International Association of Hydrogeologists
U.S. National Chapter
Spring 2018 Newsletter

Editor: Gary Robbins

CONTENTS

A Note from the Chair – *Jim LaMoreaux* **3**
Wanted Articles About You **4**
Message from Joanne Thompson, VP North America 4
A Note from the Vice President for Science and Programme **5**
News from the IAH Canadian National Chapter **6**
Groundwater News and Information **8**
- The Future of Groundwater – A Report from the 2017 Aspen-Nicholas Water Forum **8**
- Nomination for USGS Director **9**
- AGI News **10**
- Water Information Network System--Nature-Based Solutions for Water **11**
- Conference on hydrogeology of chalk organized by the French IAH Chapter **11**
- Regional Groundwater Flow Commission News **12**
- Sustainable Water Resources Management (SWARM) **13**
- Geological Society of America Annual Meeting 2018 **14**

Member News **14**
- John Moore 1931-2018 **14**
- Groundwater 101 **15**
- Adopt A School Partner **15**

Early Career Hydrogeologists Network News **15**
IAH-USNC 2018 Graduate Student Sponsees **16**
2018 IAH Congress in Daejeon, Korea **21**

Cover Photo: Nineteenth century double action pump fire engine. The ancient Greeks invented the double action pump fire engine over 2000 years ago. The Romans used them for mining. They would heat rocks and inject cold water on them to crack the rocks. The same type of pump was also used for mine dewatering and became the standard bilge pump on ships.

IAH/U.S. NATIONAL CHAPTER: EXECUTIVE COMMITTEE 2017-2018

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A Note from the Chair – *Jim LaMoreaux*

The year 2018 is progressing rapidly for the US National Committee (USNC). With Easter being early this year, you could say the year is already one fourth over. Much has occurred during this time.

Devin Galloway successfully contacted over 200 universities with programs in hydrogeology to obtain nominations for graduate students for US National Committee scholarships. Ten very well qualified graduate students were selected to receive one-year memberships in the USNC. They are highlighted in this newsletter. We are hopeful that these students will decide to renew their membership next year to help expand our ranks and those of the Early Career Hydrogeologists Network (ECHN). Please thank Devin for his efforts and welcome the students to the fold.

Speaking of ECHN, Adam Milewski and his team are continuing their efforts to expand its membership. They are looking for volunteers to serve as liaisons for the Geological Society of America (GSA) regional section meetings. If any of you are interested in doing so whether you are an ECHN or a regular member, please contact Adam at milewski@uga.edu. For other ECHN opportunities visit their Facebook page, their LinkedIn connection, or their website.

In other liaisons, Tim Parker and Clint Carney are continuing to be active with AGI. A full report is included in the newsletter. The IAH USNC is an Associated Society of AGI and Tim and I attended the AGI/GSA Associated Societies meeting in Seattle at GSA. The Spring Associated Societies meeting interestingly enough was a virtual meeting and was held on April 4.

Continuing to expand our contacts in the Americas, we are communicating with Joanne Thompson, IAH Vice President for North America, and Diana Allen, President of the IAH Canadian National Chapter. See the articles below. Vic Heilweil is making contacts for us in South America through his travels there. These activities have the goal of possibly organizing an IAH Congress in the Americas in 2021. We have sent the IAH Executive Council a letter indicating our interest in doing so and are looking for volunteers who may want to spearhead this effort.

We are not limiting our activities to the Americas though as we drum up interest for our members to attend the IAH 2018 Congress in Daejeon, Korea, September 9-14. This is shaping up to be an excellent congress. The Korean National Chapter was in Dubrovnik in full force encouraging people to attend. They have been working hard for several years organizing the congress to make it worth your while to do so. More details are enclosed.

As you can tell from this brief Note from the Chair, many people are involved in keeping your national chapter running efficiently. I would like to thank all those mentioned above and many others, past and present, for their efforts on the USNC's behalf. This includes John Moore who passed away recently and helped in the development of the USNC; he will be missed. In

addition, Dave Kreamer, IAH Vice President for Science and Programme, is serving in an ambassadorial role for the USNC carrying our torch internationally. See his article here also. Let us keep working hard to make the rest of our year successful. Visit the USNC website to see how you can become more active. Please share this newsletter with your friends and colleagues and encourage them to become members and thank Gary Robbins for serving as our editor.

Wanted Articles About You

As the editor of the newsletter, I need your help. Our newsletter is all about informing you of what the organization is doing and providing you with other news in our field that you may find useful. Of course all that is interesting. But it is also an opportunity to get to know eachother, to network and to further bond in our mutual love of this field. So I am asking you to help with the next newsletter. Send me a picture of you working with a brief description (name, company, where the picture was taken and what does the picture show you doing). Send me a brief article about some interesting place you are working or visited related to hydrogeology. Have some interesting groundwater related picture? Send that with a description of who took the picture and where. How about a brief article about you for our Members News Section (see below)? Send material to Gary.robbins@uconn.edu (That's me doing research on how groundwater and surface water may play a role in the population persistence of an engdangered species in Connecticut).

Message from Joanne Thompson, VP North America

I had the great pleasure to attend the 2017 IAH Congress in Dubrovnik, Croatia in September 2017 to represent the North American interests for our organization. The Congress attracted more than 500 delegates with excellent local and international participation from Croatia, Korea, Germany, Italy, UK, Australia, and North America. I would like to note that it was a very good showing for North America in comparison to other years with 19 Americans and 18 Canadians attending the Congress.

