International Association of Hydrogeologists
U.S. National Chapter Newsletter

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- Joint International Convention, 8th IAHS Scientific Assembly and 37th IAH Congress, Hyderabad, India, September 6-12, 2009
- Geological Society of America (GSA) Annual Meeting, Portland, Oregon, October 18-21, 2009 - USNC IAH to Co-sponsor Four GSA Sessions and Three GSA Field Trips "Volcanoes to Vineyards: Living with Dynamic Landscapes"
- NGWA Groundwater Summit, Denver Colorado April 2010 – IAH CoSponsorship
- Pre-announcement for the IAHS Groundwater Quality 2010 (GQ10) Conference,13-18 June 2010 at ETH Zurich, Switzerland
- Toward Sustainable Groundwater in Agriculture Conference, June 15-17, 2010, San Francisco, CA
- Groundwater Resources Association of California (GRA)- An Associated Society of the Geological Society of America - 2009 and 2010 Events
- ANCHIALINE ECOSYSTEMS: Reflection and Prospects, 17-20 November, 2009; MALLORCA, BALEARIC ISLANDS, SPAIN
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- Announcing: *EISOLS—8th*, International Symposium on Land Subsidence October 17-22, 2010
- University of Oklahoma International WaTER Conference, and International Water Prize Award Ceremony, October 26-27, 2009, Norman, OK, USA
- **Summary Calendar of Upcoming Events and Deadlines**

IAH/US NATIONAL CHAPTER: EXECUTIVE COMMITTEE 2009-2012

Chairman:	**Michael Wireman**	**(US EPA) (303) 312-6719 wireman.mike@epa.gov**
Vice President, North America		
	Leonard F. Konikow	**(USGS) lkonikow@usgs.gov**
Past-Chair:	**John M. (Jack) Sharp**	**(University of Texas, Austin) jmsharp@mail.utexas.edu**
Secretary:	**Dave Kreamer kreamer@nevada.edu**	**(University of Nevada, Las Vegas) (702) 895-3553**
Treasurer:	**Victor Heilweil heilweil@usgs.gov**	**(USGS)**
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Editor's Note

Greetings IAH members! In our June 2009 newsletter, you'll find a variety of announcements and information on the ongoing activities of the U.S. National Chapter (USNC) of the IAH, information on upcoming meetings, reports on international collaborative efforts, a calendar of events, news on the new chapter website, and other information as well.

Just a note on the USNC IAH Board Meetings - some USNC IAH Board meetings are phone conference calls, but we have two meetings each year where board members, and the membership, gather. These meetings occur at the Annual Geological Society of America Meeting (this Fall it will be in Portland) and at the NGWA Ground Water Summit Meeting (Spring 2010 it will be held in Denver). All meetings are open to the membership and public and you are coordially invited to attend and participate. Anyone who would like to submit any appropriate articles or announcements for publication in future newsletters – just contact me at the telephone number or email address listed above. If you are new to IAH, we would like you to welcome your participation in IAH activities.

Lastly, a great deal of thanks and gratitude goes to the USNC Members and Board for their help, and advice on the newsletters. Their assistance and collegiality is greatly appreciated.

- **Dave Kreamer, University of Nevada, Las Vegas**

IAH Members at the April 2009 Ground Water Summit in Tucson
From left: Mario Lluria, Dave Kreamer, Bill Alley, Mike Wireman, Vicki Kretsinger Grabert, Jack Sharp, Manuel Ramon Llamas, Jim La Moreaux

ARTICLES AND REPORTS

Treasurer's Report June 2009

2009 is shaping up to be a very good year for the IAH US National Chapter (USNC). We have had 27 new/reinstated members join our ranks. And now that we are a 501-C3 non-profit organization, we have begun an endowment fund and benefited from several donations. With these donations and the proceeds from our membership dues (10% of the annual IAH membership), we are currently engaging in various philanthropic efforts, including the sponsorships of several student memberships and developing country memberships. In addition, individual members in the USNC have sponsored 12 developing country memberships this year. Some of this year's USNC funds are also being spent on advertizing of the USNC and the creation of an USNC website. **Vic Heilweil - USGS**

IAH - US National Chapter (USNC) Sponsorships

At the April 21, 2009 meeting of the Executive Board of the USNC – IAH, a decision was made to sponsor memberships for two colleagues from the Georgia Technical University in Tbilisi, Georgia. On April 2, 2009 Mike Wireman met with three Georgian IAH members in Tbilisi, including Professor Ucha Zviadadze, who will be the incoming Chair of the Georgian Chapter of IAH. Subsequently Professor Zviadadze has nominated two people to receive sponsorships from the USNC: Ludmila Glonti and Badri Mkheidze.

The Board also approved a sponsorship for Dr. Hayder Mohammed Abdul-Hameed of the University of Baghdad in Iraq. Dave Kreamer and Mike Wireman met with Dr. Abdul-Hameed in Baghdad during the week of April 10-15 and recommended this sponsorship to the Board on April 21. The USNC will pay the annual dues for these three colleagues for the next 5 years.

Dr. Hayder Mohammed Abdul-Hameed of the University of Baghdad

USNC Chair – Project in Georgia and Ukraine

Since 2005, USNC Chair Mike Wireman has been a co- project manager for a project entitled "*Regional evaluation of mining-related metals contamination, risks and innovative remediation technologies in STCU nations: Ukraine and Georgia"*. The project is being managed under the direction of USEPA's Office of Research and Development and was authorized and funded by the US State Department as part of the Bio-chem Redirect Program (BCRP). The BCRP is focused on non-proliferation, anti terrorism and de-mining activities in former Soviet Union countries. The project is being administered by the Science and Technology Center (STCU) in Kiev, Ukraine. The goals of this international collaborative science and technology research project are to: (1) characterize the extent and significance of mining-related metals contamination in two large priority mining-districts in the STCU nations of Ukraine and Georgia, and associated human health and ecological risks; and (2) determine what innovative characterization and remediation technologies are used, available, or being developed that could address these

problems.

Ukraine and Georgia have diverse mining industries that produce a wide variety of metallic and non-metallic minerals that account for a relatively large percentage of their economic output. At the end of the 1980s, Ukraine mined about 5% of the world's mineral product output. Although production has decreased significantly since the break up of the Soviet Union, Ukraine has significant reserves of major economic minerals, including iron, manganese, uranic ores, coal, titanium and zirconium. Ukrainian iron ore reserves are estimated at about 30 billion tons (6% of the world reserves), manganese ore reserves at about 2.5 billion tons (22.4% of the World reserves), coal reserves at about 46 billion tons, and pure uranium at about 42.6 thousand tons. *(National Report of the State of Environmental in Ukraine, 1999; 2004).* Regions with the significant large-scale development of mining include Donbas, Kryvbas, Peredkarpattya, and Naddnipryanshchina. Uranium mining has a long history in Ukraine and includes a large mining district near Zhoty Vody.

