

# International Association of Hydrogeologists

## U.S. National Chapter

### Newsletter

Vol. 38, no. 3: October, 2009

Editor: Dave Kreamer, University of Nevada, Las Vegas



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## IAH/US NATIONAL CHAPTER: EXECUTIVE COMMITTEE 2009-20012

<b>Chairman:</b>	<b>Michael Wireman</b> wireman.mike@epa.gov	<b>U.S. Environmental Protection Agency</b> (303) 312-6719
<b>Vice President, North America:</b>	<b>Leonard F. Konikow</b> lkonikow@usgs.gov	<b>U.S. Geological Survey</b>
<b>Past-Chair:</b>	<b>John M. (Jack) Sharp</b> jmsharp@mail.utexas.edu	<b>Univ. Texas, Austin</b>
<b>Secretary:</b>	<b>Dave Kreamer</b> kreamer@nevada.edu	<b>University of Nevada, Las Vegas</b> (702) 895-3553
<b>Treasurer:</b>	<b>Victor Heilweil</b> heilweil@usgs.gov	<b>U.S. Geological Survey</b>
<b>Director:</b>	<b>William Alley</b>	<b>U.S. Geological Survey</b>
<b>Director:</b>	<b>Vicki Kretsinger Grabert</b>	<b>Luhdorff &amp; Scalmanini, Consulting Engineers</b>
<b>Director:</b>	<b>Jim Lamoreaux</b>	<b>PE LaMoreaux &amp; Associates, Inc.</b>

### EDITOR'S NOTE

Greetings USNC-IAH members! In our third newsletter of 2009 we have a variety of information to let you know about. Enclosed is an update on ongoing activities of the U.S. National Chapter of the IAH, information on upcoming meetings, reports on international collaborative efforts, a calendar of events, and other information as well.

As you might expect, our chapter is active and doing great things. This month, the USNC IAH Executive Committee is meeting in Portland, Oregon on October 20th at the Annual Meeting of the Geological Society of America (4 pm in the Senate Suite Room of the Hilton Hotel). Everyone is invited. This follows our International Congress in Hyderabad, India last month. Thanks to the tireless efforts of Vicki Kretsinger Grabert and others, we have a new Chapter website. The new website has lots of interesting information and descriptions of upcoming activities. We are also increasing our philanthropic efforts - If you are interested in making a philanthropic donation to USNC IAH that can be a tax deduction, please see our website or contact Vic Heilweil whose contact information is above. I again want to invite everyone to submit any appropriate articles or announcements for publication in future newsletters – just contact me at the telephone number or email address listed above.

I hope that this fall season treats you well.

**- Dave Kreamer**



IAH Council meeting – September 5, 2009 –Hyderabad, India

## A Note from the Vice President for North America

It was a privilege to be able to attend the recent IAH Congress in Hyderabad.

The IAH Council held a special meeting on the Saturday before the Congress to discuss a “forward look” for the Association and the science of hydrogeology (e.g., where will we be—or want to be—in 2015 or 2020?). Among other points, IAH seeks to be a leader in the international science and policy community in promoting the sound use and protection of groundwater resources, representing the interests and professional concerns of hydrogeologists. The process is continuing.

Ken Howard presented a discussion of the results of an analysis of IAH Commissions. Among the concerns were the lack of clear rules and guidelines under which Commissions operate, and the lack of a termination policy when their mission is accomplished or their functioning becomes stagnant.

The Council considered a motion to slightly increase the annual membership dues. However, because of recent favorable currency fluctuations, IAH appears to have more funds at the moment than anticipated. Therefore, the motion to increase dues was not approved.

Future Congresses include Krakow, Poland in 2010, Dublin, Ireland in 2011, and Niagara Falls, Canada in 2012. Because the 2012 Congress will be hosted by our neighbors to the north, and it is so close to the U.S., the U.S. National Chapter is planning to help by organizing and convening several technical sessions and training courses at this meeting; we expect a substantial attendance from U.S. members. Proposals to host Congresses in succeeding years have been proffered by Australia (for Alice Springs) and Morocco (for Marrakesh). All are great locations, and I hope more of you will be able to participate.