The next Congress will be in Daejeon, Korea, September 9-14, 2018 - Mark your calendars and plan to attend!

While at the Congress, I attended the Council meeting on September 24, 2017. There are a few key items I would like to share with you regarding membership, 2018 fees and the Hydrogeology Journal.

The international organization is doing well with membership rising to about 4020 in 2017. The American membership has been reasonable steady in recent years at about 280 and the Canadian membership has been somewhat variable over the past few years in the 350 to 400 people range.

Together, the USNC and CNC represent about 15% of the total IAH membership – a significant group!

The fee increases in 2018 will be minor and will target the high-income full member rates at three Euro. Student and sponsored memberships will see an increase of one Euro and Corporate memberships will rise by 25 Euro. At current exchanges rates, this will likely result in an increase of about $3.70 for full memberships in the US.

Submissions to the Hydrogeology Journal have been very strong in recent years, and with over 500 papers being submitted annually, there is a need for additional editorial support. Council approved the addition of a fifth editor to the journal team. There was a lot of discussion regarding the future of funding for the Journal. When members were surveyed, it is the number one reason cited to join the IAH, so clearly sustaining the Journal is critical to the organization. Many researchers support an online version, especially given the increasing requirements for government funded work to have open access. However, there are problems in many areas of the world to offer an online version only. The Council will be exploring funding options.

One other piece of news that I was asked to pass along is related to education. Callist Tindimugaya, VP for Sub Saharan Africa, noted that they are intending to set up training sessions on groundwater development and wells, as well as guidance for the preparation of papers and conference presentations. They envision organizing instructors to tour around to various cities to avoid local participants having to travel. They are looking for volunteer instructors so I encourage you to get involved if you are interested in participating, teaching or training. Callist's contact information can be found on the website at iah.org.

Just one last thing, please be advised that I have a new email address - joannethompsoniah@gmail.com.

A Note from the Vice President for Science and Programme

I hope this note finds everyone well and having a productive time with their endeavors. The IAH Executive Committee met in Dorchester on Thames in England on February 22-24 and discussed many things related to all aspects of our organization. The Committee is made up of Executive Director Ian Davey from England, President Antonio Chambel from Portugal, Secretary General Bruce Misstear from Ireland, Vice President for Finance Teodora Szocs from Hungary, and myself. Visitors and members of the supporting IAH Secretariat who provided important input included Kellie Nicholson, Sue Duncan, Nick Robbins, Sandra Larkins, John Chilton and Robbie Dow. One of the topics covered was the past Congress in Dubrovnik, Croatia, (wow what a great time!), and future congresses. I hope to see you this upcoming

September in our 2018 Congress in Korea. There has been some discussion of the U.S. National Chapter proposing a future Congress in North America, perhaps jointly with the Canadian Chapter. The Executive Committee would love to see that kind of a proposal coming from our U.S. chapter. Right now, two future Congresses after Korea are planned for Brazil, and Spain on the Mediterranean coast, with interest expressed for other future Congresses in Belgium and South Africa.

At the Executive Committee meeting, we discussed past budgets and planned future budgets. Brexit has thrown a bit of uncertainty into our financial planning, as the home office is U.K. based, but IAH is on good footing. Other topics included our website, future corporate sponsorships, membership which continues to trend upward, education, National Chapters, a "Forward Look" program we have been implementing for several years, international engagement with other scientific groups, and our IAH publications, including our book series and professional journals. Our journal publications continue to increase in recognition and impact factor.

IAH also has a vibrant set of Commissions and Networks (C&Ns - see the website) for all sorts of specialization in hydrogeology. If you have not explored these C&Ns, there are some great groups in various subdisciplines such as karst, thermal and mineral waters, groundwater and energy, fractured rock hydrology, urban groundwater, transboundary groundwater, groundwater and climate change, managed aquifer recharge, coastal aquifers, and regional flow. The Early Career Hydrogeologists Network (ECHN) helps students and people beginning their careers, and the hydrophilanthropic, Burdon Groundwater Network for International Development has many projects in many countries. Commissions and Networks are open to all, are free, and are great for meeting some of the experts in the field.

If you have any questions on IAH, please do not hesitate to contact me. And encourage your friends and colleagues to join us in IAH!

Contributed by Dave Kreamer

News from the IAH Canadian National Chapter

Greetings from the IAH-CNC. Here is a bit of news on IAH-CNC's activities:
IAH-CNC Membership and AGM - As of October 1, 2017, there were 361 IAH-CNC members. The 2017 Annual General Meeting was held on October 2, 2017 in Ottawa during the GeoOttawa 2017 Conference. Membership includes Early Career Hydrogeologists. The ECHN-Canada website can be found at http://iah-echn-canada.weebly.com

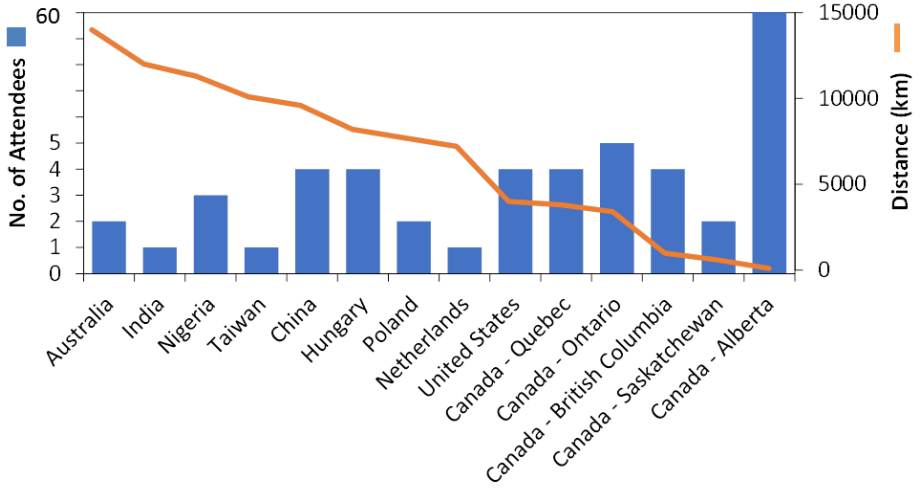
Awards and Scholarships - In addition to the Robert N. Farvolden Award, which honours outstanding contributions to the disciplines of earth science and engineering that emphasize the