Georgia produces ferrous and nonferrous metals, ferroalloys, industrial minerals, and fuels. This production is second only to agriculture in terms of gross national product (Levine and Wallace, 2001). Other mined products include copper, iron ore, barite, lead and zinc, arsenic, and a range of secondary metals, including gold and silver. The country has been a major producer of manganese and has one of the richest manganese deposits in the world in the Imeriti district near Tchiatura in western Georgia. This manganese district represents about 5-6% of the manganese resources in the world. The manganese is processed at a smelter in nearby Zestaponi.

Although the mining and processing industries in these Newly Independent States (NIS) nations have had many economic and societal benefits, they also have had significant environmental impacts, including acid mine drainage (AMD) and metals contamination of groundwater, surface water, and soils, with associated increased risks to human health and ecological systems.

A manganese processing facility on River Kvirila

Members of sampling team being trained in use of multi probe

The privatization, future expansion and sustainability of the mining sector in both Ukraine and Georgia will require that the legacy environmental problems be addressed. This is a significant effort and will require financial, scientific and technical support from Western Europe and the United States. Metals contamination and human health and environmental risks from mining and processing activities in most NIS nations have not been studied due to the lack of resources and technical expertise. The human health risks and effects from metals contamination may be significant, particularly in these regions where the extent and significance of contamination is not known and may impact downstream areas with poor communities. Exposure routes can include multiple environmental media and involve ingestion, dermal exposure, and inhalation of particulate forms.

The specific objectives are:

1. Characterize the nature and extent of uranium contamination in the vicinity of the major uranium mines near Zhovty Vody and Dniprodzerzginsk cities and surrounding mining district (Kryvyi Rig basin). This is one of the most important mining and contamination areas in Ukraine.

2. Describe the geological, hydrologic, ecological, and human population characteristics of this area.
3. Analyze the spatial and temporal characteristics of metals in environmental media, waste rock, tailings, soils, groundwater, and surface water.
4. Determine the feasibility and most suitable site in this region for possible installation of a permeable reactive barrier (PRB) to treat contaminated groundwater.
6. Utilizing a bench scale pilot - determine the effectiveness of semi-passive PRB with inorganic filings and sulfate reducing bacteria in removing metals from contaminated groundwater at selected sites in Kryvyi Rig basin.

The specific aims of the project for the Georgian team are to:

1. Complete a rigorous environmental characterization of manganese distribution in soils, water, and mine waste in the vicinity of the manganese mine at Tchiatura.
2. Provide training in conducting environmental sampling and risk assessment.
3. Estimate the health risks of population exposed to manganese.
4. Perform a survey of human health in Georgia in regions exposed to manganese.
5. Raise public awareness on manganese-related health impacts and prepare guidelines for improving human health and environment.
6. Expand preventive measures to avoid harmful impacts of manganese on human health and the environment.
7. Prepare a report that can be used to support the involvement of the Georgia government (or others) in the eventual remediation of mining related contamination

Through collaboration with U.S. EPA scientists, this project will facilitate the redirection of NIS Bio-Chem institutes and scientists to address metals contamination and risks from one of the largest industries in these nations, and put their bio-chemical expertise to a very important and practical use.

References cited

Levine, R.M. and G.J. Wallace. 2001. The Mineral Industries of the Commonwealth of Independent States.
National Report of the State of Environmental in Ukraine, 1999.
National Report of the State of Environmental in Ukraine, 2004.

Reflecting on the Fifth World Water Forum

Michael E. Campana- aquadoc@oregonstate.edu

Background

The World Water Forum is a 'mega-conference' - over 33,000 attended this year - convened every three years by the World Water Council (www.worldwatercouncil.org), a private, nonprofit organization based in Marseilles, France, and the host country. The latter assumes most of the responsibility for organizing the event under the watchful eye of the WWC. Five fora have been held, starting in 1997: Marrakech, Morocco; The Hague, The Netherlands; Kyoto, Japan; Mexico City; and most recently (16-22 March 2009), Istanbul, Turkey (www.worldwaterforum5.org). The Sixth World Water Forum will be held in Marseilles or Durban, South Africa.

DSI (State Hydraulics Works) was the Turkish governmental agency given the task of organizing the 5WWF on behalf of the Turkish government. DSI had decided to limit the sessions to 100, encompassing 24 topics, developed from 6 themes, based upon two issues: 1) providing water for sustainable development; and 2) enabling mechanisms for development. These two issues merged into the single overarching theme, *Bridging Divides for Water*. This pyramid structure of sessions, topics, themes, and issues can be seen at:
http://www.worldwaterforum5.org/index.php?id=1897&L=%2527

This hierarchical approach worked well, although DSI had to be strict about allocating sessions and some Draconian decisions were no doubt made. However, 'side events' could be proposed outside this structure, and that mollified some participants.

Groundwater Arrives!

The big news is that groundwater was welcomed back into the hydrologic cycle. You didn't realize it was gone, did you? It was good to see groundwater begin to get its due at 5WWF. Previous WWFs had all but ignored groundwater. IAH members – Ramón Llamas, Alice Aureli, and Shammy Puri to name a few - have worked hard over the years to rectify this shortcoming. IAH members Ramón Llamas, Willi Struckmeier, Bill Alley, Shammy Puri, Alice Aureli, and I played prominent roles in the various groundwater and transboundary water sessions.

At one session in which I served on a panel, questions directed towards the panelists were about 90% on groundwater. One of my fellow panel members passed me a note inquiring if I had packed the audience (I had not). An acquaintance told me that groundwater was also a topic of discussion at the ministerial-level meetings, to which I was not privy. That's a very good sign; if ministers and politicians are aware, then our message is starting to penetrate the political fog. [Note: I have posted some of the presentations made at these sessions on my WaterWired blog: http://aquadoc.typepad.com/waterwired - check the posts for 20, 22, and 25 March and 2 April.]

Suggested 6WWF Sessions

I am certain that the attention given to groundwater will again manifest itself at 6WWF (in Durban, South Africa, I hope!). But I don't necessarily want to see a bunch of separate sessions on groundwater. That would be self-defeating, and a return to the days when the hydrologic cycle was compartmentalized. Insofar as possible, I want to see groundwater fully integrated into a variety topics. I envision sessions on:

- Case studies of Integrated Water Resources Management (IWRM) in groundwater dominated basins
- Applications of IWRM to systems with aquifers underlying multiple surface water basins
- Improving IWRM to better consider groundwater reservoirs
- Effects of climate change on groundwater reservoirs
- Transboundary surface water - groundwater basins
- Groundwater reservoirs as storage systems
- Role of small, hydrophilanthropic organizations in alleviating the world's water and sanitation issues

Random Thoughts

I especially want to acknowledge and thank Ahmet Sargin of **DSI**, with whom I worked very closely. He was wonderful organizer and a 'true believer' in groundwater.

I was very disappointed that the **Ministerial Statement** did not recognize a human right to water. It did recognize that water was a 'basic need.' How profound!

