possible, but we are confident that the attendees and presenters alike will find plenty of exciting opportunities to learn even if it means some

Please see **Wasatch** *on page 9*

In This Issue:

EDITOR'S NOTE: A color version of this newsletter is available on the web at [http://gsahydrodiv.unl.edu]

Chair's Corner...

Janet Herman, Chair
GSA Hydrogeology Division

Since I last wrote in May, several summer projects have come to fruition. You can see that I have grown hair. I also climbed a mountain, mourned my mother, ran a race, and once again rejoiced in the friendship and support that the members of our Division offer each other. I thank you all for helping me with every one of my projects.

In my opinion, the three most important functions of the Hydrogeology Division are to (1) develop a diverse and interesting technical program for the meetings, (2) recognize the outstanding professional accomplishments of our peers, and (3) support students as they train to become hydrogeologists. We are completing a banner year in all these areas.

The Annual Meeting for Salt Lake City is unquestionably an event that active professionals in hydrogeology simply can't afford to miss. The huge number of presentations and the broad scope of topical coverage dictate that SLC is the place to be in order to keep current in the field. The varied themes of the sessions reflect the diversity of intellectual pursuits in modern hydrogeology. Nearly one third of the 36 half-day sessions is being chaired by a first-time convenor. I believe the result is a program of sessions and presentations that brings the full excitement of our field of science to the meeting. It will be enriching for all of us to have these new convenors, presenters, and ideas as part of the SLC meeting. The short course and field trip add to the opportunities to learn new techniques and perspectives. No one should leave the Annual Meeting without some new knowledge or insight in hydrogeology.

The interdisciplinary character of hydrogeology lends itself to the development of a rich and diverse program, but this year the riches grew beyond my wildest dreams. The session convenors may recall several nervous e-mails from me in the early summer exhorting them to contact their prospective contributors and encourage them to submit abstracts. Our convenors are awesome! We received a record high 617 abstracts, an increase of 20% over last year's robust meeting. The Joint Technical Program Committee worked with our Division representatives – Joe Donovan and Laura Toran – to arrange sessions as sensibly as possible and to locate the rooms in a contiguous block. Even so, you should bring your comfortable walking shoes to SLC because you will often move between sessions. Your colleagues have invested tremendous effort into developing an outstanding meeting, and you will be pleased with the result.

Our Division celebrates the success of some of its members this year, and that recognition takes several forms. We welcome 15 new GSA Fellows from the Hydrogeology Division this year thanks to the selfless efforts of their nominators and supporters. The ballot initiative to change the Division Bylaws to make the Birdsall-Dreiss Distinguished Lecturer an automatic Fellow (as long as she/he is a GSA member) will bring well deserved recognition to the

The Hydrogeologist

The Hydrogeologist is a publication of the Hydrogeology Division of the Geological Society of America. It is issued twice a year, to communicate news of interest to members of the Hydrogeology Division. During 1998, the publication moved from paper-based to electronic media. The electronic version may be accessed at: <*http://gsahydrodiv.unl.edu*>. Members of the Hydrogeology Division who have electronic mail will receive notification of all new issues. Other members will continue to receive paper copies.

Contributions of material are most welcome, and should be directed to the Editor. Submission as Word or WordPerfect document is most expedient.

F. Edwin Harvey, Editor
The Hydrogeologist
107 NH
University of Nebraska
Lincoln, Nebraska 68588-0517

Voice: (402) 472-8237
Fax: (402) 472-4608
Email: feharvey1@unl.edu

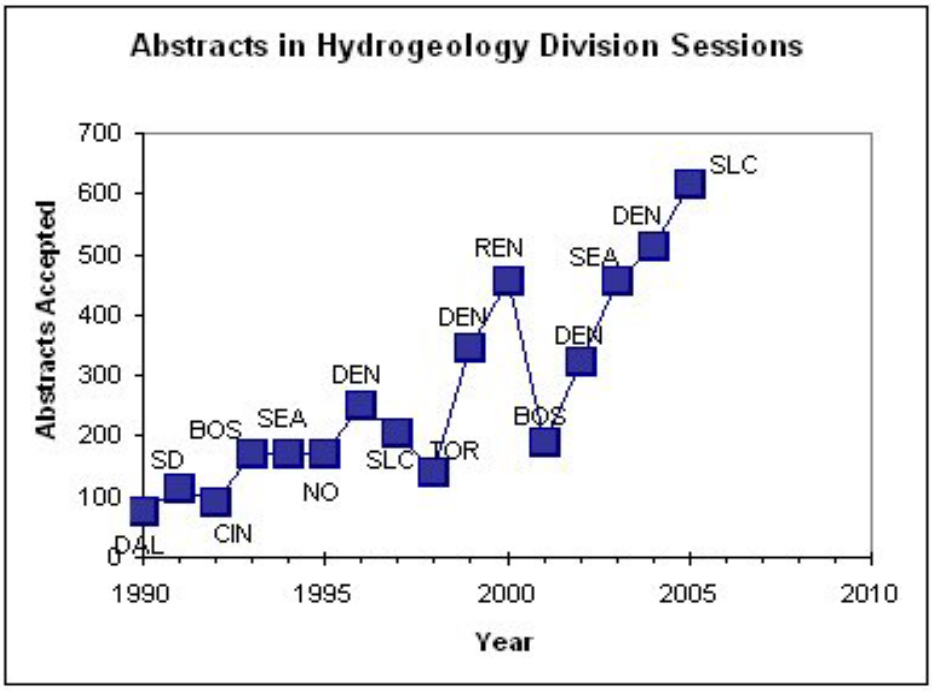
Deadline, Spring Issue

May 1, 2006

candidate at the culmination of the lecture tour at each Annual Meeting as well as save the time and energy of Division members. I am delighted to report to you that this ballot initiative was voted in most convincingly by our membership, and the issue is now before GSA Council for ratification. We also have the opportunity to celebrate the accomplishments of the Meinzer Award winner and the dedicated service of the Distinguished Service Award winners at our Division Luncheon and Awards Ceremony. Further, we have three outstanding graduate students to recognize for their research creativity at the Awards Ceremony.

Every Division member has a role to play in accomplishing the major goals of the Division. Volunteers occupy elected office, develop the program, convene sessions, and serve on committees. If you think you benefit from the meeting in any way, you might reflect upon how you could give back to the Division with a contribution of your time, energy, or expertise in some volunteer role. Or, you might lead an effort to recognize the valuable contributions of a colleague through nomination of a candidate for an award or for Fellowship.

It does take cash to accomplish some of our goals. A donation to support the Student Research Fund this year will result in your taking home a new Polubarinova-Kochina Historical Mug. Consistently paying your Division dues helps fund the Birdsall-Dreiss Distinguished Lecture tour, the Student Research Awards, and the Student Reception. Bringing new dues-paying members to the Division would help even more. Do make sure that as you renew your GSA membership for 2006 at http://www.geosociety.org/members/ that you pause on the Dues page long enough to check the box next to Hydrogeology Division. You might also take time on the Contributions page to select the Dreiss or the Birdsall Fund managed by GSA Foundations and contribute to public outreach and education by our Lecturer each year. In fact, why not renew your dues before December 15, thereby saving $10 off your GSA dues and contribute that money to the Dreiss or Birdsall Fund?



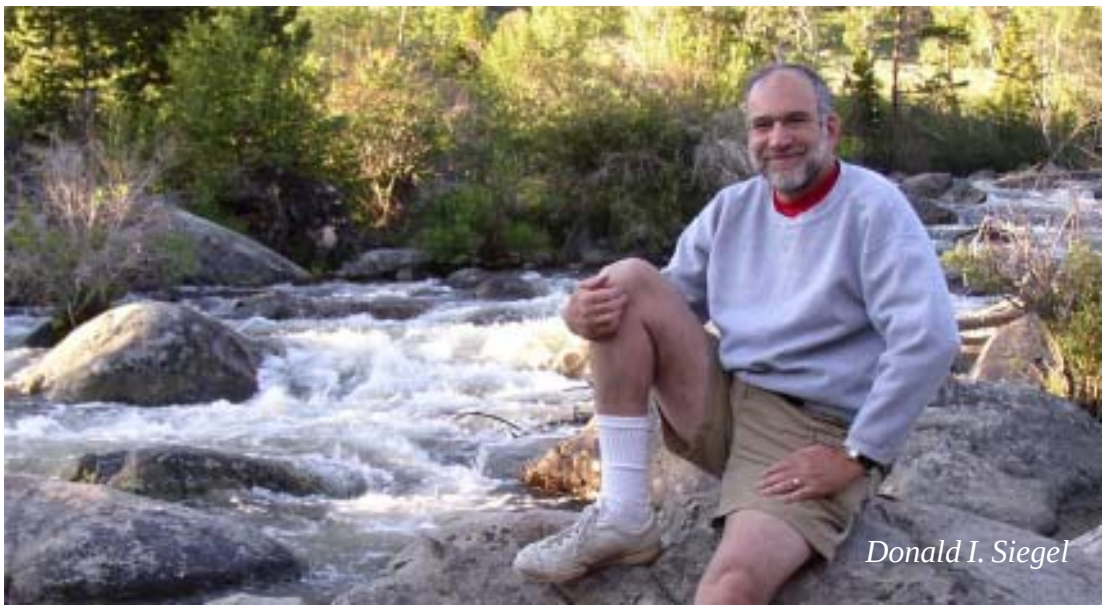
My enthusiasm for the Division has grown over this past year of serving as Chair. The selflessness of our members whom I called upon to nominate, to organize, or to contribute impressed me again and again. Their enthusiasm for hydrogeology, their dedication to outstanding research, teaching, and service, their commitment to embracing a broad scope of topics in our interdisciplinary field, and their genuine desire to include all professionals and students with an interest in hydrogeology in all aspects of our Division is contagious. You cannot help but come to feel part of something much larger than yourself when you interact with Division members. Thank you for giving me this opportunity to serve as Chair. I look forward to seeing you in Salt Lake City!