role or importance of groundwater, and the Tóth Award for the best student paper in Canadian hydrogeology, the IAH-CNC recently established an annual scholarship of $5,000 for a Ph.D. student studying at a Canadian university. The first IAH-CNC Scholarship for Graduate Studies in Hydrogeology was awarded in 2017 to Aaron Mohammed from the University of Calgary. Three new IAH-CNC awards were formally established in 2017: The Early Career Hydrogeologists Network (ECHN) Award; the Lifetime Achievement Award; and the Long Term Service Award. Information on these awards can be found at http://www.iah.ca

The 2017 Long Term Service Award was awarded to Steve Holysh, former IAH-CNC President.

IAH-CNC Conferences and Events -

Characterizing Regional Groundwater Flow Systems, 2017, Calgary, Alberta, June 26 to 28, 2017: This international research symposium, supported by the IAH-CNC and organized by the IAH Commission on Regional Groundwater Flow, covered a range of topics, including water management, economic reserves exploration, variable density flow and waste disposal. There were 20 posters and 46 presentations, 14 of which were made by Early Career Hydrogeologists. The attendees, about 100, came from ten countries (Source: Brian Smerdon, IAH-CNC).



GeoOttawa 2017, Ottawa, Ontario, October 1 to 4, 2017: This was a joint IAH-CNC and Canadian Geotechnical Society (CGS) conference attended by approximately 850 delegates. The conference's theme was "70 Years of Canadian Geotechnics and Geoscience" celebrating the extensive contributions of geotechnical and hydrogeological practitioners to Canada's built form since the CGS was founded 70 years ago. The conference included lectures by the 2016 and 2017 Robert N. Farvolden Award recipients, René Lefebvre (https://www.cgs.ca/newsletter_item_display.php?id=56&lang=en) and Mike Wei (http://www.cgs.ca/newsletter_item_display.php?id=119&lang=en), and the inaugural display of two newly created banners on "Canadian Achievements in Hydrogeology."

Coming in 2018 -

Resources for Future Generations 2018, Vancouver, British Columbia, June 16 to 21, 2018: This international conference is the first dedicated to the availability of resources needed to sustain future generations. The conference is expected to attract 4,000 to 5,000 attendees, representing earth science and engineering research and practice, industry, governments and civil society, and First Nations and Indigenous peoples. IAH-CNC is a technical partner for this event

René Lefebvre, recipient of the 2016 Robert N. Farvolden Award

Diana Allen, IAH-CNC, and Dharma Wijewickreme, CGS, present the 2017 Robert N. Farvolden Award to Mike Wei

(http://www.rfg2018.org/) and the IAH-CNC President is a co-theme leader for the water theme. There are several groundwater-focused sessions, some with IAH co-chairs, for example the Groundwater and Unconventional Oil and Gas Resource Development session (Co-chair Laurie Welch, IAH-CNC member and Board member) and the Modelling Integrated Surface-Subsurface Hydrologic Systems for Energy Resource Development and Regulation session (Co-chair Brian Smerdon, IAH-CNC member).

GeoEdmonton 2018 - Edmonton, Alberta, September 23 to 26, 2018: This is a joint IAH-CNC and CGS conference: http://www.geoedmonton2018.ca

Coming in 2019 - Québec City, Québec, May 12 to 15, 2019: A joint IAH-CNC and Geological Association of Canada and Mineralogical Association of Canada (GAC-MAC) conference.

Contributed by Heather Wilson, IAH-CNC Secretary

Groundwater News and Information

The Future of Groundwater – A Report from the 2017 Aspen-Nicholas Water Forum[1]

The annual Aspen-Nicholas Water Forum provides "*a platform for addressing domestic water challenges in the 21st century."* The theme for the 2017 Forum was the future of groundwater, specifically "*exploring the present condition of groundwater, the evolution of that condition and opportunities for transitioning to more sustainable use of groundwater resources*." Topics

covered in the 50 page report include: current state of the groundwater resource, challenges related to monitoring, modeling and hydrologic assessment, governance (policy, regulation, public participation, stakeholder collaboration), and using science and technology to improve water resource management. The report focuses on the advantages and challenges of achieving sustainable development of groundwater resources.

Key findings include:

1. Groundwater has been managed for sustained aquifer depletion. This practice needs to change.
2. Aquifers and aquifer systems can underlie thousands of mi^2 - however, the management and impacts associated with groundwater use is more site specific. Conversely, the consequences of groundwater depletion and contamination are not unique.
3. Groundwater is mostly locally managed but the consequences of groundwater depletion can affect large regions. Solutions aimed at sustainable use need to be scalable.
4. About 14% of the US population relies on private domestic wells. In addition, there are about 130,000 privately owned groundwater systems. These groundwater users are most vulnerable to non-sustainable development due to almost total reliance on groundwater for water supply. Local, state and federal regulatory programs are not well organized to protect these users.
5. Data collection techniques, modeling and water technology are all improving rapidly. This improves understandings of the groundwater resource and management options.
6. Collaboration built on trust and transparency is critical for educating public and decision makers.