I worry that the world's economic troubles will encourage countries to turn further inward and be less accommodating to their neighbors. Perhaps conflict over water could result. A greater likelihood is that developed countries will reduce the aid they provide to developing countries. I heard an African say that to reach the water, sanitation, and hygiene Millennium Development Goals by 2015 requires $34.5B per year. That is *not* a lot of money - really. Will we step up? Or will 2015 arrive indistinguishable from the present?

The world's economic woes could provide a catalyst for rethinking the way we do things. We humans seem to respond better to crises; perhaps some good can come out of all this in terms of the way we manage water and address water issues.

Was 5WWF Worth It?

Some have questioned the utility of "water megaconferences". Are they worth it? In this time of global warming and concern over GHG emissions do we really need something like the World Water Forum? Does it really advance the discussion on water and related issues? I say "Yes!"

The 5WWF was worth it in the sense that it kept water and related issues on the world's agenda, attesting to their importance. It is all too easy to forget that too many of our fellow global citizens do not have access to clean water and sanitation. It's also easy to forget that climate change is impacting our water resources and could exacerbate conflict within and between countries. So we need to be 'poked in the eye' every so often and reminded of these things. May the year 2012 bring some real good news in Durban. I'm optimistic.

IAH-USNC Heads Outback

Two USNC members of IAH are assisting the Australians with groundwater research at Flinders University in Adelaide, South Australia. They are working on an Australian National Water Commission project managed by Dr. Andrew Love on "Allocating Water and Maintaining Springs in the Great Artesian Basin." Brad Wolaver, who recently finished his Ph.D. with Jack Sharp at The University of Texas at Austin, is a postdoctoral researcher focusing on spring flow hydraulics, the Dalhousie Springs complex, and ephemeral stream recharge. Todd Halihan is on a sabbatical year from Oklahoma State University and is focused on the southern springs near Lake Eyre.

The Great Artesian Basin covers approximately 20 percent of the Australian continent and provides sole source water for arid central Australia. The aquifer system is unique because of extraordinarily old water (i.e., residence time up to 2 million years). Long flow paths bring water over 1,000 kilometers from eastern Australia recharge areas to discharge zones in central Australia. Natural discharge from the Great Artesian Basin is through thousands of springs – some that have flowed for hundreds of thousands of years. These desert springs provided water for Indigenous Peoples, guided European exploration, and harbor unique endemic species. While western Great Artesian Basin modern recharge is essentially zero, the aquifer system is the sole water supply for an expanding mining sector, livestock operations, and Outback communities. Overuse of the resource in the eastern Great Artesian Basin resulted in head declines over 100 meters in highly exploited areas and dried many springs.

Brad Wolaver is conducting a spring flow hydraulics analysis to understand the effects of pressure decline from pumping on springs in the western Great Artesian Basin to ensure sustainable groundwater development. The Dalhousie Springs complex discharges approximately 90 percent of South Australian Great Artesian Basin spring flow. At Dalhousie, Brad is using hydraulics, geochemistry, environmental tracers, and geophysics to understand the groundwater source and geologic mechanisms controlling spring locations. Brad is also using land gravimetry to estimate groundwater recharge during a decadal flood event on the ephemeral Finke River – a potential groundwater source for the Dalhousie Springs complex.

Todd Halihan has helped with program management for the first year of the project as well as conducting hydrogeophysical research. Most recently, Todd, Brad, and other project members collected electrical resistivity imaging data on several mound springs in the southern Great Artesian Basin in order to understand spring source water and mound spring formation processes. Todd is also developing conceptual models for mound spring hydraulics.

Flinders University is also establishing a national center for groundwater research and training. Numerous Ph.D., postdoctoral, and sabbatical research opportunities are available. Please contact Brad Wolaver at brad.wolaver@flinders.edu.au for more information on the project or other research opportunities available.

From left: Todd Halihan (Oklahoma State), Dan Wohling and Volmer Berens (South Australia Department of Land, Water, Biodiversity, and Conservation), and Brad Wolaver (Flinders University) at Beresford Spring Complex.

IAH – USNC in Baghdad

IAH - USNC Chair Mike Wireman and Secretary Dave Kreamer, along with several Iraqi scientists and engineers, recently presented a five-day short course in Baghdad, Iraq on "Remote Water Quality Monitoring" through the U.S. Civilian Research and Development Foundation (CRDF) on April 12-16, 2009. The mission of the CRDF is to assist training of former weapons scientists and engineers, or those who have the potential to become involved in weapons development, and to facilitate their transition to environmental restoration and remediation activities. The training was attended by professionals from the Iraq Ministry of the Environment. The course went from a general discussion on surface and groundwater hydrology, to Iraq's specific water quality challenges, to specific strategies and techniques for water quality monitoring. The last two days of the course were hands-on instruction in the use of water quality multi-probes, including their use, placement, calibration, and data downloading. The Iraqis were eager to learn and very engaged in the water quality issues that were discussed.

Participants in the April 2009 "Remote Water Quality Monitoring" training in Baghdad.

IAH USNC is Developing a New Website!

Vicki Kretsinger Grabert is leading the effort to establish an IAH USNC website. This includes a home page, an "about" page, an events page, a membership page, a publications page, and an education page. Vicki is looking for other input on the draft website content , including ideas / opinions about adding educational information from, for example, the USGS, IUGS, UNESCO, and GSA to establish cross connections with other groups even if it is just links. The website will evolve and change - particularly pages like the events page.

The Earth Portal

According to a recent E-Bulletin of the International Union of Geological Sciences, the Earth Portal (http://www.earthportal.org) provides a comprehensive resource for timely, objective, science-based information about the environment. The Earth Portal has three components: The Encyclopedia of Earth, The Earth Forum, and The Earth News (a weekly newsletter that you can receive free of charge http://www.earthportal.org/news/). "Water" is one of their "hot topics." They presently also have a "featured article" on the nitrogen cycle.

New Blog Added to International Water Law Project Website

Gabriel Eckstein of Lewis and Clark Law School announced that he recently added a blog to his International Water Law Project website. The blog is an effort to consider and comment on the most interesting and significant international water issues and developments of our times. The postings are meant to be somewhat restricted to international and transboundary water law and policy. You can find a link to the blog at the top right of every page of the International Water Law Project website, or simply bookmark this direct link: http://internationalwaterlaw.org/blog/

New York Times Article - Demand for Hydrologists to Grow

A March 8, 2009 article in the New York Times, written by Eilene Zimmerman and entitled "Hiring in Hydrology Resists the Slump", quotes Bureau of Labor statistics that predict that demand for hydrologists will grow 24% from 2006 to 2016, much higher than the national average. The article mentions effort in water quality, and water supply particularly with regard to concerns about climate change. The article can be found at http://www.nytimes.com/2009/03/08/jobs/08start.html?ref=earth

New Book on Groundwater Resources

Neven Kresic has published a new book entitled "*Groundwater Resources*" through McGraw-Hill Publishers. The publisher bills it as "An All-Inclusive Guide to Efficient, Cost-Effective Management of Groundwater Resources". The short description from the publisher indicates, "*Groundwater Resources* is a one-stop guide containing information needed to succeed in groundwater development and management projects. It covers virtually every aspect of the subject and includes the following nine chapters: Global Freshwater Resources and Their Use; Groundwater System; Groundwater Recharge; Climate Change; Groundwater Quality; Groundwater Treatment; Groundwater Development; Groundwater Management; and Groundwater Restoration." The publisher's description also includes that it is: "Packed with hundreds of illustrations and photographs, this expansive guide (852 pages) reviews both established and innovative aquifer restoration techniques and technologies, including the control and remediation of contaminant sources and groundwater contaminant plumes" and that it has, "valuable information regarding resource augmentation, the engineering necessary for resource development, and building comprehensive databases for efficient, cost-effective resource assessment." The book "includes topics rarely covered by hydrogeology books such as value and price of water and drinking water treatment."