Want to know what's going on within the GSA Hydrogeology Division?

Then visit our website at <http://gsahydrodiv.unl.edu> to catch up on the latest events or find out how you can become more involved with our activities.

Siegel 2005 O.E. Meinzer Award Recipient

The 2005 O.E. Meinzer Award is presented to Donald I. Siegel for his research and scientific publication in the areas of paleo-hydrogeology, specifically aquifer recharge under ice sheets and their hydrologic and hydrogeochemical imprint on present flow systems, and the body of work on boreal peatland hydrology and geochemistry.


Donald I. Siegel

Siegel was the first to recognize and study the impact of glacial meltwater recharge on present day groundwater flow patterns and isotopic and geochemical distribution. His co-authored 1984 paper with Mandle -Isotopic evidence for glacial meltwater recharge to the Cambrian-Ordovician aquifer, north-central United States - was the first to suggest the idea that significant meltwater injection into a Paleozoic aquifer system was presented. This idea were further expanded in a 1989 U.S. Geol. Survey Professional Paper and a 1990 contribution in Geology on "Sulfur isotopic evidence for regional recharge of saline water during continental glaciation". This work spawned and inspired work by other researchers in North America and Europe.

Parallel to the glacial recharge research Siegel developed insight into fundamental hydrology, geochemistry and biological processes of boreal peatlands. The first phase involved the importance and effects of micro-topographically driven systems on the patterns of groundwater flow and chemistry in establishing the various forms of landscape units and their own feedback on flow and chemistry. These fundamental papers establish the interactive role of hydrology and chemistry on the evolution of peatlands such as in the 1983 paper on, "Groundwater and the evolution of patterned mires" and the 1987 co-authored paper with Glaser,

Please see **Meinzer** *on page 20*

O.E. Meinzer Award Papers

Siegel, D.I. and Mandle, R.J., 1984, Isotopic evidence for glacial meltwater recharge to the Cambrian-Ordovician aquifer, north central United States, Quaternary Research, vol. 22, p. 328-335.

Siegel, D.I., 1990, Sulfur isotopic evidence for regional recharge of saline water during continental glaciation, north-central United States, Geology, vol. 18, p. 1054-1056.

Siegel, D.I., 1983, Groundwater and the evolution of patterned mires, Glacial Lake Agassiz Peatlands, Northern Minnesota: Journal of Ecology, vol. 71, p. 913-921.

Siegel, D.I., and Glaser, P.H., 1987, Groundwater flow in a bog-fen complex, Lost River Peatland, Northern Minnesota, Journal of Ecology, vol. 75, p. 743-754.

Siegel, D.I., Reeve, A., Glaser, P.H. and E. Romanowicz, 1995, Climate-driven flushing of pore water from humified peat: geochemical and ecological ramifications, Nature, vol. 374, p. 531-533.

Davis & Schwartz Receive Distinguished Service Award

Ralph Davis

The first award is presented to Ralph K. Davis in recognition of his contributions to practical studies in hydrogeology, his mentorship in the field through teaching, and his service to the profession.

Ralph's career began as Manager of the Big Bend Groundwater Management in Kansas. Here he published papers on the effect of flood waves on groundwater levels, on patterns of groundwater level declines in developed aquifers, and on effects of groundwater pumping on river flows.

Ralph's dissertation research used the movement of atrazine from the Platte River into the Lincoln wellfield to determine the dispersivity of a major alluvial aquifer and the degree of connectivity in this dynamic surface water – groundwater system.

Ralph worked with the tribal lands of the Omaha and the Santee Nations, and he continues to work with Native Americans to assist expansion of their capacity for water resources management within their homelands.

Recently, his research has expanded to include karstic aquifers in Arkansas. Management of that groundwater resource has been enhanced by his research that has led to greater understanding of the interaction of people and the aquifer and enhanced our understanding of bacterial and sediment transport in karstic aquifers. He is currently serving as Director of the Arkansas Water Resources Center while teaching and conducitng research at the University of Arkansas.

He has served the Hydrogeology Division as Program Chair for the Toronto Meeting and has routinely organized a session for the GSA Annual Meeting. Of special note is that he is in his 4th term as Secretary-Treasurer of the Hydrogeology Division. The institutional memory and dedication that he has brought to this position has made a difference in the quality of the Division activities through the years.

For his superb scientific and management leadership and mentorship in the hydrogeologic profession, the Hydrogeology Division takes great pride in presenting Ralph K. Davis with the Distinguished Service Award for 2005.

The second award is presented to Franklin W. Schwartz in recognition of his outstanding service to the science and the profession of hydrogeology. The award specifically recognizes dedication and exemplary contributions in research, in education, and in professional service and leadership within the Hydrogeology Division of the Geological Society of America.

Frank Schwartz

He has published more than 130 refereed papers encompassing field and theoretical aspects of mass transport, contaminant hydrogeology and ground-water geochemistry. Many of these papers have been benchmarks in the field. He received the O.E. Meinzer Award, 1984 for seminal contributions to understanding mass transport in ground-water flow systems. Some of his work on the state of innovation in hydrogeology, though controversial, has stimulated healthy and open discussions within our scientific community. His most recent work has been on urban watershed hydrology and on climate change interactions among the atmosphere, land surface, and ground water.

He has contributed to all areas of education in hydrogeology. As a Professor at the University of Alberta and currently as The Ohio Eminent Scholar Chair in Hydrogeology, he has been the advisor or co-advisor to 15 Ph.D. and 9 M.S. students and several post-docs. He has edited or co-edited two books and co-authored three textbooks, including two editions of a widely used introductory text. He has served many professional societies, but none more than the Geological Society of America. He was the Birdsall Distinguished Lecturer, 1983. He was Division Technical Program Chair, 1992. He was Division Chair, 1993 and has served in most all of its elected offices. He regularly supports the Division Student Reception, maintains a strong presence at annual meetings and is always willing to contribute where needed.

For his many exemplary contributions to research, education, and professional service the Hydrogeology Division presents Franklin W. Schwartz the Distinguished Service Award.

Congratulations Ralph and Frank from your Hydrogeology Division friends and colleagues!

Blowes Is 2006 Birdsall-Dreiss Lecturer

Reprinted From GSA Today

Dr. Dave Blowes

David Blowes of the University of Waterloo has been selected as the 2006 Birdsall-Dreiss Lecturer for 2006. This lecture series is sponsored by the GSA Hydrogeology Division. At the request of interested institutions, he will present one of the two lectures described below.

David Blowes teaches in the Department of Earth Sciences at the University of Waterloo, where he has held the Canada Research Chair in Groundwater Remediation since 2001. He is a member of the Waterloo Institute for Groundwater Research. He received his B.Sc. in Earth Sciences from the University of Waterloo, then went on to complete M.Sc. and Ph.D. studies specializing in hydrogeology and aqueous geochemistry at the same institution. In 1991 he joined the faculty, and now holds the rank of Professor. At Waterloo he teaches courses on groundwater geochemistry and hydrogeology. His research focuses on the release and transport of dissolved metals from mine wastes, transport of dissolved metals and nutrients in aquifers and remediation of groundwater contaminated by dissolved metals and nutrients. He has published over 100 professional papers and presented more than 100 professional talks. He has co-edited three volumes on the environmental effects of sulfide mineral oxidation in mine wastes. He has participated in review panels for Natural Sciences and Engineering Research Council of Canada and for government agencies in Canada, the United States, Australia and Europe. He has acted as a consultant for private companies and government agencies.

To request a visit to your institution contact David Blowes, Department of Earth Sciences, University of Waterloo, 200 University Avenue West, Waterloo, Ontario, Canada, N2L 3G1, 519-888-4878, blowes@uwaterloo.ca. The Hydrogeology Division is particularly interested in including liberal arts colleges in the itinerary. The Division will pay transportation expenses and the host institution will provide local accommodations.