**- Lenny Konikow**



## **IAH- US National Chapter 2009 Budget Report (updated 10/10/2009)**

By Victor Heilweil, USNC Treasurer

### **Membership**

- 290 USNC Members for calendar year 2009 (includes 2 sponsored student members)
- 16 Developing Country Sponsored Members (3 by USNC, 13 by individual members)
- Current year (2009) membership is now closed (as of 9/30/2009); all incoming dues will be applied to 2010 memberships

### **2009 Budget**

- 2009 Income = \$4,112.62
  - \$2,862.62 in membership dues
  - \$1,250.00 in donations
- 2009 Paid Expenditures (to date) = \$1,588.53
  - Advertising (SW Hydrology) = \$257.50
  - Postage = \$37.03
  - Web Design = \$750.00
  - CO Incorporation renewal = \$50.00
  - GSA Meeting Room deposit = \$60.00
  - American Geological Institute (AGI) Membership = \$290.00
  - 3 Developing Country IAH Memberships = \$144.00
- Outstanding Expenditures = \$290 (2<sup>nd</sup> payment due to AGI)
- 2009 Investments = \$4,500: Vanguard Group Mutual Funds – Total Stock Market Index
  - \$3,000 initial investment
  - \$500 automatic monthly investment will begin October 2009
- Current Chase Business Account Balance = \$41,647.49

### **Outstanding Issues**

- We budgeted for six USNC-sponsored Developing Country Memberships (3-yr commitment), but only sponsored three members in 2009. A 4<sup>th</sup> member (Ana Maria Paulini from Peru) will be added in 2010
- We budgeted for six USNC-sponsored Student Memberships (1-yr commitment), but did not sponsor any in 2009

### **Treasurer's Suggestions**

- Select all six student members annually at the NGWA Ground Water Summit
- For auditing purposes, treasurer must receive an invoice or receipt in order to issue a check for payment or reimbursement



## ARTICLES AND REPORTS

### Joint Meeting - 8<sup>th</sup> IAHS Scientific Assembly and 37<sup>th</sup> IAH Congress Hyderabad, India - Sept 6 – 12, 2009

More than 500 people from 84 countries attended the Joint International meeting of the 8<sup>th</sup> International Association of Hydrological Sciences (IAHS) Scientific Assembly and the 37<sup>th</sup> International Association of Hydrogeologists (IAH) Congress. The conference was organized by the National Geophysical Research Institute in Hyderabad and the Joint Association of Hydrologists of India. The overall theme of the joint meeting was “Water: A Vital Resource Under Stress – How Science Can Help.” The IAH Congress focused on the hydrogeology of fractured rocks. There were more than 30 symposia and workshops, including 13 joint sessions, 5 IAH sessions, and 14 IAHS sessions. A small number of short courses were offered at the Joint meeting, and a mid-conference field trip occurred to Himayatsagar and Osmansagar Lakes, which are public water supplies for the City of Hyderabad. An IAH council meeting was held on September 5<sup>th</sup>. At least eight USNC members attended the Congress, including Lenny Konikow, Jack Sharp, Vic Heilweil, Mary Hill, Alyssa Dausman, Mike Wireman, Shlomo Neuman, and John Moore.



**USNC IAH Members at the Joint Meeting of the IAHS Scientific Assembly and IAH Congress in Hyderabad, India. From left to right are: Shlomo Neuman, Jack Sharp, Mike Wireman, Alyssa Dausman, Lenny Konikow, and Vic Heilweil**





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## USNC-IAH Members Present Short Course in Hyderabad

IAH – USNC members Alyssa Dausman (USGS) and Mary C. Hill (USGS) presented a short course at the IAH 37<sup>th</sup> Congress in Hyderabad, India. The course, *Introduction to Ground-Water Flow and Transport Modeling Using MODFLOW, MODPATH, MT3DMS, and SEAWAT, with model analysis using PEST and UCODE*, was attended by 17 students – all were from India. The course was held at the National Geophysical Research Institute in Hyderabad and designed to introduce participants to a suite of codes which simulate steady-state and (or) transient groundwater flow and transport in one, two, or three dimensions. In addition, this course addressed the problem of integrating site-specific data into model development. Students were also introduced to the PEST and UCODE programs, which address this issue.