[1]The report was prepared jointly by the Aspen Institute's Energy and Environment Program and Duke University's Nicholas Institute for Environmental Policy Solutions – report available from *energyandenvironment@aspeninstitute.org*

Contributed by Mike Wireman
Past-Chair USNC IAH

Nomination for USGS Director

According to a news release from the American Geosciences Institute (AGI), President Donald Trump announced his intent to nominate Dr. James Reilly to be Director of the U.S. Geological Survey (USGS) at the Department of the Interior. After a 13-year career at the National Aeronautics and Space Administration (NASA), during which he flew three spaceflight missions and conducted five spacewalks, Dr. Reilly currently serves as a technical advisor on space operations for the U.S. Air Force's National Security Space Institute in Colorado Springs, Colorado. Dr. Reilly earned his B.S., M.S., and Ph.D. in geosciences from the University of Texas at Dallas; his studies included a scientific expedition to Marie Byrd Land, West Antarctica, to research isotope geochronology. Prior to joining NASA, Dr. Reilly worked for 15 years as an oil and gas exploration geologist with Enserch Exploration, Inc. Following his career at NASA, Dr. Reilly served as an administrator for the American Public University System,

retired from the U.S. Navy as a Lieutenant Commander, and started his own firm, March 25 Management. Reflecting on his experience working at the International Space Station, Dr. Reilly stated, “There hasn’t been a moment when I had the chance to look down on our planet from orbit when I haven’t been amazed at how geology has played a significant role in the development of humankind.” In a Senate hearing on March 6, 2018, Dr. Reilly pledged to prevent undue political interference in USGS scientific research if he is confirmed as the agency’s next Director.

Contributed by L. Konikow

AGI News

AGI Releases Geoscience Policy Annual Review for 2017

The American Geosciences Institute (AGI) is pleased to announce the publication of its first Geoscience Policy Annual Review, an in-depth summary of the major developments in federal geoscience policy during 2017. Throughout the year, geoscience issues were the focus of significant action by President Trump and the 115th Congress. The Geoscience Policy Annual Review provides a nonpartisan synthesis of legislative, budgetary, and administrative actions across geoscience topics. Read the Geoscience Policy Annual Review at https://www.americangeosciences.org/policy/annual-review. Sign up for the Monthly Review here.

Earth Science Week 2018 Theme Announced: 'Earth as Inspiration'

The American Geosciences Institute (AGI) is pleased to announce that the theme of Earth Science Week 2018 will be "Earth as Inspiration." The coming year's event will be October 14-20, 2018, and emphasize artistic expression as a unique, powerful opportunity for geoscience education and understanding in the 21st century.

AGI Names Sally Jewell as Earth Science Education Ambassador

Sally Jewell, the conservationist, petroleum engineer, former President and CEO of Recreational Equipment, Incorporated (REI), and former U.S. Secretary of the Interior, will serve as a major national spokesperson for the American Geosciences Institute (AGI). The Institute has named Jewell as its Earth Science Education Ambassador; Jewell will highlight the need for strong Earth science instruction throughout K-12 education and will be the principal spokesperson for Earth Science Week 2018 (October 14-20), which will focus on the theme "Earth as Inspiration."

AGI Announces Incoming Foundation Trustees for 2018

The American Geosciences Institute (AGI) is honored to name three outstanding individuals as new trustees for the AGI Foundation (AGIF). The Institute welcomes Jennifer M. Erich, Alma H. Paty, and Chandler T. Wilhelm, each of whom joins a distinguished group of scientists and professionals who share a strong commitment to the geoscience community.

In addition to the above Tim Parker has been in discussions with AGI about a webinar on recharge and water banking which is in planning stages. He also has been discussing how different states manage their hydrogeologic data and its integration with other geo data, which may be brought up at the American Association of State Geologists meeting in June.

Contributed by T. Parker and C. Carney

Water Information Network System
Nature-Based Solutions for Water

The 2018 edition of the World Water Development Report (WWDR 2018) was presented at the 8th World Water Forum, in Brasilia (Brazil) on the 19th of March." The report seeks to inform policy and decision-makers, inside and outside the water community, about the potential of nature-based solutions (NBS) to address contemporary water management challenges across all sectors, and particularly regarding water for agriculture, sustainable cities, disaster risk reduction, and water quality. NBS use or mimic natural processes to enhance water availability (e.g., soil moisture retention, groundwater recharge), improve water quality (e.g., natural and constructed wetlands, riparian buffer strips), and reduce risks associated with water-related disasters and climate change (e.g., floodplain restoration, green roofs). The WWDR2018, titled ***Nature-based solutions for water***, demonstrates how nature-based solutions (NBS) offer a vital means of moving beyond business-as-usual to address many of the world's water challenges while simultaneously delivering additional benefits vital to all aspects of sustainable development. The report can be downloaded from a link on the World Water Assessment Programme web page at: http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/wwdr/2018-nature-based-solutions/

Contributed by L. Konikow

Conference on Hydrogeology of Chalk Organized by the French IAH Chapter

The purpose of this symposium is to present and discuss the current state of knowledge on the hydrogeological functioning of chalk. It will give the hydrogeological community the opportunity to discuss advances in knowledge, new concepts, measurement methodologies, data analysis, hydrogeological modeling applied to chalk, but also operational management of chalk water resource.