Lecture Topics

Permeable Reactive Barriers for Treating Groundwater Contaminated by Dissolved Metals

In situ techniques for treating contaminated groundwater have evolved rapidly over the past decade. Permeable reactive barriers were among the first of these new approaches, and now are applied widely. Permeable reactive barriers are installed by excavating a portion of the contaminated aquifer and replacing the aquifer materials with a reactive material tailored to treat the target contaminants. More than 150 reactive barriers have been installed since the initial installations in the mid 1990's. These barriers treat a variety of contaminants, including dissolved metals, nutrients, mine drainage, halogenated hydrocarbons and petroleum derivatives. Reactive barriers designed to treat dissolved metals rely on removing the metal from the water and retaining it in the reactive mixture through precipitation or adsorption reactions. Most frequently, metal retention is achieved by changing the oxidation state of the metal and precipitating a secondary mineral which is sparingly soluble under the conditions that prevail in the barrier.

During this presentation I will focus on the development of reactive barrier systems for treating dissolved metals, describing the steps from bench-scale testing to full-scale implementation. The presentation will include the results of laboratory testing, conducted to assess the properties of reactive materials, field installations, long-term monitoring and the development and application of reactive transport models, used to understand the interaction of physical and chemical processes within reactive barriers and to predict their long-term performance. I will describe our continuing efforts to understand, refine and extend the limitations of this developing technology.

Predicting, Preventing and Remediating Acidic Drainage from Sulfide Bearing Mines and Mine Wastes

The generation of acid mine drainage and the accompanying release of high concentrations of dissolved

Please see **Blowes** *on page 18*

GSA's John Mann Mentors in Applied Hydrogeology

Karlon Blythe
Program Officer, Outreach
The Geological Society of America

The Hydrogeology Mentor programs, made possible by a gift of endowed funds to GSA Foundation by the late John F. Mann, bring together undergrad and graduate students interested in hydrogeology or hydrology as a career to participate

in informal conversation with professionals currently practicing in these fields. These Programs, named after benefactor John F. Mann, are held in various formats at GSA Meetings, and focus on providing students with career-enhancing information. In addition they always include a free meal for participants at Section Meetings, as well as subsidized tickets for qualified students to the Hydro Division's Annual Meeting Luncheon and Business Meeting. Twenty-two students attended the Division's Luncheon in Denver last year, courtesy of the Mann Program funds. New this year are awards of up to 100 free, one-year GSA student memberships or renewals, each of which also includes one-year's paid student dues to the Hydro Division. These awards will be made via the gift raffle held at the Division's Annual Meeting Student Reception.

The growing success of the John Mann Mentors in Applied Hydrogeology Programs was clearly evident in the sessions held at the 2005 Section Meetings. At roundtables, students and professionals chatted about careers in hydrogeology and hydrology, networked over free pizza dinners, and exited the events expressing feelings of both personal and professional growth. New friendships were made— and to the students' great good fortune— professional contacts were established for their futures. For 2005, each Section Meeting featured one session of the Mann Mentor Program. All of the programs were enthusiastically attended; the final numbers for all six sessions reflect that 118 students and 32 Mentors participated. A complete list of 2005 Mentors will be featured in a related article from the October issue of *GSA Today*. An incidental outcome of the Mann Program held at this spring's 2005 North-Central Meeting was the follow-on job interviews by one of the Mentors of four students initially in attendance at the Program. Ultimately, two students were successfully hired!

Karlon Blythe, Program Officer, said that she received excellent cooperation in identifying potential Mentors from the International Association of Hydrogeologists, Association of Engineering Geologists, and the Association of Earth Science Editors, among others. However, Karlon says that her first (and best) source for professional, high-quality Mentors is from the membership of the GSA's Hydro Division. If you receive an invitation from Karlon asking you to participate as a Mentor in a Mann Program—jump at the opportunity. You will enjoy the experience AND you will have promoted our industry along the way. Better yet, VOLUNTEER! Karlon always welcomes volunteer Mentors. Contact her if you plan to attend a 2006 Section Meeting; give her a call at (303) 357-1036 or send her an email, kblythe@geosociety.org.

John Mann Mentors in Applied Hydrogeology Program Schedule for 2006 Section Meetings

SOUTH-CENTRAL SECTION MEETING
Mann Mentors in Applied Hydrogeology Program
Monday, March 6, 2006
5:00 - 6:30 p.m.
Univ. of Oklahoma
Norman, OK

NORTHEASTERN SECTION MEETING
Mann Mentors in Applied Hydrogeology Program
Monday, March 20, 2006
5:00 - 6:30 p.m.
Radisson Penn Harris Hotel & Convention Center
Camp Hill/Harrisburg, PA

SOUTHEASTERN SECTION MEETING
Mann Mentors in Applied Hydrogeology Program
Thursday, March 23, 2006
5:00 - 6:30 p.m.
Marriott Hotel
Knoxville, TN

NORTH-CENTRAL SECTION MEETING
Mann Mentors in Applied Hydrogeology Program
Thursday, April 20, 2006
5:00 - 6:30 p.m.
University of Akron
Akron, OH

CORDILLERAN SECTION MEETING
Mann Mentors in Applied Hydrogeology Program
Monday, May 8, 2006
5:00 - 6:30 p.m.
Anchorage, Alaska

ROCKY MOUNTAIN SECTION MEETING
Wednesday, May 17, 2006
5:00 - 6:30 p.m.
Western State College
Gunnison, CO

The John Mann Mentors in Applied Hydrogeology

Cordilleran: *Michael Clark*, CEG, CHg, Kleinfelder, Inc.,San Jose, CA; *Sue Mattenberger*, U.S. Fish & Wildlife Service, Klamath Falls, OR; *Keri Murch*, Environmental Resolutions, Inc., Petaluma, CA; *Belinda Price*, Shaw Environmental & Infrastructure, Inc., Knoxville, TN; *Scott Warner*, RG, CHG, CEG, Geomatrix, Oakland, CA.

Northeastern: *Jonathan R. Bridge*, P.G.,GeoTrans, Inc., Clifton Park, NY; *Benjamin B. Greeley*, Pennsylvania Dept. of Evironmental Protection, Norristown, PA; *Scott M. Hulseapple*, URS Corporation, Clifton Park, NY; *Mary Passaretti*, Aztech Technologies, Inc., Saratoga Springs, NY; *Stephen J. Rossello*, PARSONS, Liverpool, NY; *Stephen J. Urbanik*, New Jersey Dept. of Environmental Protection,Trenton, NJ.

North-Central: *Thomas P. Clark*, P.G., Minnesota Pollution Control Agency, St. Paul, MN; *Keith B. Rapp*, Unisys Corporate Environmental Affairs, Eagan, MN; *Kathleen M. Rolf*, P.G., Minnesota Pollution Control Agency, St. Paul, MN; *Dennis L. Schubbe*, P.G., Northeast Technical Services, Inc.,Virginia, MN; *Timothy W. Thurnblad*, Minnesota Pollution Control Agency, St. Paul, MN; *Ray Wuolo*, P.E., P.G., Barr Engineering Company, Minneapolis, MN.

Rocky Mountain: *Brad Dingee*, Powder River Coal Company, Gillette, WY; *Heidi Hadley*, USDOI Bureau of Land Management, Salt Lake City, UT; *Robert J. Sterrett*, Engineering Management Support, Inc., Arvada, CO; *Jacob S. Waples*, Golder Associates, Inc., Lakewood, CO; *Michael Wireman*, U.S. Environmental Protection Agency, Denver, CO.

South-Central: *Michael D. Campbell*, P.G., P.H.M.D., Campbell and Associates, L.P., Houston, TX; *Robert E. Mace*, Texas Water Development Board, Austin, TX; *Olufemi Osidele*, Southwest Research Institute, San Antonio, TX; *Bob Traylor*, P.G., CPG, Texas Commission on Environmental Quality, Austin, TX; *John Russell Waugh*, P.G., San Antonio Water System, San Antonio, TX.

Southeastern: *Jay Ferris*, P.G., MACTEC Engineering and Consulting, Inc., Jackson, MS; *Danny Harrelson*, U.S. Army Engineer Research & Dev. Center, Vicksburg, MS; *James Andrew Heller*, Alabama Dept. of Environmental Management, Montgomery, AL; *Barry L. Levine*, P.G., City of Memphis, Memphis, TN; *Amanda Roberts*, National Weather Service, LMRFC, Slidell, LA.

Wasatch *from page 1*

conflicting events in their week at GSA.