**Alyssa Dausman (center) and Students**

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## Next IAH Congress in Krakow, Poland

The 38<sup>th</sup> IAH Congress will be held in Krakow, Poland from September 12-17, 2010. The Congress will be hosted by the Polish Chapter of IAH and the AGH University of Science and Technology. The theme of the Congress will be “Groundwater Quality and Sustainability.” The website for the Congress is [www.iah2010.org](http://www.iah2010.org), or the conference organizers can be reached at [office@iah2010.org](mailto:office@iah2010.org). The 39<sup>th</sup> IAH Congress will be held in Dublin in 2011, and the 40<sup>th</sup> Congress will be held at Niagara Falls, Canada in 2012.



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## USNC - IAH Cooperation with Mexican IAH chapter and Colombian Association of Hydrogeologists (ACH)

John Moore, former President of USNC-IAH and former President of IAH, participated in the III Colombian Congress on Hydrogeology, which was held in Bogota, Columbia from July 5-10, 2009. The Columbian National Committee of IAH organized an outstanding hydrogeologic meeting; there were more than 200 participants. The full scientific program consisted of a two-day field hydrogeology short course, a geologic field trip, keynote speakers, technical exhibits, and technical presentations. Dr. Moore and Dr. Joel Carrillo (president of the Mexican IAH chapter) led a field hydrogeology short course that consisted of one day to discuss theory and a second day to conduct field measurements. Forty-five students attended. Dr. Stephen Foster (IAH past president) and the Columbian Minister of the Environment made keynote presentations. The overall Congress was convened by Mario Valencia Cuesta, President of ACH.



**Dr. John Moore and Dr. Joel Carrillo**

**- Mike Wireman**

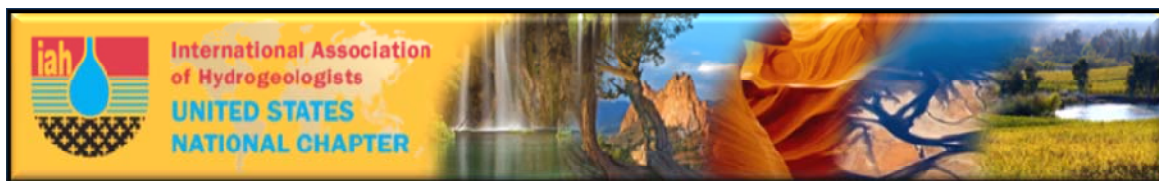
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## UNESCO IHP VI – Series on Groundwater

UNESCO has published a 2 CD set that includes 16 titles from the International Hydrological Program (IHP) Series on Groundwater. The 16 different groundwater papers have been published to meet the objectives of the sixth phase of the IHP titled “Water Interactions: Systems at Risk and Social Challenges.” Topics include transboundary aquifer management, fractured rock hydrogeology, groundwater contamination, sustainable use of groundwater, etc. The 2 CD set contains a selection of documents on groundwater and a complete list of titles from the Groundwater Series. The 2 CD set is available online at no cost:

<http://www.unesco.org/water/ihp/publications>.

**- Mike Wireman**



## New USNC – IAH Web Site

The new US National Chapter IAH web site was launched in July. The web site address is <http://www.iah.org/usa/>. The new site is a subdomain to the main IAH site, but it also contains lots of USNC-specific information, including:

- The most recent USNC newsletter (October 2009);
- Historical newsletters from October 2000 to June 2009;
- Contact information;
- Articles of Incorporation and Bylaws;
- Information about sponsored members;
- Information on USNC Meetings (the fall meeting will be at the 2009 GSA Annual Meeting);
- Photos from USNC activities around the globe; and
- Upcoming events.

Periodically, the web site will be updated. Information for posting on the Events page is welcome. Suggested additions to the Education page are also welcome. Please forward event information or other web site suggestions to Mike Wireman at [Wireman.Mike@epa.gov](mailto:Wireman.Mike@epa.gov) or Vicki Kretsinger at [vkretsinger@lsce.com](mailto:vkretsinger@lsce.com).