U.S. Civilian Research Development Foundation Solicits Placement of Iraqi Engineers in the Private and Public Sectors

The Iraqi Engineer Enhancement Program (IEEP) is soliciting placement of Iraqi engineers in the private and public sectors as part of an effort to expand the skills of Iraqi engineers. The IEEP is a public-private partnership, focused on increasing Iraqi professional and technical capacity while promoting infrastructure and workforce development. This program builds on the success of the Iraqi Virtual Science Library (IVSL)[1] as a capacity building tool for Iraqi scientists and engineers.

Engineers from ministries, university faculty, and small businesses are eligible to participate in 3-6 month fellowships in both the public and private sectors. Fellows have the opportunity to learn project and program management skills, understand western business culture, and gain modern technical and professional skills. Upon their return to Iraq, ministry engineers will be positioned to assist with reconstruction, provide a cultural and professional bridge between industry and the Iraqi business community, have a better understanding of governmental practices, and contribute to the developing economy in Iraq. University faculty will be positioned to teach best practices from the US public and private sectors to their students, enhancing Iraq's future engineering capacity. This model of providing teachers with modern engineering curricula will extend the benefits of this program beyond those who participate as fellows. Engineers from Iraqi firms will be better positioned to contribute to reconstruction efforts, building the economy, and working as a partner with US and multinational firms.

Existing Need: Engineers are crucial in the reconstruction of Iraq's infrastructure and economic recovery. Iraqi engineers must have the opportunity to expand their skills and to overcome multiple barriers to successful employment. Sanctions and conflict have isolated Iraqi engineers from technology and practice advances since the early 1990s.

Early Results: In 2008, five fellowships were awarded in the first year of the program. All five fellows completed their fellowships and returned home to share their new knowledge with their colleagues and communities. An Iraqi professor of engineering redesigned his university's curriculum and is establishing a partnership with his host university in the United States. A young engineer placed at the U.S. Army Corps of Engineers Headquarters is now the primary liaison with the U.S. Army Corps of Engineers for his company. Another engineer has returned to update the construction codes on bridges to reflect 21st century best practices and started multiple collaborations to re-enter the world of scientific publishing after a 15-year hiatus. A lecturer from the University of Baghdad worked with one of the national laboratories in the United States, researching security concerns in network protocols and cryptography enabling him to upgrade his curriculum. Finally, a young Iraqi woman from the Ministry of Construction and Housing worked with private engineering companies in Kansas and New York on both design and construction projects.

Program Specifics: Engineers will spend 3-6 months working either in industry or the public sector. Two possible types of placements are available: 1) private sector internships with on-the-job training, and, 2) placements within the U.S. public sector at government agencies or universities. Private sector firms will provide technical and professional development. Hosts in the public sector will provide professional development, including experience in procurement, contract administration, project oversight, and standards. Fellowships are tailored to include focused attention to specific engineering requirements and general management skills (e.g., project management, procurement, and contracting). All participants are required to return to Iraq upon completion of the program to avoid further loss of intellectual capacity.

The program will be a true public-private partnership and require cost-sharing by all parties. During the continuation of the pilot period the U.S. Government and the Civilian Research & Development Foundation (CRDF) will

[1] The IVSL is a virtual library providing millions of articles through a web-portal for University and Ministry associated scientists, faculty and students in Iraq developed and supported by a public-private partnership. https://ivsl.org

facilitate visas, transportation, and an orientation program in Washington. Engineering firms and public institutions serving as hosts will provide lodging and per diem for the participant and cover any related costs. The Iraqi government and individual Iraqi firms will continue to provide salary support for fellows for the duration of the fellowship. In addition, the fellow will retain their position upon return.

Engineers will be recruited through a multiphase competitive process. A call for applications from engineers will be distributed in 2009, utilizing both Iraqi and US collaborators in both the public and private sectors, to assure a wide dissemination of the announcement. In addition to their application and CV, applicants will be required to provide a letter from the ministry, university or small business certifying continued salary support and continued employment following the fellowship. A panel of representatives from the US Government, industry, professional societies and academia will select candidates for interviews. Interviews will be conducted in the region by the US Government, industry, and professional society representatives. Finally, selected candidates will have to pass a security check. In the 2007 call for applications, 18 complete applications were received.

The selection process will assure that fellows have the technical skills and English language fluency to maximize the fellowship experience. The interview will be used to assess the likelihood that the fellows will return to Iraq at the completion of their fellowship. Metrics for fellow selection will also be designed to assure a balance of ethnic, gender and religious groups. This program is being implemented in phases. This year will be a second pilot program with a small number of engineers (6-10). Supplementing this effort, and equally important, will be the continued development of Iraq-based training opportunities for engineers, both virtual and in-person. The IVSL can host additional virtual instruction for Iraqi engineers supplied by private sector firms and public institutions, such as instructor led remote courses.

Stakeholders: This program was conceptualized by a group of engineers and US Government representatives brought together through the AAAS Science Fellows program. The program is currently funded by the US Department of State and Department of Defense and administered by the US Civilian Research & Development Foundation. In addition to engineering firms there are many engineering related stakeholders for this program including professional societies (e.g., American Society of Civil Engineers, Society of American Military Engineers) and nongovernmental organizations (e.g., Engineers Without Borders), who may provide additional support and/or placements for Iraqi engineers. UNESCO (United Nations Education Science and Cultural Organization) will also sponsor a fellow through this program.

Industry: US engineering firms with interest in operating in Iraq would have the opportunity to work with selected Iraqi engineers. By working in the US, the Iraqi engineers will also be immersed in the corporate culture of the firm. At the end of the program, the participating firms will have an experienced engineer to work on reconstruction projects at a level of competence exceeding the local labor pool, increasing the company's competitive advantage for securing future contracts from Iraqi ministries. It will also provide relationships for future business partnerships with Iraqi firms. The company will also be making a philanthropic contribution to the reconstruction of Iraq.

Iraqi Engineers: Participants will benefit from advanced professional development opportunities in US firms, and public sector institutions. This will enhance reconstruction efforts, contribute to the economic development and improve the quality of engineering education in Iraq's universities. In addition, program participants will develop an understanding of US standards and practices and their value in the design and execution of infrastructure projects. This understanding will allow the participant to serve as a cultural interpreter for future business relationships between Iraqi and US firms.