While the program is large, its diversity may be its outstanding contribution. There are topical sessions on familiar themes from past meetings (monitoring techniques for remediation, management of fractured-rock aquifers, reaction kinetics, spring geochemistry, water quality/quantity interconnections, recharge methods, carbonate aquifer hydrology, artificial recharge). In addition, however, the program confronts topics on the interface between hydrogeology and related disciplines, capturing the cross-disciplinary nature of our science. To name a few of these cutting-edge topical sessions not regularly seen at GSA: coastal hydrogeology, sea-floor hydrogeology, lake-groundwater interaction, ecosystems at the terrestrial-aquatic interface, trace metal cycling via colloids, hydrogeology and climate change, and naturally-occurring perchlorate in the hydrologic cycle. The breadth of co-sponsorship with other divisions and societies reflects the truly interfacial role of this Division program. We expect this to be a thoroughly stimulating and thought-provoking meeting.

This year, the Luncheon, Awards Ceremony, and Business Meeting are TUESDAY (not Monday), noon till 3:00 PM in the Hilton Grand Ballroom C. The day change was implemented at GSA request. Due to the large number of sessions, we scheduled two short oral sessions on Tuesday afternoon, following our luncheon. The 2005 Birdsall-Dreiss Distinguished Lecture by Bill Woessner will follow at 4:30-5:30, in Room 250AB of the Convention Center, followed immediately by the Student Reception (Tuesday 5:45 to 7:30 PM, in the Ken Knight Board Room Foyer of the Convention Center). In addition, on the previous day, Kip Solomon's 2005 NGWA Darcy Distinguished Lecture will be on Monday at 5:00-6:00 at the end of Vic Heilweil/Lorraine Flint's Topical Session T9 on Bedrock Infiltration Processes, also in room 250AB. Poster sessions are scheduled for Monday, Tuesday, and Wednesday mornings, plus Tuesday afternoon.

The Joint Technical Program Committee gods have smiled on Hydro Division this year, and all the hydro oral sessions are in the same contiguous block of rooms for the entire meeting. Also, all "double oral sessions" remain in the same room, AM and PM. So logistics should be good. Here are a few meeting highlights. The Division is co-sponsoring not one but two Pardee Keynote Symposia, *Water Resources Science and Public Policy* (convenors Dave Diodato and Pete Folger), Sunday PM, and *The Wasatch Hydroclimatic System* (convenors Chris Duffy, Dave Tarboton, Danny Marks, and Craig Forster), Monday AM. The Wasatch group under Dave Tarboton will also be convening two attached oral Topical Sessions, Monday PM and Tuesday PM. We're very excited about all of these. The topical schedule is too large to describe in detail here, but some highlights include full-day oral sessions on new frontiers in hydrologic modeling, arsenic hydrochemistry, microbial reaction rates, fault zone controls on fluid movement, environmental issues related to oil and gas, subsurface transport of microbes and colloids, and a session to honor the scientific accomplishments of Olaf Pfannkuch. You can check out the technical program and event schedule on http://gsa.confex.com/gsa/2005AM/finalprogram/.

In terms of short courses, Abe Springer and colleagues are doing a short course on *Springs Inventory and Classification* with a field trip, and Bryant Kimball et al. are running *A Tracer Runs Through It* (both pre-meeting events, Saturday 8-5). The division field trip looks to be an excellent one — Dave Naftz and colleagues on a spectacular boat tour of the Great Salt Lake, Wednesday afternoon, entitled *Biogeochemistry, Limnology, and Ecology of Great Salt Lake*. All these events are already booked but may open up a few slots if there are cancellations.

Joe Donovan

Division members should expect a busy meeting, with much to do, see, and hear. Thanks to all who have contributed their organizational talents in planning the program. Special thanks to my partner on JTPC, Laura Toran, and to Division Chair Janet Herman, both of whom worked tirelessly in planting the seeds for this October. I feel really fortunate that we were teammates and will remember all the fun we had working together!

See you all in SLC!

2005 GSA Annual Meeting Program Schedule
Hydrogeology Division

Saturday October 15	Sunday October 16	Monday October 17	Tusday October 18	Wednesday October 19
7:00 a.m. - noon	**7:00 a.m. - noon**	**7:00 a.m. - noon**	**7:00 a.m. - noon**	**7:00 a.m. - noon**
Field Trips 7:00 am Departure Short Courses 8:00 am - 5:00 pm	President's Student Breakfast (FREE) 7:00 - 8:30 am (Hilton Grand Ballroom) Technical Sessions 8:00 am - 12:00 pm **Hydrogeology Division Management Board Meeting** **11:00 am - 1:00 pm** **(SPCC Ken Knight Board Rm)**	Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9:00 am - 5:30 pm	Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9:00 am - 5:30 pm	**Hydrogeology Division Management Board Meeting** **7:00 - 9:00 am** **(SPCC Ken Knight Board Room)** Technical Sessions 8:00 am - 12:00 pm Exhibits Open 9:00 am - 2:00 pm
Luncheon:			**Hydrogeology Division Luncheon, Awards, Business Meeting** **noon - 3:00 pm** **(Hilton Grand Ballroom C)**	
1:30 - 5:30 p.m	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**	**1:30 - 5:30 p.m**
GSA Presidential Address & Awards Ceremony 7:00 - 9:00 pm (Hilton Grand Ballroom)	Technical Sessions 1:00 - 3:30 pm **Welcoming Party & Exhibit Hall Opening** **5:30 - 7:30 pm**	Technical Sessions 1:30 - 5:30 pm **NGWA Darcy Distinguished Lecture** **5:00 - 6:00 pm** **(SPCC 250 AB)**	Technical Sessions 1:30 - 5:30 pm **Hydrogeology Division Luncheon, Awards, Business Meeting** **noon - 3:00 pm** **(Hilton Grand Ballroom C)** **Birdsall-Dreiss Distinguished Lecture** **4:30 - 5:30 pm** **(SPCC 250 AB)**	Technical Sessions 1:30 - 5:30 pm GSA Annual Meeting Ends at 5:30 pm
Receptions:		Alumni Night: Various University Receptions	**Hydrogeology Division Student Reception** **5:45 - 7:30 pm** **(SPCC Ken Knight Board Room Foyer)**	

Hydrogeology Division Sponsored Technical Program Schedule for the 2005 Salt Lake Meeting

Session Title	Day	Time	Room
T12. Environmental Issues Related to Oill and Gas Exploration and Production I	SU	8:00 AM - 12:00 PM	SPCC 250 DE
T14. Flowpaths Integrating Terrestrial and Aquatic Components of Catchment Ecosystems	SU	8:00 AM - 12:00 PM	SPCC 251 C
T18. Innovations and New Frontiers in Hydrologic Modeling I	SU	8:00 AM - 12:00 PM	SPCC 250 AB
T19. Innovative Methods of Estimating Recharge in Humid Climates	SU	8:00 AM - 12:00 PM	SPCC 251 AB
T32. Water Resource Management and Planning for Fractured and Karstic Aquifers	SU	8:00 AM - 12:00 PM	SPCC 250 C
P8. Water Resources Science and Public Policy	SU	1:30 PM - 5:30 PM	SPCC 251 AB
T12. Environmental Issues Related to Oill and Gas Exploration and Production II	SU	1:30 PM - 5:30 PM	SPCC 250 DE
T18. Innovations and New Frontiers in Hydrologic Modeling II	SU	1:30 PM - 5:30 PM	SPCC 250 AB
T20. Innovative Monitoring and Modeling Techniques for Assessing the Performance of Passive Remediation Projects for Contaminated Water and Soil	SU	1:30 PM - 5:30 PM	SPCC 251 C
T28. Stream-Hyporheic Interactions: Hydrology, Geochemistry, and Biology	SU	1:30 PM - 5:30 PM	SPCC 250 C
T98. Innovations in Geological Mapping (Posters)	SU	1:30 PM - 5:30 PM	SPCC Hall C
P7. The Wasatch Range - Great Salt Lake Hydroclimatic System	MO	8:00 AM - 12:00 PM	SPCC Ballrooms AC
T8. Artificial Recharge of Groundwater - Hydrogeologic Characterization and Implementation	MO	8:00 AM - 12:00 PM	SPCC 250 C
T13. Fault Zone Controls on Fluid Movement, Earth Resources and Processes: Perspectives from Field, Laboratory, and Modeling Studies I	MO	8:00 AM - 12:00 PM	SPCC 251 AB
T15. Groundwater Quality and Quantity Interconnections: The Effects of Natural and Anthropogenic Contamination on Groundwater Availability (Posters)	MO	8:00 AM - 12:00 PM	SPCC Hall C