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## LaMoreaux Appointed Editor in Chief of *Environmental Earth Sciences*

Dr. James W. (Jim) LaMoreaux, Chairman of P.E. LaMoreaux and Associates, Inc. (PELA\*) has been appointed Editor in Chief of *Environmental Earth Sciences*.

*Environmental Earth Sciences* is an international multidisciplinary journal concerned with all aspects of interactions between humans, natural resources, ecosystems, special climates, or unique geographic zones and the earth. The journal is published twelve times a year by Springer Science and Business Media of Heidelberg, Germany. Formerly published under the name *Environmental Geology*, the journal's title is being changed to *Environmental Earth Sciences* with the November 2009 issue. Its aims and scope are being expanded and it is being published in full color. Website: <http://www.springer.com/earth+sciences/geology/journal/12665.com>

As stated in his introductory editorial (vol. 59, *Environmental Earth Sciences*): “With the expanded coverage of *Environmental Earth Sciences*, the earth science community now has a unified vehicle for disseminating research. As we explore our world together and document the findings, I believe we will learn much from each other, and that both the quality and the creativity of research will be enhanced. I look forward to working with you all.”

Dr. LaMoreaux will also be serving as Editor for Springer's *Environmental Earth Science* Book Series. He will be responsible for traveling to international conferences and editing four books a year on selected earth science topics examined by particular scientific meetings.

\* PELA is an international consulting company based in Tuscaloosa, Alabama which provides services in the fields of geology, hydrogeology, environmental sciences, and cultural resources/archaeology. Website - <http://www.pela.com>

**- Nancy Green, for Lois George, Vice President, Environment and Ecology, PELA**



## CONFERENCES AND ASSOCIATED SOCIETIES

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### **Call for Abstracts -- Deadline November 6, 2009**

The 2010 NGWA Ground Water Summit and the 2010 Ground Water Protection Council Meeting will be held at The Westin Tabor Center, 1672 Lawrence Street in Denver, CO from April 11-15, 2010. The event seeks to integrate cutting-edge science with the leading edge of practice and will focus on the theme "Groundwater for a Thirsty World." Thirty sessions have been approved by the organizing committee, and several sessions have an international theme. A field trip to the Denver Basin is being organized by the Colorado Geological Survey. Information on the sessions and the field trip can be obtained at <http://ngwa.org/summit2010/index.aspx> . Abstracts are due by 11:59 PM ET on November 6. The call for abstracts can be found at <http://ngwa.confex.com/ngwa/2010gws/cfp.cgi>. The USNC-IAH is a co-sponsor of the Ground Water Summit, and will meet at the Conference.

**- Mike Wireman**

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## **2009 Geological Society of America (GSA) Annual Meeting**

**Portland, Oregon - October 18-21, 2009**

**USNC IAH Meeting, 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 announce its meeting, and co-sponsorship of four 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 is "Volcanoes to Vineyards: Living with Dynamic Landscapes."

### **IAH-USNC Meeting at GSA Conference**

**Date and Place:** Tuesday, October 20 at 4 PM, in the Senate Suite Room of the Hilton Hotel.

**This meeting is open to all members and the public.**

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

**Date:** Wednesday October 21, 1:30 pm – 5:30 pm

**Special Event:** Wine tasting will follow the session.

This session 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. This memorial session in honor of George Moore provides perspectives on the influence of soils and geology and the overall influence of terroir on wines produced in Oregon that led to writing his book titled *Oregon's Phenomenal Wine: the Subsoil of Geology*, soon to be published by the OSU Press. This 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.

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

**Date:** Monday October 19, 8 am – Noon

This session 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.

### **SESSION T20 Contaminant Hydrogeology: Contaminant Fate and Transport in Geological Systems (Posters)**

**Date: Wednesday October 21, 9 am – 6 pm**

This poster session 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. This session focuses on contamination of groundwater by anthropogenic compounds, including pharmaceutical metabolites and by naturally occurring substances is ubiquitous.