The conference will include three major thematic sessions (from Thursday, May 24 in the morning until Friday, May 25, 12h):
Session 1 - Physical and hydrogeological characterization of the chalk reservoir: reservoir structure (lithology, porosity, fracturing, karst) and quantitative aspects of the different flow modes.
Session 2 - New concepts, tools and methodologies developed for the study, monitoring,

modeling of chalky aquifers.
Session 3 - Operational aspects: vulnerability, exploration and surveillance, protection, management of the resource and associated wetlands.

Three technical excursions will be organized:

Friday, May 25 afternoon: Drilling of Yport (pumping station of the Community of the urban area of Le Havre - CODAH and marine karst resurgence).
Saturday, May 26 morning: Regional structural context: visit of the site of the Tilleul at the edge of beach.
Saturday, May 26 afternoon: An example of karst geomophology in Chalk: cave of the Petites Dales.
May 4, 2018: registration deadline.

Contributed by M Bakalowicz

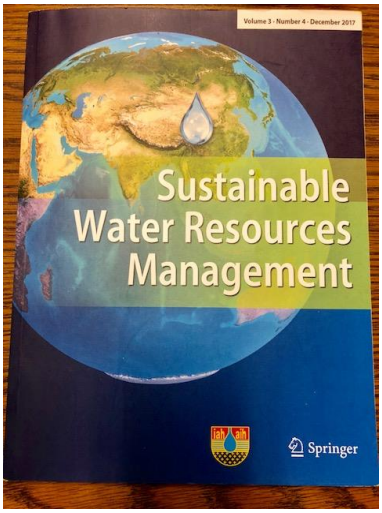
Regional Groundwater Flow Commission News

IAH's Regional Groundwater Flow Commission (RGFC) internationally fosters the research and practical application of regional groundwater flow. The RGFC is organizing two sessions and a whole topic at the upcoming IAH Congress, 9–14 September 2018, Daejeon, South Korea.
T7 Advances in Karst and Fractured-rock Hydrogeology is powered by our Commission.
Sessions:
T7.1 Recent developments in karst hydrogeology
T7.2 Characterizing fractured rock aquifers
T7.3 Modeling of flow and transport in karst/fractured-rock aquifers
T7.4 The critical zone in karst system (Karst Institute of Geology CAGS, UNESCO-IGCP Special Session)
T7.5 Regional flow systems of deep carbonates - Geological agency, discharge features and practical consequences (organized by the RGFC)
Understanding the flow conditions and permeability distribution of deep carbonate systems with unconfined and confined segments are critical because these systems contain significant drinking and thermal water resources, moreover, hydrocarbon reservoirs and MVT deposits. These areas can be suitable for CO2 sequestration as well. Contrary to this great need, the knowledge of these reservoirs is very limited due to their depth and consequent high drilling and exploration costs. This session intends to foster and mediate the scientific discussion about these carbonate systems regarding their flow characteristics, driving forces, water type, the geological agency of flowing water and the practical application of this knowledge.
T2.6 Innovation in regional groundwater flow **understanding.**
The session attracts abstracts related to theoretical or practical aspects of regional groundwater flow. The focus is put on innovation, which can be interpreted in relation to the applied approach or method or simulation technique, theoretical development. Moreover, we are waiting for abstracts demonstrating the practical application possibilities of regional groundwater flow concept in water management, mitigation of climate change or in the exploration of hydrocarbons, geothermal energy and ore deposits.

Visit the RGFC website for more information: https://regionalgwflow.iah.org/

Copied from: https://iah.org/news/45th-iah-congress-call-abstracts

Sustainable Water Resources Management (SWARM)



Did you know that IAH supports a journal other than Hydrogeology Journal? Sustainable Water Resources Management (SWARM) published by Springer-Nature has Dr. Jim LaMoreaux as Editor with Dr. Cliff Voss as Associate Editor. IAH lends support to development of the journal and the IAH logo appears on the front cover. SWARM's focus is on articles addressing water resources management, sustainability of water resources, ground and surface water quantity and quality, water use and reuse methods and research, geopolitical and socio-economic effects and constraints, ecological impact and human health, agricultural and climatic effects on water resources, natural and man-induced contamination of water resources, geothermal uses, water availability, surface and ground water interaction, managed aquifer recharge and storage. It is unique in that it addresses not only the technical aspects of the science, but also looks at them from the views of stakeholders, policy makers, socio-economists, and regulators. SWARM is published four times a year and was started in 2016.

As the rejection rates for water resources journals have risen, including Hydrogeology Journal, edited by Cliff (and provided as a benefit to members of the IAH US National Chapter), and Environmental Earth Sciences, edited by Jim, one of the motivations for founding SWARM was to provide an innovative medium for authors n which to publish the results of their work. In relation to this, the IAH Managed Aquifer Recharge (MAR) Commission headed by Dr. Peter Dillon currently is preparing a topical SWARM issue on MAR that will appear later this year. Papers in the topical issue were prepared based on presentations at the ISMAR 9 Conference in Mexico City in 2016. IAH was one of the organizers of the conference. (ISMAR 10 is scheduled for May 20 to 24, 2019 in Madrid, Spain. For further information you may contact ismar10@tragsa.es.)

SWARM solicits articles from authors in both developing and developed countries. Another advantage of the journal is that many of the subscribers from developed countries look on SWARM as an excellent source for information about areas in developing countries where they are looking to implement projects.