Session Title	Day	Time	Room
T25. Arsenic Occurence and Fate in Hydrogeologic Systems I	MO	8:00 AM - 12:00 PM	SPCC 250 DE
T33. Water, Solute, and Sediment Fluxes through Carbonate and Karst Aquifers	MO	8:00 AM - 12:00 PM	SPCC 250 AB
T28. Stream-Hyporheic Interactions: Hydrology, Geochemistry, and Biology (Posters)	MO	8:00 AM - 12:00 PM	SPCC Hall C
T29. Surface and Subsurface Geologic Characterization of the Edwards and Trinity Carbonate Aquifer Systems, Central Texas (Posters)	MO	8:00 AM - 12:00 PM	SPCC Hall C
T9. Bedrock Infiltration: Advances in Understanding Vadose-zone Processes, Percolation through Macropores and Shallow Soils, and Recharge to Consolidated-rock Aquifers	MO	1:30 PM - 6:00 PM	SPCC 250 AB
T10. Chemistry, Ecology, and Groundwater Hydrology of Lakes, Streams, Playas, and Springs: Obsevations at the Interface	MO	1:30 PM - 5:30 PM	SPCC 251D
T13. Fault Zone Controls on Fluid Movement, Earth Resources and Processes: Perspectives from Field, Laboratory, and Modeling Studies II	MO	1:30 PM - 5:30 PM	SPCC 251 AB
T15. Groundwater Quality and Quantity Interconnections: The Effects of Natural and Anthropogenic Contamination on Groundwater Availability	MO	1:30 PM - 5:30 PM	SPCC 250 C
T25. Arsenic Occurence and Fate in Hydrogeologic Systems II	MO	1:30 PM - 5:30 PM	SPCC 250 DE
T30. The Hydrosystem of the Great Salt Lake Basin: New Frontiers for Observing and Modeling Human-impacted Hydrologic, Climate and Geomorphologic Processes I	MO	1:30 PM - 5:30 PM	SPCC 251 C
T7. A Tribute to Hans-Olaf Pfannkuch: From Darcy to the Modern World of Environmental and Contaminant Hydrogeology I	TU	8:00 AM - 12:00 PM	SPCC 250 C
T11. Dissolution, Precipitation and Redox Reaction Kinetics in Aquifers	TU	8:00 AM - 12:00 PM	SPCC 251 AB
T24. Naturally Occurring Perchlorate (and Other Oxyanions) in the Hydrologic Cycle - Origins, Accumulation, Transformations, and Transport	TU	8:00 AM - 12:00 PM	SPCC 251 C
T31. The Role of Colloids and Semicrystalline/Amorphous Materials in Environmental Cycling of Trace Elements	TU	8:00 AM - 12:00 PM	SPCC 250 DE
T34. Springs: Keys to Understanding Geochemical Processes in Aquifers	TU	8:00 AM - 12:00 PM	SPCC 250 AB
Hydrogeology (Posters) I: Recharge and Vadose Processes	TU	8:00 AM - 12:00 PM	SPCC Hall C

Session Title	Day	Time	Room
T9. Bedrock Infiltration: Advances in Understanding Vadose-zone Processes, Percolation through Macropores and Shallow Soils, and Recharge to Consolidated-rock Aquifers (Posters)	TU	8:00 AM - 12:00 PM	SPCC Hall C
T10. Chemistry, Ecology, and Groundwater Hydrology of Lakes, Streams, Playas, and Springs: Obsevations at the Interface (Posters)	TU	8:00 AM - 12:00 PM	SPCC Hall C
T13. Fault Zone Controls on Fluid Movement, Earth Resources and Processes: Perspectives from Field, Laboratory, and Modeling Studies (Posters)	TU	8:00 AM - 12:00 PM	SPCC Hall C
T25. Arsenic Occurence and Fate in Hydrogeologic Systems (Posters)	TU	8:00 AM - 12:00 PM	SPCC Hall C
T7. A Tribute to Hans-Olaf Pfannkuch: From Darcy to the Modern World of Environmental and Contaminant Hydrogeology II	TU	1:30 PM - 3:30 PM	SPCC 250 C
T30. The Hydrosystem of the Great Salt Lake Basin: New Frontiers for Observing and Modeling Human-impacted Hydrologic, Climate and Geomorphologic Processes II	TU	1:30 PM - 4:30 PM	SPCC 251 C
T22. Interactions of Groundwater and Surface Water at the Land-Sea Margin (Posters)	TU	1:30 PM - 5:30 PM	SPCC Hall C
T24. Naturally Occurring Perchlorate (and Other Oxyanions) in the Hydrologic Cycle - Origins, Accumulation, Transformations, and Transport (Posters)	TU	1:30 PM - 5:30 PM	SPCC Hall C
T33. Water, Solute, and Sediment Fluxes through Carbonate and Karst Aquifers (Posters)	TU	1:30 PM - 5:30 PM	SPCC Hall C
T34. Springs: Keys to Understanding Geochemical Processes in Aquifers (Posters)	TU	1:30 PM - 5:30 PM	SPCC Hall C
T131. Geophysical Studies for Improving Management of Land, Water, Environment, and Hazards (Posters)	TU	1:30 PM - 5:30 PM	SPCC Hall C
Hydrogeology I: Tracers and other Field Techniques	WE	8:00 AM - 12:00 PM	SPCC 251 C
T16. Hydrogeology and Climate Change: Insights from the Past	WE	8:00 AM - 12:00 PM	SPCC 250 C
T22. Interactions of Groundwater and Surface Water at the Land-Sea Margin	WE	8:00 AM - 12:00 PM	SPCC 250 DE
T23. Nano- To Field-scale Processes Governing the Transport of MIcrobes and Colloids in the Subsurface I	WE	8:00 AM - 12:00 PM	SPCC 251 AB
T26. Quantifying Controls on Microbial Reaction Rates in Subsurface Environments I	WE	8:00 AM - 12:00 PM	SPCC 250 AB
T51. Investigation of Sources and Fates of Anthropogenic Inputs to the Environment through Isotopic Systematics	WE	8:00 AM - 10:00 PM	SPCC 151 DEF

Session Title	Day	Time	Room
Hydrogeology (Posters) II: Field and Modeling Syntheses	WE	8:00 AM - 12:00 PM	SPCC Hall C
Hydrogeology II: Modeling and Parameter Measurement	WE	1:30 PM - 5:30 PM	SPCC 251 C
T23. Nano- To Field-scale Processes Governing the Transport of MIcrobes and Colloids in the Subsurface II	WE	1:30 PM - 5:30 PM	SPCC 251 AB
T26. Quantifying Controls on Microbial Reaction Rates in Subsurface Environments II	WE	1:30 PM - 5:30 PM	SPCC 250 AB
T27. Seafloor Hydrogeology: Investigating Fluid Flow through the Oceanic Crust and Seafloor Sediments	WE	1:30 PM - 5:30 PM	SPCC 250 DE
T35. Riparian Corridors in Semi-Arid and Arid Environments: Results and Approaches of Integrative Studies in Support of Scientifically Based Management and Restoration, with Emphasis on the Great Basin	WE	1:30 PM - 5:30 PM	SPCC 250 C

Program Correction for SLC meeting: Session T15. “Groundwater Quality and Quantity Interconnections: The Effects of Natural and Anthropogenic Contamination on Groundwater Availability” has both an oral and a poster session. The poster session (Monday morning) was incorrectly listed in the paper copy of the program as an oral session. (the GSA web site is correct). Look for these presentations in poster Hall C.

Hydrogeology Division Sponsored Short Course

Short Course	Day	Time	Room
1. Springs Inventory and Classification Courses and Fieldtrip	SA	8:00 AM - 5:00 PM	Convention Center
2. Three-Dimensional Geologic Mapping for Groundwater Applications Workshop	SA	8:00 AM - 5:00 PM	Convention Center

Hydrogeology Related Field Trip

Field Trip	Day
Biogeochemistry, Limnology, and Ecology of Great Salt Lake	WE, Oct 19

GSA 2006 Heads to Philadelphia

By Lora Toran
2006 Technical Program Coridinator

(Photy Courtesy of the Philadelphia Convention & Visitors Bureau).

As you look at the diverse program for Hydrogeology at Salt Lake City, I encourage you to think about what you'd like to see in Philadelphia for 2006 (Oct 22-25). Are there some topical areas you'd really like to see expanded? Do you have some new ideas? Got a session idea that might be more broadly attended and could be a Pardee? Send your ideas along to me (Laura Toran, ltoran@temple.edu) or brainstorm with me at the SLC meeting. I encourage you to contact me as early as possible in the procedure *(before Dec 1, 2005*). I can let you know what other session ideas are in the works, and I can suggest co-convenors if you don't already have one. I welcome first-time convenors as well as old pros. You'll need to submit a formal application by Jan 10, 2006; forms will be posted on the GSA web site in early October 2005. For field trips and short courses, the deadline is earlier, Dec 1, 2005.