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

**Date: Monday October 19, 8 am – Noon (Oral Session); Tuesday October 20, 9 am – 6 pm (Poster Session)**

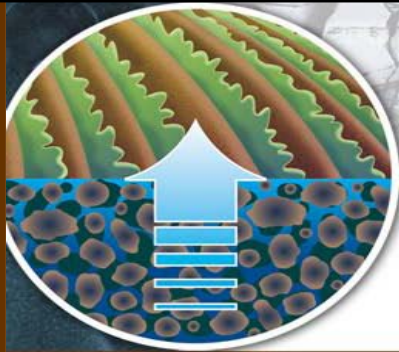
This session (oral and poster formats) is being convened by Randall Hunt of the US Geological Survey, Wisconsin Water Science Center, Middleton, Wisconsin and Masaki Hayashi of the University of Calgary, Canada. The session co-sponsors include the GSA Hydrogeology Division and the USNC-IAH. This session focuses on methods for characterizing groundwater-ecosystem interaction, the effects of human activities on this interaction, and potential ramifications for resource sustainability. This session will also highlight and explore the linkages between groundwater and ecosystems and 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.

### **THREE IAH CO-SPONSORED FIELD TRIPS**

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. The third trip occurs on October 22 to the Columbia River Gorge (**Trip 431. Terroir Tour of the Columbia Gorge**). Sign up soon – field trip spaces are filling up quickly.

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# Toward Sustainable **Groundwater** in Agriculture

*An International Conference  
Linking Science and Policy*

June 15-17-2010

Hyatt Regency at the San Francisco Airport  
Burlingame, CA

Organized by Water Education Foundation and UC Davis  
IAH is Among the Co-Sponsors

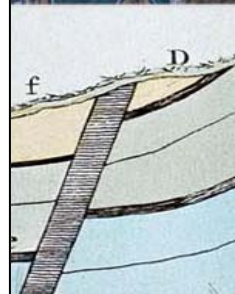
This three-day international conference will bring together leading scientists, policy analysts, policy and decision makers, and agricultural and environmental stakeholder groups to define and highlight the science, challenges, and potential policy solutions in agricultural groundwater resources management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

Groundwater constitutes nearly half the world's drinking water and much of the world's irrigation water supply. Population growth, overexploitation, salinization, nonpoint source pollution from agricultural activities (including animal farming, ranching, and forestry activities), impacts to surface water, and groundwater quality and quantity conflicts at the urban-rural interface have reached global dimensions and threaten the health and livelihood of this planet.

**Topics to be addressed in plenary sessions and technical sessions include:**

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

Watch for updates at <http://www.ag-groundwater.org/>







**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.

**FOR MORE INFORMATION:** <http://www.geosociety.org/sectdiv/cord/2010mtg/index.htm> Please contact Jeffrey Knott (Technical Program Chair), Associate Professor at the Dept. of Geological Sciences, California State University Fullerton at [jknot@fullerton.edu](mailto:jknot@fullerton.edu); or Phil Armstrong (Joint Meeting Chair), Associate Professor of Geology, Department of Geological Sciences, California State University Fullerton, [parmstrong@exchange.fullerton.edu](mailto: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](mailto:vkretsinger@lsce.com).



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## **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 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.

To access the new electronic issue of *HydroVisions* go to - <http://www.grac.org/hv/fall09.pdf>

### **Upcoming GRA Conferences**

#### **Enhanced In-Situ Remediation Using Nanomaterials** **November 3, 2009; San Francisco, California**

Web Page: <http://grac.org/nanotech.asp>

The Symposium is a forum for leading nanotechnology researchers, practitioners, and policy and regulatory experts to share and express the latest research findings, case studies, and regulatory issues of nanotechnology. The focus of the Symposium will be on the application of nanotechnology for groundwater remediation, surface water treatment, and pollution control.