Contributed by J. LaMoreaux and C. Voss

Geological Society of America Annual Meeting 2018.

RGFC North American regional co-Chair John Molson, together with René Therrien of Université Laval, are co-chairing a proposed Special Session at the upcoming GSA, entitled Advances in the development and application of hydrogeological models. It will be co-sponsored by the GSA Karst Division. The submission site will be open in April.

Contributed by J. LaMoreaux

Member News and Notes

John Moore 1931-2018

We are saddened to learn that John Moore passed away. John served as Chair of the US National Chapter (USNC) of IAH from 1980-84 and as President of IAH from 1993-1996. John and Dr. Phil LaMoreaux are the only two Americans to serve as President of IAH. John worked for the US Geological Survey (USGS) from 1960-1989 retiring as Deputy Assistant Chief Hydrogeologist. After retiring from the USGS, he worked as a technical advisor to the US Environmental Protection Agency (EPA) and the US House of Representatives for three years. He remained active in IAH and in hydrogeology well into his 80s and was an honorary Life Member. Joe Rosenshein and John co-edited the History of Hydrogeology in the United States and John co-authored a paper on the history of the USNC.

John in Krakow, Poland at IAH Congress

The first time I met him (mid 90s) he was hosting a well-known Russian hydrogeologist Dr. Igor Zekster on one of the early scientific exchange visits between US and former Soviet scientists. John brought Dr. Zekster to my office at EPA and I later met him in the field on the Estonia-Russia border.

Over the years, I traveled with John to IAH Congresses in Slovenia, Poland and Mexico. I have fond memories of riding the train from Vienna to Ljubljana with John and his wife Dickie to attend an IAH Congress in Slovenia. For those who knew John, he will be remembered for his enthusiasm, his willingness to share his knowledge and experience with younger peers and his amazing network of friends and colleagues all around the world. We will miss his camaraderie and friendship.

Contributed by Mike Wireman
Past-President USNC IAH

Groundwater 101

How most people see groundwater in the ground.

Gary Robbins, Professor of Geology at the University of Connecticut, has been giving lectures in Connecticut on groundwater to lay audiences. Despite the importance of groundwater in Connecticut for water supply, many, if not most, people who own wells or rely on public supply wells have little appreciation of groundwater fundamentals. This includes members of wetland and planning and zoning commissions who make decisions affecting water supplies. Gary's presentations cover the basics of groundwater storage and flow and delve into protection, sustainability, and contamination. You can catch a webinar presentation entitled Groundwater 101 archived at the link below.

http://clear.uconn.edu/webinars/CLEARseries16/groundwater.htm

Adopt A School Partner

PE LaMoreaux & Assocs., Inc. (PELA), an international environmental consulting firm, has been an Adopt A School Partner for Rock Quarry Elementary for 20 years. The Adopt A School Program was developed by the West Alabama Chamber of Commerce as a way to bring local businesses and schools together to benefit from one another. PELA shares AGI Earth Science Week Kits with third, fourth and fifth grade classes at Rock Quarry and sponsors a Shadow Day every year where students and teachers learn more about careers in environmental sciences, among other educational activities.

Early Career Hydrogeologists Network News

Hi Everyone!
We are now on Twitter (ECHN_USA)! We've made a number of updates to our website including webforms to sign up for the mentor-mentee program. One of the goals of the ECHN is to provide mentorship and help connect them with possible job opportunities. We encourage new and continuing members to check out our jobs database with real-time feeds on our site (http://echn-usa-iah.org/jobs/)

We are also in the process of building an academic and industry database and an academic database of hydrogeology professors for potential graduate school advisors or employers. As always, we are constantly updating our website and providing new ideas so check back often. We are currently searching for ECHN liaisons for the regional GSA meetings. Please email us you are an ECHN member and plan to attend any of the GSA sectional meetings.

Photo: ECHN member, Adam Milewski, posing before fieldwork on transmission losses in Ourika Valley, Morocco.

We are continuing to identify and recruit Early Career Hydrogeologists into our membership. Please let us know if you meet these criteria so we can include you in membership communications. Contact us at echn.usa.iah@gmail.com or check out our Facebook page (ECHN USA IAH) and LinkedIn Group (ECHN USA IAH). Please feel free to reach out to colleagues and friends about joining the new ECHN and IAH. In other words, we encourage everyone to join IAH and the ECHN (currently free) to take advantage of these opportunities. Student membership prices are now only €30. Make sure to follow our updates and events on the website (http://echn-usa-iah.org) and social media (Twitter: ECHN_USA; Instagram: @echn.us; Facebook: ECHN USA IAH). We are always looking for more people to join and become more involved in the ECHN. Please email Adam Milewski (milewski@uga.edu) or the ECHN (echn.usa.iah@gmail.com).

Contributed by A. Milewski

IAH-USNC 2018 Graduate Student Sponsees

Meet the new 2018 IAH-USNC Sponsored Graduate-Student Members

The IAH U.S. National Chapter (USNC) sponsors one-year, graduate-student memberships annually through general funds and through generous individual contributions of our members. This year we are sponsoring ten students, nominated by their faculty advisors and/or IAH-USNC members. This year's sponsored students represent a diverse, ambitious and accomplished group of graduate students with strong international hydrogeology interests. If you are interested in

sponsoring or nominating a student for sponsorship, please contact the IAH-USNC Membership Liaison (Devin Galloway, dlgallow@usgs.gov, 916-801-2040).