Philadelphia offers a terrific setting to explore hydrogeology – take it from someone who regularly explores the local watersheds and outcrops. And when you want a break from the meeting, Philadelphia is considered one of the best dining out towns in the U.S from 5 star restaurants to the Italian market. The historic sites include both those that mark our nation's birth, but also one of the oldest municipal waterworks and the largest municipal park system in the world. Exhibits at Franklin Institute of Science, the Academy of Natural Sciences, and the newly refurbished New Jersey Aquarium offer further distractions.

Laura Toran

New Historical-Series Mug for 2005!

by Alan Fryar and Vitaly Zlotnik

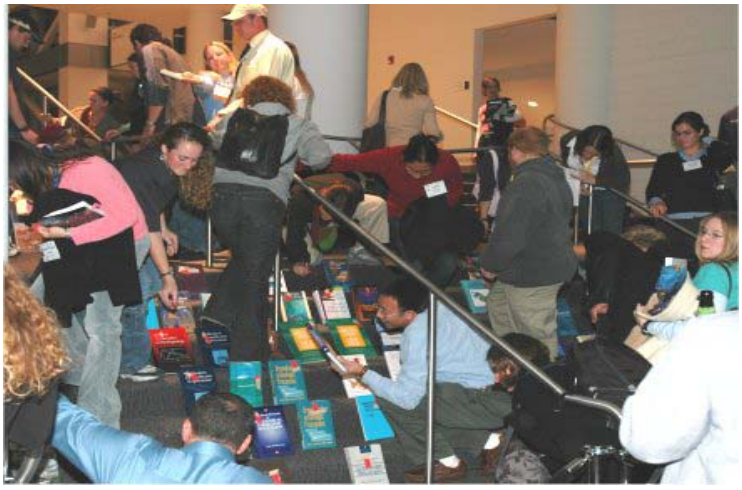
For the first time since 2003, a new ceramic mug is available in the Division's "Historical Mug Series," which honors the late pioneers of our profession while providing support for the next generation of hydrogeologists. This mug, the ninth in the series, commemorates Pelageya Polubarinova-Kochina (1899-1999), who made fundamental contributions to porous-media hydraulics during a career of nearly 80 years in Russia and the former Soviet Union. Prof. Polubarinova-Kochina is only the second non-American (after Henry Darcy, the first honoree) and the first woman to be profiled on a Division mug. As in the past, only 146 new mugs have been made. They can be obtained at the Division luncheon and business meeting in Salt Lake City on Tuesday, October 18. An average donation of $25.00 will generate more than $3,000 in support of student research. Don't miss this opportunity to help the Division strengthen a wonderful program!

Pelageya Polubarinova-Kochina

2004 Student Reception A "Step" Up

by Robert Ritzi

The 2004 version of the Student Reception was a huge success, thanks to the help of Division members, publishers, professional organizations, and software vendors. The purpose of the Student Reception is to recognize those students attending GSA Annual Meetings who have chosen or who are considering a career path in Hydrogeology or a related field. The 140 or so students who attended were welcomed, encouraged to mingle with our professional members, and encouraged to consider our Division as their professional home. Door prizes totaling more than $25,000 were given out, including 20 pieces of software, 97 books, 11 memberships to professional organizations and/or subscriptions to professional journals, and 21 historical mugs.



Students storm the convention center steps to claim their door prizes! (Photo by Ed Harvey)

A highlight of the event was the presentation of a copy of Patricia Bobeck's new translation of Darcy's full "The Public Fountains of Dijon," by the author herself, to a deserving student. We are happy to report that every student walked away with a prize again this year. The Division would like to thank the following organizations and individuals for donating prizes for the event, as well as the GSA staff (particularly Barb Mieras) for helping ship the many boxes from Boulder to Denver for the meeting.

Individual Donors

Mary Jo Baedecker
Barbara Bekins
Craig Bethke
Patricia Bobeck
Colin Booth
Ken Bradbury
Anne Carey
Frank Chapelle
Ralph Davis
Matt Davis
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Bill Simpkins
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Publishers

American Geological Institute
Cambridge Press
Elsevier-Academic Press
Geological Society of America
Lewis Publishers
McGraw-Hill
National Ground Water Association
National Academy Press
Prentice-Hall
Springer
U.S. Geological Survey
Wiley

Professional Organizations and Journals

Geological Society of America
GSA Hydrogeology Division
International Association of Hydrogeologists
National Ground Water Association
Environmental and Engineering Geoscience

Software Companies

Environmental Simulations
Environmental Modeling Systems
Golden Software
Haitjema Software
Hydrosolve
International Ground Water Modeling Center
Rockware
Waterloo Hydrogeologic

NGWA and GSA: Geoscience Collaboration in Action

by Vicki Kretsinger, AGWSE Chair

NGWA Co-Sponsors Three Sessions and the NGWA Darcy Lecturer at 2005 GSA Annual Meeting

Vicki Kretsinger

As an Associated Society of the Geological Society of America (GSA), the National Ground Water Association/Association of Ground Water Scientists and Engineers (NGWA/AGWSE) is pleased to co-sponsor three sessions at the 2005 GSA Annual Meeting and Exhibition, coming soon on October 16-19, 2005 in Salt Lake City, Utah. Co-sponsorship of these sessions by NGWA/AGWSE also furthers collaborative activities that benefit both organizations.

One of the co-sponsored sessions at the 2005 GSA annual meeting is "Groundwater Quality and Quantity Interconnections: The Effects of Natural and Anthropogenic Contamination on Groundwater Availability", co-convened by Mike Moran of the U.S. Geological Survey (USGS) and Vicki Kretsinger of Luhdorff and Scalmanini, Consulting Engineers. This session (T15 oral and poster [Session No. 68]) will focus on the interconnections between groundwater quality and quantity, including the effect that quality can have on the volume of groundwater that is effectively available for present and future human and ecological needs. A second session (T18), "Innovations and New Frontiers in Hydrologic Modeling," co-sponsored by GSA's Hydrogeology Division, NGWA/AGWSE, the US National Chapter of the International Association of Hydrogeologists (IAH), and GSA's Engineering Geology Division, has been organized by Frank Schwartz of Ohio State University and Motomu Ibarki of the University of Waterloo. This session will explore how models have grown from a mathematical curiosity to an indispensable tool for analysis of hydrologic systems. This session will also examine new developments in groundwater and hydrologic modeling, emphasizing innovations in theory, design, and data handling. The third session (T26), "Quantifying Controls on Microbial Reaction Rates in Subsurface Environments," co-sponsored by GSA's Hydrogeology Division, NGWA, and GSA's Geobiology and Geomicrobiology Division, is being convened by Barbara Bekins of the USGS, Eric Roden of University of Wisconsin, Madison, and Gary Curtis of the USGS. This session will discuss the significance of subsurface microbial reaction rates to modeling the fate of groundwater contaminants and quantifying global chemical cycles. The session will also include studies investigating controls on subsurface microbial reaction rates by direct and proxy methods.

NGWA's 2005 Darcy lecturer, Dr. Kip Solomon (professor in the Department of Geology and Geophysics at the University of Utah and the Director of the Noble Gas Laboratory and also first Vice Chair of GSA's Hydrogeology Division), will illustrate the basic concepts of using inert gas tracers along with case studies that describe their applications to groundwater flow problems in his lecture on "Inert Gas Tracers in Groundwater" on Monday October 17, 2005 at 5 pm.

Planning Underway for 2006 AGWSE Ground Water Summit

Many thanks to GSA's Hydrogeology Division as a co-sponsor of several activities that occurred at the new AGWSE annual technical conference, the "Ground Water Summit", launched April 17-20, 2005 in San Antonio, Texas.

Planning is now underway for the second annual AGWSE Ground Water Summit that will take place April 23-26, 2006 at the Henry B. Gonzalez Convention Center along the banks of the world famous River Walk in San Antonio, Texas. The Summit engages local, national, and international science partners to facilitate the exchange and dissemination of technical information and new science developments, allow a means for discussing policy and regulatory issues pertaining to groundwater, and promote goodwill among groundwater professionals worldwide. Highlights of the 2006 Summit include: guest speakers (including Deborah Bass, Deputy Project Scientist with the NASA Jet Propulsion Laboratory, who will enthrall attendees with a presentation on "Phoenix Mars Scout Mission and the Search for Extant Water Ice"), professional development courses, Darcy Forum, platform and poster presentations, distinguished lecturers (including 2006

NGWA Darcy Lecturer, Eileen Poeter, and, pending other scheduling and availability, the 2006 GSA Birdsall-Dreiss Lecturer), AGWSE Awards, field trips, student mentoring program, student project presentations, and student awards for platform and poster presentations.

The Summit includes 29 sessions with subject matter that ranges from more environmentally and emerging contaminant-focused topics to water resources systems analysis, management, and policy issues. Co-sponsors include the USNC/IAH, the Geological Society of America's (GSA) Hydrogeology Division, the Groundwater Resources Association of California (GRA), USGS, and the Illinois State Geological Survey. Additionally, field trip sponsors include the Edwards Aquifer Authority and the San Antonio Water System.