Contacts: Laurel Kemper, CRDF, 703-526-2326, lkemper@crdf.org; Christiana Hoffman, CRDF, 703-526-6752, choffman@crdf.org; William McCluskey, OSD/DoD, 703-861-4166, ext 103, William.McCluskey@osd.mil; Mike Sanio, American Society of Civil Engineers; 703-295-6116; msanio@asce.org

New Newsletter on Transboundary Water Issues

Todd Jarvis, Associate Director of the Institute for Water and Watersheds at Oregon State University announced a new newsletter on transboundary water issues. The newsletter, released through NGWA, can be found at: http://www.ngwa.org/sig/transboundary/newsletters.aspx
Todd also has a four minute video which is his summary of The Currents of Power experience in Bergen, Norway. It can can be accessed at the following link: http://oregonstate.edu/media/tkllq

Conferences

Joint International Convention
8th IAHS Scientific Assembly and 37th IAH Congress

Hyderabad, India
September 6-12, 2009

Water: A Vital Resource Under Stress -- How Science Can Help

As reported in the last newsletter, the International Association of Hydrological Sciences (IAHS) and the International Association of Hydrogeologists (IAH) will hold the Joint International Convention of the 8th IAHS Scientific Assembly and the 37th IAH Congress in Hyderabad, India during September 6-12, 2009. IAHS and IAH welcome the world scientific and professional community and policy makers, essentially all persons comprising the world 'hydrological community', to participate in this event. The Convention's overall theme emphasizes "Water: A vital resource under stress--How science can help," while IAH sessions concentrate on "Hydrogeology of Hard Rocks" with four comprehensive symposia.

The Joint International Convention covers a myriad of subjects and scientific approaches to address unprecedented water resources stresses. Globally, we face future challenges and risks emerging from existing water scarcity, contamination (including salts, synthetic chemicals, and microbiological concerns), and a burgeoning population that further stresses an already stressed resource despite global efforts to implement conservation and management strategies. In developing nations, these issues warrant special attention. Climate change contributes to new dilemmas either directly or indirectly, affects every aspect of the hydrologic cycle, and results in uncertain water resources availability. Groundwater stresses have been magnified in hard rock terrain due to the subsurface heterogeneity and groundwater's dynamic occurrence and behavior in this environment. The above challenges exemplify the need to implement appropriate scientific approaches in coordination with local and national policymakers and the community at large.

The Joint International Convention in Hyberadad, India provides an excellent opportunity and forum for the world hydrological community to interact, discuss their experiences and issues of mutual interest, deliberate these complex issues in an exotic location, and also initiate joint research programs to address varied hydrological problems of local and global importance. The Convention location also provides a model setting as, similar to elsewhere across the world, the Indian subcontinent's diverse hydrogeological and hydrometerological conditions present many new and also unresolved hydrological problems. Additional information about the Joint International Convention is posted at http://www.appliedhydrology.org/iahs/iahshome.view.

2009 Geological Society of America (GSA) Annual Meeting
Portland, Oregon
October 18-21, 2009

USNC IAH Co-sponsor of Four GSA Sessions and Three GSA Field Trips
"Volcanoes to Vineyards: Living with Dynamic Landscapes"

As announced in the last newsletter, the United States National Chapter (USNC) of the International Association of Hydrogeologists (IAH), as an Associated Society of the Geological Society of America (GSA), is pleased to co-sponsor three sessions and three field trips at the 2009 GSA Annual Meeting and Exhibition in Portland, Oregon on October 18-21, 2009. This year's overall conference theme "Volcanoes to Vineyards: Living with Dynamic Landscapes" evokes visions of geoscapes ranging from the clusters of Cascade volcanoes near Portland and basalt lava flows that spilled down the Columbia River to the stunning vistas in Oregon's wine country. The sessions and field trips co-sponsored by IAH certainly represent opportunities for varied, informative, and palate-stimulating hydrogeologic experiences. The IAH – USNC will hold a Board meeting at the conference which is open to all members and the public.

SESSION T8 AND FIELD TRIPS **Terroir — The Relationship of Geology, Soils, Hydrology, and Climate to Wine: A Special Tribute to George Moore**

The topical session titled "Terroir and a Tribute to George Moore" is being co-convened by Scott Burns at Portland State University, Alan Busacca at Washington State University, Kevin Pogue from Whitman College in Washington, and Vicki Kretsinger of Luhdorff & Scalmanini, Consulting Engineers. The session co-sponsors include the USNC IAH, GSA Hydrogeology Division, GSA Quaternary Geology and Geomorphology Division, GSA Engineering Geology Division, GSA Cordilleran Section, and the Groundwater Resources Association of California.

Contemplation of a session on terroir began before George Moore died in a tragic car crash on October 4, 2007. He retired from the United States Geological Survey in 1987; and, at the time of his death, he was a courtesy professor of geology at Oregon State University (OSU). He implemented the famous Condon Lecture series that brought renowned earth scientists to Corvallis to present public lectures in honor of Thomas Condon, Oregon's first geologist. George's intrigue of the influence of soils and geology and the overall influence of terroir on wines produced in Oregon led to writing his book titled *Oregon's Phenomenal Wine: the Subsoil of Geology*, soon to be published by the OSU Press.

In concert with the many interpretations of "terroir", the tribute session embodies many geoscience subjects, including the wealth of data and analyses that vintners utilize when producing their wine and the many factors that influence their final product. What *is* terroir? The concept developed through centuries of French winemaking denotes the special characteristics that geology, soils, hydrology, and climate impart on the grapes grown in a

specific region. The term also includes the linkages between the vintner and how the vintner interfaces with Earth's processes to produce wines with a "sense of place."

IAH is also co-sponsoring the three 1-day field trips being organized by Scott Burns. Before the meeting, on October 16 (**Trip 416. Terroir Tour of the Northern Willamette Valley I)** and 17 (**Trip 424. Terroir Tour of the Northern Willamette Valley II)**, two field trips (each visiting different wineries) occur in the Northern Willamette Valley. This is one of the best places in the world to taste the terroir; the distinguishing characteristics of the area's major bedrocks (Columbia River Basalts and marine sediments) and their associated soil groups result in distinctly different wines. The third trip occurs on October 22 to the Columbia River Gorge (**Trip 431. Terroir Tour of the Columbia Gorge)**. Here, climate plays a huge role in the difference in the terroir experienced in the Gorge compared to the Northern Willamette Valley.

SESSION T18 Applied Hydrogeology: In Honor of Dr. Roy Williams

The topical session "Applied Hydrogeology: In Honor of Dr. Roy Williams" is being convened by Gerry V. Winter of the Idaho Department of Environmental Quality and Neil Coleman of the U.S. Nuclear Regulatory Commission. The session co-sponsors include the GSA Hydrogeology Division, the USNC IAH, the International Mine Water Association, and the GSA Geology and Health Division. The memorial session in honor of Dr. Roy Williams, founder of the Hydrology Program at the University of Idaho, is offered to provide past and current students and former associates and friends of Dr. Williams an opportunity to provide a brief retrospective on how Dr. Williams or the Hydrology Program influenced their lives and an example of applied hydrogeology they performed during their career. Potential topics include groundwater flow and/or transport modeling, interpretations of groundwater hydraulics, mining hydrology, radioactive waste disposal, groundwater monitoring, groundwater remediation, geothermal resources, applications of statistics to hydrogeology, groundwater/surface water interactions, and hydrochemistry.