JOSHUA BARNA, M.S. Candidate (Earth & Environmental Sciences), Dept. of Earth & Environmental Sciences, University of Kentucky (Nominated by Dr. Alan Fryar [Advisor]). jmba286@g.uky.edu; https://ees.as.uky.edu/users/jmba286

Josh earned his B.S. in Geology from Bucknell University (2017). From there, he moved to Lexington to pursue an M.S. in Earth & Environmental Sciences at the University of Kentucky. Working with Dr. Alan Fryar, his research focuses on identifying karst groundwater flowpaths and recharge sources using stable isotopes and quantitative dye tracing in the Houzhai Karst Basin in Guizhou, China. After graduation, Josh hopes to apply his skills to the field of environmental consulting and views his membership in IAH as a wonderful opportunity to connect with other members of the hydrogeology community.

VICTORIA BLUMENBERG, M.S. Candidate (Earth Sciences), Dept. of Geography & Earth Sciences, University of North Carolina at Charlotte (Nominated by Dr. David Vinson [Advisor]). vblumenb@uncc.edu. Victoria received a B.S. in Geography (2012) and is currently pursuing an M.S. in Earth Sciences at the University of North Carolina at Charlotte. Victoria's thesis research focuses on isotope hydrology and sustainability of groundwater in the High Plains region of northeastern New Mexico. The research combines water isotopes (O and H), C isotopes limited residence-time analysis, and geospatial analysis in a regional network of wells to improve understanding of groundwater evolution and sustainability. Upon completion of her graduate education, Victoria's professional goals are to combine her military experience with her scientific expertise to work with groundwater stakeholders, and ultimately to address international water-resources conflicts. Victoria is a recent recipient of a Geological Society of America student research grant.

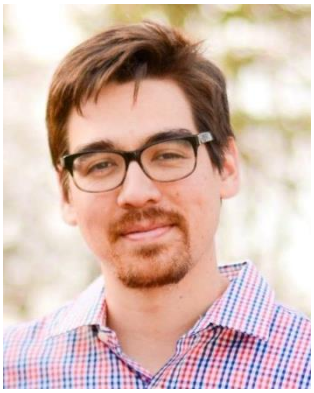
PAULA PERILLA-CASTILLO, Ph.D. Candidate (Geology), Dept. of Earth and Planetary Sciences, The University of Tennessee (Nominated by Dr. Larry D. McKay [Advisor]). pperill1@vols.utk.edu; https://eps.utk.edu/graduate/gradstudents.php

Paula earned a B.S. in Geology (2013) from the National University of Colombia, and then worked with hydrogeology and environmental geology consulting companies in Bogotá. Paula earned an M.S. in Geology (2017) from the University of Oklahoma, were she worked as a Graduate Research Assistant for the Oklahoma Geological Survey. Her M.S. thesis characterized the Arbuckle Group in Oklahoma, aiming to provide more accurate hydrogeological parameters to the induced seismicity research that has been conducted in Oklahoma. To estimate the parameters, Paula analyzed the response of water levels in deep wells to Earth tides. As a Ph.D. student, Paula is researching the paleohydrology and paleoclimate in the Upper Tennessee River. Upon completion of her degree, Paula hopes to work in hydrogeology, focusing on the availability and protection of water resources for developing countries. To her, IAH membership presents a great opportunity to engage in the latest information on protection of water resources strategies, networking, and workshops.

CAROLINE HACKETT, M.S. Candidate (Hydrogeology), Jackson School of Geosciences, University of Texas (Nominated by Dr. Jack Sharp [Advisor]). caroline.hackett@utexas.edu

Caroline earned a B.S. in Civil and Environmental Engineering (2013) from the University of Virginia. She then worked in Austin, Texas, at the Texas Rural Water Foundation and as a Hydrologist at the Texas Commission on Environmental Quality. Currently, Caroline is working toward an M.S. in Hydrogeology at the University of Texas at Austin. She studies recharge from the upper Nueces River to the Trinity and Edwards aquifers in south-central Texas. Using a variety of field techniques and water balance modeling, she is quantifying the role of alluvium in buffering discrete infiltration into karst features and promoting diffuse recharge. Caroline ultimately plans to work on integrated water-resources management and views IAH membership as an essential means to network and engage with groundwater experts around the world.

MARK A. HIGGINS, Ph.D. Candidate (Geosciences), Center for Integrative Geosciences, University of Connecticut (Nominated by Dr. Gary Robbins [Advisor]). mark.higgins@uconn.edu; https://earth.uconn.edu/people/graduatestudents/



Mark earned a B.S. in Geosciences (2011) from the University of Connecticut. Afterward, he worked six years for Flexible Liner Underground Technologies (FLUTe) as a Field Engineer and East Coast Manager where he specialized in borehole transmissivity profiling methods and discrete multi-level sampling. Mark's former work involved environmental site characterizations across the USA, Canada, Caribbean, and Europe. His current research focuses on

characterizing microbial biodiversity in groundwater and soil samples to identify contaminant source indicators and track groundwater flow.

GARE AMBROSE-IGHO, M.S. Candidate (Hydrogeology), Dept. of Geography, Geology, and the Environment, Illinois State University (Nominated by Dr. Eric W. Peterson [Advisor]). gambro1@ilstu.edu

Gare earned a B.S. in Soil Science (2012) from the University of Benin (Nigeria). She then worked for two and a half years in Nigeria and currently is in her first year of the M.S. Hydrogeology Program. Before pursuing a Ph.D., Gare plans to work for a few years to gain experience. Her areas of interest are in algal blooms and their effect on the properties of water, the spatial patterns of algal blooms in lakes and the use of remote sensing to detect algal blooms in lakes. Her professional goal upon completion of the Ph.D. is to work as a research consultant for a public organization or government agency.