Call for Abstracts: Abstract instructions are posted on the NGWA web site on the Ground Water Summit Page at http://ngwa.confex.com/ngwa/2006GWS/summit/papers/index.cgi . Abstracts will be received until midnight (EDT) **November 18, 2005**.

Summit session details and other Summit information is provided at http://www.ngwa.org/e/conf/0604235095.shtml ; a few highlights follow.

2006 Darcy Forum

The Darcy Forum launched in 2005 at the first Summit was created to provide perspectives and insights by renowned panelists and prompt an exciting exchange among the panelists and Summit attendees. This year's topic is:

"What information is needed to better define groundwater resources and protect the quality of these resources for the future?"

The 2006 Darcy Forum panelists include:

- Michael Barcelona, Chair Chemistry Dept., Western Michigan University
- Scott Bair, Professor and Chair of the Dept. of Geological Sciences, Ohio State University
- Stephen Worthington, Worthington Groundwater
- Donna Myers, Chief, National Water-Quality Assessment (NAWQA) Program

2006 Summit Workshops and Courses

HYDROGEOLOGIC FIELD METHODS—STANDARDS AND GUIDES FOR THE COLLECTION AND ANALYSIS OF HYDROGEOLOGIC FIELD DATA
John E. Moore, adjunct professor Metro State College, Denver, Colorado; Michael Wireman, U.S. Environmental Protection Agency, Region 8

HYDROLYSIS: UNDERSTANDING & PREDICTING THE DEGRADATION OF ORGANIC COMPOUNDS IN WATER
Stuart Cohen, Environmental & Turf Services, Inc.

GROUNDWATER MANAGEMENT
Tim Parker, Schlumberger; Robert Mace, Texas Water Development Board

KARST
Geary Schindel, Edwards Aquifer Authority

SIMULATION/OPTIMIZATION (S/O) MODELING—WELL FIELD OPTIMIZATION IN WATER AND ENVIRONMENTAL MANAGEMENT
Richard Peralta, Water Dynamics Laboratory at Utah State University

The AGWSE Board welcomes continued Summit session and other event co-sponsorship by GSA's Hydrogeology Division. Check the NGWA web site at www.ngwa.org for Summit details. The AGWSE Board also extends many thanks to GSA for embracing continued opportunities for geoscience collaboration! We look forward to more opportunities to demonstrate the value of allied efforts.

Do you have an interesting idea for a short scientific article? Perhaps an opinion on a new policy or technique? Any exciting news in your professional life? Upcoming conference? An announcement of interest to the hydrogeological community? If so, why not publish it in ***The Hydrogeologist***? Send your submission ideas to feharvey1@unl.edu.

Poeter Named 2006 Darcy Lecturer

Dr. Eileen Poeter has been chosen as the 2006 National Ground Water Association (NGWA) Darcy lecturer. She is currently a Professor of Geological Engineering at the Colorado School of Mines and Director of the International Ground Water Modeling Center. Before entering academia, she worked for Golder Associates in the early 1980s and has continued to consult throughout her academic career.

Eileen Poeter

Poeter earned a B.S. in geology from Lehigh University in 1975, and an M.S. in engineering in 1978 and a Ph.D. in engineering science in 1980 from Washington State University. Her research focuses on groundwater modeling, parameter estimation (she is author of UCODE, a universal inversion code), multi-model evaluation, water resources evaluation, and evaluation of heterogeneous and fractured aquifers. She is part of the JUPITER (Joint Parameter IdenTification and Evaluation of Reliability) development team. JUPITER is an application-programming interface (API) intended to energize the science and technology of evaluating sensitivity, assessing data needs, estimating parameters, selecting/ranking models, and evaluating uncertainty. This API, and associated codes, is currently under development by the U.S. Geological Survey, in coordination with the U.S. Environmental Protection Agency to interface with their software modeling frameworks.

Poeter's lecture, "All Models Are Wrong: How Do We Know Which Are Useful?", details how the groundwater profession today is searching for appropriate approaches to developing conceptual models, evaluating which are useful, and describing the uncertainty associated with their predictions.

Formulation of a reasonable set of alternative conceptual models coupled with quantitative representation is critical to the process, but is unfortunately more difficult than numerical modeling as it must address the realm of human nature and judgment. In addition, the dense, opaque character of the subsurface that makes data acquisition expensive, causing the work to be accomplished with sparse, uncertain information, exacerbates the problem. Nevertheless, movements to meet this challenge are gaining momentum in the groundwater profession. Poeter's presentation will discuss currently available practical approaches to the problem in down-to-earth terms, as well as address future challenges.

Blowes *from page 6*

metals plague mining districts throughout the world. Without adequate control acidic, metal-laden drainage devastates river courses and contaminates aquifers. Acidic drainage results from the biologically mediated oxidation of sulfide minerals in mine workings and mine wastes, and the transport of the reaction products along groundwater and surface water flowpaths. Over the past two decades our understanding of the complex interactions between hydrogeology, microbiology, geochemistry and mineralogy has advanced significantly. At the same time, reactive transport models have evolved rapidly to a high level of sophistication, providing a framework for integrating these highly coupled processes. Combining reactive transport modeling with the results of detailed field and laboratory studies provides an unprecedented ability to predict the potential impacts of mining activities and mine-waste disposal facilities prior to closure. Our improved understanding of the causes of acidic drainage has led to the development of new approaches to mine-waste disposal, including the segregation and selective disposal of sulfide minerals in subaqueous repositories or in cemented paste backfill and co-disposing sulfide wastes with organic carbon to prevent sulfide oxidation and to promote sulfate reduction and secondary sulfide precipitation. At sites where acidic drainage persists new and often passive approaches for remediating contaminated surface water and groundwater are providing new opportunities to protect water resources.

This presentation describes conceptual models of the hydrogeochemical evolution of mine wastes and illustrates these conceptual models with examples from minesites throughout the world. I will describe approaches that can be used to understand and model the predominant physical and biogeochemical processes that control the extent and duration of contaminant release and provide examples of new techniques that are being developed to protect water resources from future contamination and to restore groundwater and surface water quality.

William Woessner's 2004-05 Birdsall-Dreiss Lecture Schedule

January 7	University of Delaware, Newark
January 13	University of Waterloo, Canada
January 24	UC Davis
January 28	University of Nevada-Reno
February 2	Texas AM
February 3	University of Texas
February 4	Baylor
February 7	University of Arkansas
February 9	University of Alabama
February 16	Northern Arizona University
February 17	University of New Mexico
February 18	New Mexico Tech
February 22	Southern Utah University
February 28	Atlanta USGS
March 1	Florida International Miami
March 2	University of South Florida
March 4	University of Tennessee
March 6	USGS Reston VA
March 7	Washington and Lee
March 8	University of Virginia
March 31	Wright State
April 1	Ohio State
April 4	College of Wooster
April 5	Kent State
April 6	Bowling Green
April 12	State of Washington Ground Water Meeting-Seattle
April 18	NGWA Ground Water Summit—San Antonio TX
April 21	Louisiana State University
June 22	Technische University Berlin , Germany
June 30	EAWAG Dubendorf, Switzerland
August 31	PNNL Richland, WA
September 1	Boise State
September 6	Iowa State University
September 7	University of Nebraska
September 8	University of Missouri
September 26	University of Alberta
September 27	University of Calgary
September 28	Stanford
October 4	Michigan State
October 6	University of Wisconsin-Milwaukee
October 7	University of Wisconsin-Madison
October 18	GSA Salt Lake City
October 27	MTAWRA Montana State

Final Scheduling being prepared

Report on Birdsall-Dreiss Fundraising

by Robert Ritzi

The Division membership has contributed $40,930 thus far in order to bolster the interest-bearing accounts which support the Birdsall-Driess Lectureship. This very positive response shows that our members highly value the Lectureship and are willing to help put an end to under-funded lecture tours in the future. These gifts will support the lectureship in-perpetuity. We hope more contributions are coming.

Most members who responded to the first phase of the fundraising campaign (started in late 2002) pledged to contribute $25 per year over four years. If you are one who made this pledge, we thank you for your contributions in prior years and for continuing to follow through on your pledge this year.

In 2004 an anonymous donor put up $20,000 in matching funds as a "challenge" to the former Birdsall-Dreiss lecturers. The former B-D lecturers have responded to the challenge generously generating $11,250 in pledges and contributions to be matched. We are still $8,750 away from taking full advantage of the opportunity. The deadline for pledges as part of this matching funds campaign is December 2005.

If you have not yet joined us in helping to support the Birdsall-Dreiss Lectureship, please do so now. Donations can be made in any amount and pro-rated over any number of years. Donations can be made through the GSA Foundation at: https://rock.geosociety.org/donate/donate.asp or by calling Joan Bell, GSA Foundation, (303) 357-1067.