SESSION T20 Contaminant Hydrogeology: Contaminant Fate and Transport in Geological Systems

The topical session "**Contaminant Hydrogeology: Contaminant Fate and Transport in Geological Systems"** is being convened by Lois Ongley of the Unity College in Maine. The session co-sponsors include the GSA Hydrogeology Division, the GSA Geology and Health Division, and the USNC IAH. Contamination of ground water by anthropogenic compounds including pharmaceutical metabolites and by naturally occurring substances is ubiquitous. Around the world, as aquifers become increasingly relied upon for potable water, the need for the field and experimental study and characterization of such systems has not abated. Papers on contaminant hydrogeology from students and international attendees are especially encouraged.

SESSION T 25 Groundwater in Ecosystems: Effects of Physical, Chemical and Biological Processes and Feedback Mechanisms

The topical session "Groundwater in Ecosystems: Effects of Physical, Chemical and Biological Processes and Feedback Mechanisms" is being convened by Randall Hunt of the US Geological Survey, Wisconsin Water Science Center, Middleton, Wisconsin and Masaki Hayashi of the University of Calgary, Canada. The session co-sponsors include the GSA Hydrogeology Division and the USNC IAH. As described elsewhere in this issue, Randall Hunt is one of the co-authors of the 2009 *Hydrogeology Journal* theme issue that addresses groundwater's importance to ecosystems.

This session focuses on methods for characterizing groundwater-ecosystem interaction, the effects of human activities on this interaction, and potential ramifications for resource sustainability. Groundwater is a connector, not just in the aquifer itself, but within, across, and between surface waters and many terrestrial ecosystems. Where the water table intersects or comes close to the land surface, contributions of water and nutrients to plant roots and

aquatic ecosystems can be critical to their persistence. Moreover, many societal questions are not direct hydrogeological questions ("should the drawdown be limited to 0.1 m?"), but they are often ecohydrological questions ("will this pumping rate harm the birds/bugs/plants that are valued by society"). This session will highlight and explore the linkages between groundwater and ecosystems will provide perspectives on the state-of-the-science of current work, offer examples of ecohydrology that can be used by others in the future, and help increase the relevancy of our science.

GSA Abstracts Due August 11, 2009

Abstracts for Sessions T8, T18, T20, and T25 must be submitted electronically on GSA's web site at www.geosociety.org (instructions are posted at the site) by August 11, 2009 **(11:59 pm Pacific Time). Electronic abstracts will be archived and remain searchable on the site for at least two years. For more information about Session T8, contact Scott Burns at burnss@pdx.edu, Vicki Kretsinger at vkretsinger@lsce.com, Kevin Pogue at pogue@whitman.edu, or Alan Busacca at busacca@mail.wsu.edu. For further information about Session T18, please contact Gerry V. Winter at Gerry.Winter@deq.idaho.gov or Neil Coleman at nmc@nrc.gov. For further information about Session T20, please contact Lois Ongley at loisongley@earthlink.net, and for more information about Session T25, contact Randall Hunt at rjhunt@usgs.gov or Masaki Hayashi at hayashi@ucalgary.ca.**

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national ground water association

2010 NGWA GROUND WATER SUMMIT

The Groundwater Community – Providing Water for a Thirsty World

Denver, Colorado - April 11-14, 2010

The 2010 National Ground Water Association (NGWA) Ground Water Summit titled "Water for a Thirsty World" will occur April 11-14, 2010 in Denver Colorado. The International Association of Hydrogeologists (IAH) will be among the co-sponsors of this event. More information and a call for abstracts will be released this summer.

The Spring 2010 IAH – USNC Board meeting will be held at this conference and will be open to all members and the public. Sessions on international hydrogeology will be featured at this meeting. Both oral and poster presentations will be included in the conference, as well as several featured speakers and panels, field trips, short courses and the Darcy, McEllhiney, and Birdsall-Dreis Lectures. For more information contact NGWA (http://www.ngwa.org) for updates, or Co-chairs Dave Kreamer (kreamer@nevada.edu), and Eileen Poeter (epoeter@mines.edu)

GROUNDWATER QUALITY 2010

Pre-announcement for the IAHS Groundwater Quality 2010 (GQ10) Conference:

Be aware! Groundwater Quality 2010 will be held 13-18 June 2010 at ETH Zurich, Switzerland. An exciting program of speakers, posters, interaction and a technical tour is planned. The main theme is "Groundwater quality management in a rapidly changing world". Keynote speakers so far are:

- Barbara Bekins (USGS)
- Georgia Destouni (Stockholm University)
- Wolfgang Kinzelbach (ETH Zurich)
- Ed Sudicky (University of Waterloo)

Subthemes:

• Groundwater quality under conditions of global / climate change
• Processes at groundwater-surface water interfaces
• Biogeochemical interactions
• Groundwater ecosystems
• Urban hydrogeology
• Emerging chemicals of concern
• Geogenic contaminants including radio isotopes
• Non-aqueous phase liquids (LNAPLs and DNAPLs)
• Groundwater at complex mega-sites
• Natural attenuation
• Innovative clean-up technologies
• Protecting and managing groundwater quality
• Policy and controls on groundwater quality
• Vadose zone processes
• Salinisation of groundwater resources
• Groundwater scarcity
• Groundwater quality issues in aquifer storage and water re-use

We hope you set aside the date to attend GQ10. A web page and call for abstracts (due October 2009) will be available soon.

Prof. Dr. habil. Mario Schirmer
Eawag - Swiss Federal Institute of Aquatic Science and Technology
Chairman of the GQ10 Organising Committee
E-mail: Mario.Schirmer@eawag.ch

Toward Sustainable Groundwater in Agriculture –
An International Conference Linking Science and Policy

June 15-17, 2010
San Francisco, CA

Organized by
the Water Education Foundation and the University of California Davis

This international conference brings together leading scientists, policy analysts, policy and decision makers, and agricultural and environmental stakeholder groups to define and highlight the science, challenges, and potential policy solutions in agricultural groundwater resources management and groundwater quality protection that will provide a sustainable future at regional, national, and global scales.

Conference speakers will be featured in general assemblies and also concurrent sessions that include the following issues and topics:

- **Socio-Economic Aspects of Agricultural Groundwater**
- **Climate, Energy, and Agricultural Groundwater**
- **Agricultural Groundwater Quality and Contamination**
- **Conjunctive Use, Agricultural Water Use, and Groundwater Management, Policy, and Regulation**
- **Groundwater at the Agriculture-Urban Interface**
- **Groundwater Linkages to Surface Water and Estuaries**

Abstracts
Abstract submittal is open from September through December 31, 2009.
For updates, please check: http://www.ag-groundwater.org .