#### **Sessions will include the following:**

- Nanotechnology for Groundwater Remediation
- Nanotechnology for Surface Water Treatment and Pollution Control
- Delivery/Application Methods of Nanomaterials for Water Treatment
- Regulatory Issues with Nanomaterials and Nanotechnology
- Case Studies

#### **Groundwater Withdrawal-Induced Land Subsidence in the San Joaquin Valley: A 2009 Perspective** **November 4, 2009; Radisson Hotel and Conference Center, Fresno, CA**

Web Page: <http://grac.org/subsidence.asp>

Organizers: Association of Environmental and Engineering Geologists (AEG),  
San Joaquin Valley Chapter and Groundwater Resources Association of California  
(GRA), San Joaquin Valley Branch

The prospect of renewed episodes of deep land subsidence in the San Joaquin Valley is very real: San Joaquin Valley groundwater levels are at historic lows; groundwater pumping is increasing in response to a drought and cutbacks in surface water deliveries; and Valley population growth has imposed an ever-increasing demand on water supplies. Deep land subsidence threatens infrastructure and buildings, water delivery systems, and long-term water supply capacity. This symposium will examine the current state of deep land subsidence in the San Joaquin Valley.



**The Conference will address the following issues and topics:**

- San Joaquin Valley groundwater supply and aquifer overdraft
- History of San Joaquin Valley land subsidence
- California water policy and implications for subsidence
- Historical and current impacts
- Remote sensing, GPS, and geophysical techniques for assessment
- Lessons learned and mitigation approaches in Phoenix, Arizona and Harris-Galveston, TX area
- Roundtable discussions

**GRA Events Being Planned/Considered for 2010**

Check the web site at [www.grac.org](http://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.
- **Isotope and Forensic Geochemistry Short Course.**
- **Integrated Water Resources Planning/Water Banking.**
- **Geophysics for Groundwater Resources.** Workshop and class.
- **19th GRA Annual Meeting and Conference.**

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

### 2009

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

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

**November 3, 2009;** San Francisco, California. Enhanced In-Situ Remediation Using Nanomaterials.

**November 4, 2009;** Fresno, CA, Groundwater Withdrawal-Induced Land Subsidence in the San Joaquin Valley: A 2009 Perspective.

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

### 2010

**April 11- 15;** Denver, Colorado. NGWA Ground Water Summit Meeting - "*Ground Water for a Thirsty World*", Co-sponsored by IAHS.

**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;** Queretaro, Mexico. EISOLS – 8<sup>th</sup> International Symposium on Land Subsidence.



## International Association of Hydrogeologists

### 2009 IAH MEMBERSHIP AND U.S. NATIONAL CHAPTER SUPPORT FORM

<b>Last Name:</b>			
<b>First Name &amp; M.I.:</b>			
<b>Title:</b>			
<b>Organization/Company:</b>			
<b>Mailing Address:</b>			
<b>Telephone:</b>		<b>Fax:</b>	
<b>E-mail:</b>			

**Membership includes a 1-year Subscription to the *HYDROGEOLOGY JOURNAL* (8 issues).**

#### Type of IAH Membership being Applied for or Renewed:

- Full member: \$102 USD (includes hard copies of the *Journal*)
- Full member: \$88 USD (for the *Journal* online only)
- Student member: \$51 USD (includes hard copies of the *Journal*)
- Student member: \$37 USD (for the *Journal* online only)
- Retired member: \$51 USD (does not include the *Journal*)
- Corporate member: \$560 USD (includes 3 free members plus up to 3 additional members at \$85 USD each)  
[Attach list with member names and contact information.]

#### Member Sponsor Opportunities:

- Sponsor Student member: \$51 USD (includes hard copies of the *Journal*)
- Sponsor Student member: \$37 USD (for the *Journal* online only)
- Sponsor Developing Country Member: \$48 USD [For more information about the sponsorship of a Developing Country Member, see [http://www.iah.org/join\\_sponsorship.asp](http://www.iah.org/join_sponsorship.asp). Please enclose the Sponsored Member Application Form at <http://www.iah.org/downloads/Sponsorship%20Form%202008.pdf>.]

#### I want to Help Support U.S. National Chapter Activities

These may include Chapter support of student memberships, development of scholarship funds, Chapter alliances with and support of developing country members, and other activities that promote international activities that further the advancement and application of hydrogeology, including research, education, outreach, and training.

\$25       \$50       \$100       \$200       \$Other \_\_\_\_\_

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