When making a contribution, please clarify that you are contributing to the Birdsall-Dreiss Lectureship Funds. In reality there are two separate accounts (the Birdsall Fund and the Dreiss Fund), but in practice they are treated as one. They are listed separately on the Foundation's web page pull-down menu under "Where do you want your contribution to go?" You may make your full pledge to one or the other of these funds, or split it between them. Any of these approaches will have the identical, positive effect in supporting the lectureship. Thank you for your support!

Meinzer *from page 4*

"Groundwater flow in a bog fen complex". They are among the most frequently and consistently cited papers over the last twenty years.

The second phase represents a further step forward - now biological and biogeochemical processes are included such as the generation of methane and their influence on the flow behavior within the peat. These processes are described in Don's 1993 paper which he coauthored with Romanowicz and Glaser on the "Hydraulic reversals and episodic methane emissions during drought cycles in mires", and in his 1995 "Temporal variations of deep dissolved-methane". These two papers presented the evidence that methane is produced deep in bogs and can reverse hydraulic head gradients; hence, biological activity at the smallest scale can cause dramatic change in groundwater flow patterns. These observations led to the later Siegel et al. 2004 paper showing the isotopic effects of this phenomenon, and the following paper: Glaser et al. (2004), "Surface deformations as indicators of deep ebullition fluxes in a large northern peatland", illustrating that the very landscape moves up and down as a function of methane formation and ebullition—both of which profoundly change the hydrogeology of the peatland setting. This work strongly links hydrogeological processes to biological systems beyond simple water gain and loss caused by ET.

Don Siegel has the rare gift of combining field and laboratory work with analytical modeling in approximately equal proportions, which gives his work the credibility that is needed to launch new ideas. He has successfully shown in his work that to understand the totality of hydrogeology, hydraulic and the geochemical approaches have to be united and given equal weight, his recent work suggests that biological processes are equally important. He transcends parochial thinking and collaborates with colleagues from other disciplines, which is evidenced by the range of professional journals he publishes in. Don has also participated in various committees of the National Academy of Science, and he received the 2001 Distinguished Service Award of the Hydrogeologic Division, Geologic Society of America. Finally, Don has advised over forty-five MS and PhD students.

For his advancement of the science of hydrogeology significantly through research, publications, service and teaching Don I. Siegel is presented the 2005 O.E. Meinzer Award.

Congratulations Don from your Hydrogeology Division friends and colleagues!

Midwest Ground Water Conference Call For Abstracts

The Midwest Ground Water Conference returns to its place of origin, Urbana, Illinois, November 1-3, for its golden anniversary. It was first convened in 1956 by the Illinois State Geologic and Water Surveys to provide an informal venue for staff members from the surrounding states to get together to discuss topics of mutual interest. Over the years, the conference has grown to include more states and anyone who is interested in ground water. The venue has shifted to more formal presentations, but the conference still allows plenty of time for informal interaction among participants.

This year's schedule includes three high-profile speakers. Opening the conference on Tuesday afternoon will be our keynote speaker, Dr. Henry Vaux, Jr., speaking on "Our Growing National Water Problem: Is Research the Answer?" Dr. Vaux served as Chairman of the Water Science and Technology Board of the National Research Council between 1997 and 2001.

Wednesday morning will have a plenary session with Tom Prickett and Kevin McCray. Mr. Prickett, a pioneer in the field of ground water modeling, will present a 50-year history of ground water modeling, from the days before computers to the present. Mr. McCray, the Executive Director of the National Ground Water Association (NGWA), which includes approximately 10,000 ground water scientists and engineers in its membership, will be speaking about ground-water use in the Midwest.

This year's poster session will held in conjunction with a buffet dinner to allow participants ample time for interactions. The session will feature posters on data available from government agencies, but will also include other subjects. Exhibits from private companies, government agencies, and not-for-profit organizations will be present throughout the conference in the same room as all breaks and meals so that everyone has an opportunity to visit the vendors. For more information or to register, visit the conference website at http://midwestgroundwater.org.

Editorial / Letters To The Editor Page

Concerning Flux

I would like to bring to the attention of the hydrogeology community an ongoing problem in the published literature concerning the use of the term flux.

The Oxford English Dictionary supplies the following definition of flux for applications in physics:

> a. The rate of flow of any fluid across a given area; the amount which crosses an area in a given time; it is thus a vector referred to unit area. Also used with reference to other forms of matter and energy that can be regarded as flowing, such as radiant energy, particles, etc.

The primary flux that hydrogeologists use is the volume flux, with SI units of $m^3/(m^2\ s)$. Volume flux is often referred to as Darcy flux or average linear velocity. The use of Darcy flux is somewhat vague to people outside the hydrogeology field, and I would suggest that Darcy flux be carefully defined in publications as a volume flux. This would help tremendously in teaching the next generation of hydrogeologists that flux has a definite meaning and should not be tossed about haphazardly. This would also help greatly in differentiating water velocity from volume flux, which although both have units of length per time, have very different meanings. Given the definition of flux, heat flux is clearly the movement of joules across a unit area per time $J/(m^2\ s)$, leading to no confusion as to what is actually being discussed. It is then quite easy for students to understand that the product of water density times volume flux is the water mass flux, with SI units of $kg/(m^2\ s)$. The diffusive chemical flux, with SI units of $kg/(m^2\ s)$ as defined by Fick's first law, is another example that logically follows from the consistent definition of flux.

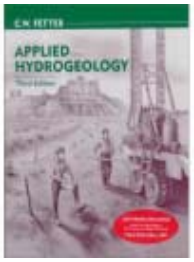
Examples of the type of misuse that are quite common include:

1) 'Flux rate' Saying flux already implies that something is moving across an area, therefore this expression is redundant and vague, like saying the 'velocity rate'
2) 'Darcy velocity' This term is very unclear. Although the SI units of volume flux reduce to m/s, this quantity is not a velocity.
3) Flowrate versus flux
   A. If one is talking about kg/s, this is a mass flow rate, not a mass flux
   B. If one is talking about m^3/s, this is a volumetric flow rate, not a volume flux.

3A and 3B are very important distinctions, because mass and volume flow rates are not vectors. Because the water mass, chemical mass, energy, and volume fluxes used in hydrogeology are defined as gradients of scalar fields (e.g. grad(head), grad(temperature), grad(concentration)), these fluxes are vectors, with both a magnitude and direction.

Dr. Philip H. Stauffer
Los Alamos National Laboratory

Change in the Domain Name for the Applied Hydrogeology Web Page



If you are using Applied Hydrogeology by Fetter as a text book please announce to your classes that the domain name for the associated web page has been changed to http://www.appliedhydrogeology.info.

Please direct any questions to cwfetter@aol.com.

C.W. Fetter
Emeritus Professor of Hydrogeology

Darcy Book Signing Planned For GSA

Patricia Bobeck will give a presentation on Henry Darcy and the Public Fountains of the City of Dijon on Tuesday October 18 at Session T7 A Tribute to Hans-Olaf Pfannkuch. She will display her English translation of Darcy's Public Fountains of the City of Dijon at the Combined Publishers Display on Sunday October 16 from 5:30 to 7:30 pm. Kendall Hunt Publishing Company will host book signings daily at the Kendall Hunt booth, according to the following schedule: Monday October 17: 12 noon to 1 pm and 4:30 to 5:30 pm, Tuesday October 18: 4:30 to 5:30 pm, & Wednesday October 29: 12 noon to 1 pm. Kendall Hunt has donated a copy of Darcy's Public Fountains of the City of Dijon to the GSA Silent Auction, to be held in the Exhibit Hall throughout the meeting.

Patricia Bobeck
Technical & Scientific Translator

BULLETIN BOARD

The American Geophysical Union (**AGU**) 2005 Fall Meeting will be held December 5-9, in San Francisco, CA. For information on sessions see the AGU web site at: [http://www.agu.org].

This year's National Ground Water Association's (NGWA) **Ground Water Expo** will take place in Cobb County, Georgia on December 13-16. For more information about the Expo, visit the NGWA webpage at [www.ngwa.org]

PLACE YOUR ANNOUNCEMENT HERE!

Contact the editor today at <feharvey1@unl.edu> to get your note on the Bulletin Board.

The American Water Resources Association (**AWRA**) GIS & Water Resources IV conference will be held on May 8-10, 2006 in Houston, Texas. Abstracts are due on January 16, 2006. You may submit abstracts via the webpage at [http://www.awra.org]

From The Editor...

Well, it's been four years and eight newsletters, and I've enjoyed every moment of it! I just wanted to send a brief note of gratitude to everyone who contributed an article, commentary, announcement, photo, etc., to this issue. The newsletter would not be possible without each of you. If you have comments, suggestions, or an idea for a column, or article, please contact me at <feharvey1@unl.edu>.

F. Edwin (Ed) Harvey, Editor
The Hydrogeologist

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