Cosponsors
Groundwater Resources Association of California (GRA), National Ground Water Association, and the **International Association of Hydrogeologists**. Other cosponsors will be added.

More Information
For more information, check the University of California Groundwater Cooperative Extension Program website at http://groundwater.ucdavis.edu/calendar.htm or http://www.ag-groundwater.org for conference updates.

Groundwater Resources Association of California (GRA)

An Associated Society of the Geological Society of America

2009 and 2010 Events

by Vicki Kretsinger

The USNC/IAH has been a cooperating organization for a number of Groundwater Resources Association of California (GRA) events. As members of a cooperating organization, IAH members enjoy GRA member rates to attend these events.

IAH members are welcome to express their interest in assisting with the planning of 2009 or 2010 events or participating as a session organizer or presenter by contacting GRA. Learn more about GRA, or the programs in which IAH is participating with GRA as a cooperator, on the GRA web site at http://www.grac.org , or by telephone, 916-446-3626.

Upcoming GRA Conferences

Micropol and Ecohazard 2009

6th International Water Association/GRA Specialized Conference on Assessment and Control of Micropollutants/Hazardous Substances Control in Water
Co-Sponsored by IAH
June 8-10, 2009; San Francisco, CA
Web Page: http://www.grac.org/micropol.asp

This three-day international event will profile the latest developments in the detection, risk assessment, treatment, and regulation of micropollutants and hazardous substances in water systems. The focus of the conference is the fate, effects and treatment of micropollutants in natural and engineered systems. In addition to concurrent oral sessions, poster sessions and social activities we are pleased to have several of the world's leading experts as plenary speakers: Professor Damia Barcelo, IIAQAB-CSIC, Barcelona; Professor Martin Jekel, Technical University of Berlin; Professor Michael Plewa, University of Illinois-Champaign; and Dr. Shane Snyder, Southern Nevada Water Authority. Sessions will be organized around the themes of Environmental Chemistry, Toxicity and Risk Assessment, Wastewater Treatment and Water Reuse, Drinking Water Treatment, Regulations and Management, and Emerging Issues. More details and examples are included on the conference website.

If you have questions, please contact: Rula Deeb, Malcolm-Pirnie (co-chair); RDeeb@pirnie.com.

Water Crisis and Uncertainty: Shaping Groundwater's Future

27th Biennial Groundwater Conference and 18th GRA Annual Meeting and Conference
October 6-7, 2009; Sacramento Convention Center, Sacramento, California
Web Site: www.grac.org; a Call for Posters is forthcoming.

California is facing an unprecedented water crisis spawned by climate change, drought, legal decisions, a failing Delta ecosystem, and a faltering economy. Groundwater will necessarily play an important role in dealing with this crisis, and decisions during this time may cause groundwater policies to change in dramatic ways.

Featuring Topics Such As:

Optimizing Water Storage: Dams and Subsurface
Groundwater Salinity and Nutrient Management
Planning for Times of Drought
Water and Energy: Optimizing Groundwater Pumping
Exploring Options for Groundwater Management

Conference Sponsors:

University of California Center for Water Resources
California Department of Water Resources
Groundwater Resources Association of California
Water Education Foundation
U.S. Geological Survey

Sponsor Exhibitor Opportunities - http://www.grac.org/se.doc

Enhanced In-Situ Remediation Using Nanomaterials

November 2009; San Francisco, California

Web Page: www.grac.org

The goal of this conference is to present the research, development, and application of innovative, engineered nanomaterials as a promising new technology for enhanced *in situ* remediation of organic and inorganic contaminants in groundwater. Because of the high specific surface area of nanomaterials, the technology achieves treatment rates that are significantly faster than other micro- or macro-scale treatment media. Moreover, the small size of the particles is thought to facilitate cost-effective delivery of the reactive particles to contaminated porous or fractured media via direct injections or recirculation techniques.

For more information, contact: Xiong Longino at Tlongino@geomatrix.com or Murray Einarson at meinarson@geomatrix.com.

GRA Events Being Planned/Considered for 2010

Check the web site at www.grac.org for more information.

- **Groundwater and Watersheds.** Short course. This short course will review the principles of groundwater and watershed hydrology, water quality, and water contamination. It will provide an overview of the most common tools for measuring, monitoring, and assessing groundwater and surface water resources. It will also review current local, state, and federal programs dealing with groundwater and watersheds. February 23-24, 2009.
- **Isotope and Forensic Geochemistry Short Course** – Winter/Spring 2009.
- **Integrated Water Resources Planning/Water Banking**
- **Geophysics for Groundwater Resources.** Workshop and class. Spring 2009.
- **19th GRA Annual Meeting and Conference.** Fall 2010.

ANCHIALINE ECOSYSTEMS: Reflection and Prospects

A SYMPOSIUM SPONSORED BYthe Karst Waters Institute (United States) and the Mediterranean Institute for Advanced Studies (Spain)

17-20 November, 2009; MALLORCA, BALEARIC ISLANDS, SPAIN

The presentations will be grouped around six themes, which have a strong interdisciplinary character:
Geology, Hydrology and Hydrogeochemistry
Habitats and water quality
Microbiology and Ecosystem processes
Physiology and Ecology
Evolutionary history, Historical biogeography and Molecular phylogenetics
Biodiversity and Conservation

The symposium includes an oral session of invited speakers, others may submit posters. In addition to presentations at the symposium, after the meeting we will be inviting some speakers to prepare a paper for a thematic issue of Hydrobiologia representing some section of the presentations at the Symposium.

The sponsoring organizations, the Karst Waters Institute in the United States and the Mediterranean Institute for Advanced Studies, Mallorca, Spain, both have a history of sponsoring important small meetings with an interdisciplinary character and we are excited to be joining forces in this endeavor. We hope you will participate in Anchialine Ecosystems, 17-20 November, 2009.

Information on the meeting, registration, and housing can be found at: http://imedea.uib-csic.es/anchialine-symp/

The symposium organizers include:

William Humphreys
Western Australian Museum
bill.humphreys@museum.wa.gov.au

Damià Jaume
Mediterranean Institute for Advanced Studies
d.jaume@uib.es

René Price
Florida International University

Carol Wicks
Karst Waters Institute

Save-the-Date

Joint 2010 Annual Meeting
Cordilleran Section of GSA — Pacific Section of AAPG
May 27-29, 2010

The 2010 Joint Annual Meeting of the Cordilleran Section of the Geological Society of America (GSA) and the Pacific Section of the American Association of Petroleum Geologists (AAPG) is scheduled for May 27-29, 2010 at Anaheim, California. The Cordilleran Section host is California State University Fullerton. A call for technical session proposals will be forthcoming in Summer 2009 with an expectation of a number of technical sessions on various aspects of hydrogeology.