ZAINA HUSSEIN MSELI, Ph.D. Candidate (Environmental Engineering), University of Dodoma, Dodoma, Tanzania; visiting student at the School of Earth Sciences, The Ohio State University (Nominated by Dr. Audrey H. Sawyer [Asst. Professor, School of Earth Sciences, The Ohio State University]). zainahussein@yahoo.com Zaina earned a B.S. in Environmental Engineering (2009) from the University of Dar es Salaam (Tanzania). She then worked for two years with a water supply and sanitation/sewerage consultant company in Tanzania, and is currently an assistant lecturer and pursuing a Ph.D. at the University of Dodoma. Her research focuses on the hydrogeological assessment and groundwater characterization of Makutopora Basin, Dodoma, Tanzania. Zaina's areas of interest include aquifer characterization, water-resources evaluation and management, groundwater budgets and groundwater-flow modeling. Upon completion of her Ph.D., she plans to research the sustainability of groundwater resources and their resilience to climate change.

RICH PAULOO, Ph.D. Candidate (Physical Hydrology), Hydrologic Sciences Graduate Group, University of California, Davis (Nominated by Dr. Graham Fogg [Advisor]). rpauloo@ucdavis.edu

Rich earned a B.S. in Biology with a minor in Conflict Resolution (2011) from the University of California, Berkeley. Afterward he worked as an Environmental Science educator in California for several years. As a third-year Ph.D. student, his research focuses on globally significant problems of groundwater salinization in irrigated basins and on development of groundwater-quality management models to determine mitigative strategies in California and the North China Plain. Rich's research interests include regional groundwater quality, contaminant transport in heterogeneous alluvial aquifers, geostatistics and groundwater-quality mapping, linear programming and hydroeconomic optimization, and data science. He has travelled internationally and co-led a National Geographic Student Expedition for high school students to Thailand in 2016.

ELISA (MISTY) PORTER, Ph.D. Candidate (Hydrogeology), Dept. of Geology, University of Kansas (Nominated by Dr. Gwendolyn Macpherson [Advisor]). misty.porter@ku.edu

Misty earned a B.A. in Biology with a minor in Geology (2015) from Metropolitan State University of Denver. In 2017, she completed an M.S. in Geology at the University of Kansas, where her research led to the development of a web app for visualizing multiple spatial and temporal data sets to capture the impacts pumping the High Plains aquifer during different climates has on groundwater levels and streamflow in southwest Kansas. The interactive web app fosters knowledge discovery as users explore the data and model results to make informed decisions about sustainable policies and resource management strategies in the face of a changing climate. Misty is currently developing an application for cyanobacterial harmful algal blooms. She is working on further merging this kind of qualitative and quantitative analysis with spatial and temporal visualization to improve understanding of water resources on local, regional, and global scales. Misty hopes to continue conversations with stakeholders and scientists surrounding the future of water resources, and views IAH as a great opportunity to begin the international dialogue necessary for effective science communication, innovative research, and collaborative solutions.

MELANIE VITAL, Post-Doctoral Student, Dept. of Hydrogeology, University of Mar del Plata (Nominated by Dr. Jim Lamoreaux [Chair, IAH-USNC; PE LaMoreaux & Associates, Inc.]). Ingagr.melanie.vital@gmail.com

Melanie completed an M.S. degree in Environmental Science (2012) from Agroparistech and Paris 11 University, and a Ph.D. in Chemistry and Geochemistry (2018) from the University of Mar del Plata (Argentina) and the University of Strasbourg (France). She received a grant from the ECOS-SUD program which allowed her to carry out her Ph.D. thesis in collaboration between France and Argentina. Her work focused on the study of the kinetic dissolution of the Pampean aquifer constituents in the southeast of the Province of Buenos Aires (Argentina). In 2017, she participated in the summer campaign as a scientist in the Almirante Brown Station in Antarctica. Melanie´s post-doctoral research aims to identify the sources and understand the dynamics of ^{222}Rn in the Pampean aquifer in the southeast of the Buenos Aires province.

Contributed by D. Galloway

2018 IAH Congress in Daejeon, Korea.

Abstract submission, registration and sponsorship enquiries for the 45th IAH Congress to be held in Daejeon, Korea in September 2018 is now open!

Hosted by the IAH Korean National Chapter, Korea Institute of Geoscience and Mineral Resources (KIGAM) and Korean Society of Soil and Groundwater Environment (KoSSGE), the congress will focus on how groundwater science, technology and policy can help ensure all have equal rights for sufficient, safe and affordable water regardless of where they are born and live, or who they are.

With the overall theme "**GROUNDWATER AND LIFE :** Science and Technology into Action", nine main topics have been defined:

- T1. Groundwater and Life: Progress towards the Solution of Critical Problems
- T2. Spotlight on Modeling, Emerging Technologies and Their Applications
- T3. Global/Regional Environmental Change and Groundwater Impacts
- T4. Strategies to Assure the Sustainability of Groundwater Resources
- T5. Groundwater Quality and Contamination
- T6. Groundwater and Surface Water: an Integrated View
- T7. Advances in the Study of Karst and Fractured-rock Aquifers
- T8. Coastal Zone Management and Water Resources

- T9. Groundwater and Energy

Mid-congress excursions are proposed to limestone caves, a national geopark, curative springs, a wetland conservation area and the national groundwater information centre. Pre- and post-congress training courses and excursions are being planned.

See you there!