Suggestions for session topics are welcomed! Please contact Jeffrey Knott (Technical Program Chair), Associate Professor at the Dept. of Geological Sciences, California State University Fullerton at jknott@fullerton.edu; or Phil Armstrong (Joint Meeting Chair), Associate Professor of Geology, Department of Geological Sciences, California State University Fullerton, parmstrong@exchange.fullerton.edu; or Vicki Kretsinger Grabert (GSA Hydrogeology Division Representative for the Cordilleran Section), Principal Hydrologist, Luhdorff & Scalmanini, Consulting Engineers, vkretsinger@lsce.com.

Announcing: *EISOLS—8th International Symposium on Land Subsidence*
October 17-22, 2010

http://www.eisols2010.com/

Call for Papers: Abstracts due September 14, 2009.

Topics: Geologic Processes; Fluid Withdrawal; Solid Extraction; Geochemical Processes; Earth Fissures & Ground Ruptures; Monitoring Techniques, Modeling; Remediation & Mitigation; Social/Cultural/Economic Impacts; Management Strategies.

Preconference Workshops: Subsidence Monitoring; MODFLOW (Advanced); Satellite Radar Interferometry.

Field Trips: Queretaro City & other nearby cities; Mexico City & Teotihuacan.

Sponsored by . *Hosted by* (National Autonomous University of Mexico).

SECOND ANNOUNCEMENT AND CALL FOR ABSTRACTS

University of Oklahoma International WaTER Conference and International Water Prize Award Ceremony October 26-27, 2009 Norman, OK, USA

The Water Technologies for Emerging Regions (WaTER) Center at the University of Oklahoma will host the **Inaugural OU International WaTER Conference and International Water Prize Award Ceremony** on October 26-27, 2009 in Norman, Oklahoma. The conference will bring together participants from multiple groups responding to the UN Millenium Development Goals focused on bringing water and sanitation to remote villages in developing countries. Water and sanitation experts from academia, industry, NGOs, government, and foundations are invited to participate. Participants from developing countries are especially encouraged to attend; a limited number of travel assistance scholarships will be available for international participants.

The two-day conference will include poster and paper sessions devoted to all technical and non-technical topics and sectors (technical, anthropological, sociological, cultural or legal aspect) relevant to water and sanitation in remote regions of developing countries. **Optional workshops will be provided on October 28.**

The highlight of the conference will be a plenary lecture by and presentation of the first OU International Water Prize to Dr. Steve Luby. In addition, keynote lectures will be given by:

- Dr. Jamie Bartram, WHO-Geneva
- Dr. George Greene, Water Missions Intl.
- Dr. Rob Quick, CDC
- Dr. Steve Silliman, Notre Dame

Stephen P. Luby

2009 OU International Water Prize Winner

Dr. Luby has worked for the International Centre for Diarrheal Disease Research, Bangladesh since 2004. He is head of the Program on Infectious Diseases and Vaccine Sciences and also functions as the head of Agency for the Centers for Disease Control in Bangladesh. He earned a bachelor of arts in philosophy from Creighton University in 1981 and a medical degree from the University of Texas Southwestern Medical School at Dallas in 1986. He completed his internship and residency in internal medicine at the University of Rochester-Strong Memorial Hospital. Dr. Luby studied epidemiology and public health in the Epidemic Intelligence Service and the Preventive Medicine Residency of the Centers for Disease Control and Prevention. Dr. Luby has authored over 120 scientific articles, the majority concerning communicable disease epidemiology in low-income countries.

Call for Abstracts

The OU WaTER Center is soliciting abstracts for papers and oral presentations for the University of Oklahoma International WaTER Conference to be held in Norman, Oklahoma on October 26-27, 2009. Papers dealing with any technical, anthropological, sociological, cultural or legal aspect of water and sanitation in developing countries are invited. Conference registration is $190, which includes entrance to all poster and paper sessions, plenary lectures, two continental breakfasts, four breaks, two lunches, a social, and one dinner banquet that are part of the conference agenda. Participants from developing countries are especially encouraged to attend; a limited number of travel assistance scholarships will be available for international participants. Late registration (after September 8) is $290.

Interested participants should submit an **abstract** of no more than 500-words to the Conference Selection Committee by **August 1, 2009**. The abstract should include a succinct but descriptive title of the proposed paper or poster, and name, affiliation, and contact information (including email) of the authors. The abstract should identify the topic of the proposed paper or poster and should include a brief description of the actual project or innovation. The abstract should also discuss the significant results of the efforts and conclusions or recommendations drawn from the study. Abstracts submittal and registration information may be found at http://water.ou.edu.

The Conference Selection Committee will review the abstracts and authors will be informed of acceptance by August 25, 2009. Suggested topical areas include the following:

APPROPRIATE WATER/ SANITATION TECHNOLOGIES
Water supply technologies
Sustainable water/sanitation technologies
Implementation projects and case studies
Household water treatment
Assessment/outcomes procedures
Failures – what doesn't work an why

SOCIAL SCIENCES AND BUSINESS
Sustainable change
Micro-financing and social entrepreneurship
In-country capacity building
Small-scale programming by decentralized organizations
Case studies

HEALTH SCIENCES
Community health assessment
Disease prevention
Case studies

EDUCATIONAL INNOVATIONS
Service learning and EWB projects
Interdisciplinary courses/programs
K-20 Outreach
Field methods

International WaTER Conference and Water Prize Award Ceremony

Summary Calendar of Upcoming Events and Deadlines (see above for more information)

2009

June 8-10; San Francisco, CA. *Micropol and Ecohazard 2009, 6th International Water Association/GRA Specialized Conference on Assessment and Control of Micropollutants/Hazardous Substances Control in Water,* Groundwater Resources Association of California Conference, Co-Sponsored by IAH.

August 19 - Ettore Majorana, Foundation and Centre for Scientific Culture, in The Science City—Erice, Italy; *Green Chemistry: Integrating Environmental Health Research and Chemical Innovation.*

September 6-12 - International Convention 8th IAHS Scientific Assembly and 37th IAH Congress Hyderabad, India.

October 6-7; Sacramento, California. *Water Crisis and Uncertainty: Shaping Groundwater's Future,* 27th Biennial Groundwater Conference and 18th GRA Annual Meeting and Conference

October 18-21; Portland, Oregon. 2009 Geological Society of America (GSA) Annual Meeting.

October 26-27; Norman, OK. Water Technologies for Emerging Regions.

November 17-20; Mallorca, Balearic Islands, Spain. ANCHIALINE ECOSYSTEMS: Reflection and Prospects

2010

April 11- 14; Denver, Colorado. NGWA Ground Water Summit Meeting - *"Ground Water for a Thirsty World",* Co-sponsored by IAH.

May 27-29; Anaheim, California. The 2010 Joint Annual Meeting of the Cordilleran Section of the Geological Society of America (GSA) and the Pacific Section of the American Association of Petroleum Geologists (AAPG).

June 13-18; Zurich, Switzerland. IAHS Groundwater Quality 2010.

June 15-17; San Francisco, CA. Toward Sustainable Groundwater in Agriculture.

October 17-22; Quaeretaro, Mexico. EISOLS – 8th International Syposium on Land Subsidence