International Association of Hydrogeologists
U.S. National Chapter
FALL 2018 Newsletter
Editor: Gary Robbins

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Cover Photo: Old flowing well in wetland fen in Western Connecticut. Groundwater in the fen, discharges to the muck with the water table being only about a foot or so beneath the ground surface. Pipes inside the well go deeper and discharge into the concrete well so that water in the well rises about 1 foot above the ground surface. Water in the well discharged to some long-forgotten structure via gravity in pipes that can be seen inside the well. The water level in the well is controlled by an overflow pipe (on the right side of the structure in the picture). Water flows out the pipe to a small stream which discharges to a downstream farm pond. Water appears to discharge from the pipe to the small stream all year long, even in the dry months. Photo by M. Higgins.

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A Note from the Chair – *Jim LaMoreaux*

The year is passing rapidly for the US National Chapter (USNC) with the highlight of the year happening in September. The IAH 2018 international congress was held in Daejeon, Korea, September 6-15. The Korean National Chapter worked hard and all those US Members who attended found it to be an excellent conference. In addition, much has occurred since our Spring Newsletter and several other important meetings are upcoming before the year ends.

The USNC will hold its biannual meeting at GSA in Indianapolis November 4-9. Our meeting will be at its usual time on Sunday afternoon from 5:15 to 7pm in Room 103 of the JW Marriott. Afterwards we will go to dinner at a nearby restaurant. Everyone is invited to join us for the meeting and for dinner. Recommendations for restaurants are welcome.

In the Spring Newsletter we highlighted the biographical sketches of ten very well qualified graduate students who were selected to receive one year memberships in the USNC. Please reach out to these students, if you have not already done so, and encourage them to renew their membership next year to help expand our ranks. These young people represent future leaders of our organization and are automatically eligible to participate in the Early Career Hydrogeologists Network (ECHN).

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. The ECHN will be having another reception this year at GSA to attract new members and give them and existing members an opportunity to network and become friends. Look for the details on their website and social media sites (http://echn-usa-iah.org and Twitter: ECHN_USA; Instagram: @echn.us; Facebook: ECHN USA IAH)

Tim Parker and Clint Carney are continuing to represent the USNC with AGI. A full report is included in the newsletter. The IAH USNC is an Associated Society of AGI and as such our members are eligible for discounts at AGI sponsored functions. One of these functions is a joint webinar sponsored by AGI and AIPG for which the USNC is serving as a media partner. The seminar is on A Journey through the Geology and Aquifers of New England and Why Groundwater Wells need to be Re-developed. See our website for details.

Continuing to expand our contacts in the Americas we are reaching out to Joanne Thompson, IAH Vice President for North America, Diana Allen, President of the IAH Canadian National Chapter and Miguel Rangel Medina, President of the IAH Mexican National Chapter. See an

article from Diana Allen in this issue of the newsletter. Please also keep Joanne and her family in your thoughts and prayers as her father recently passed away. USNC Past President Vic Heilweil is making contacts for us in South America through his travels there. Most recently he attended the World Water Forum in Brazil for which he has prepared a full report included herein. These activities have the goal of possibly organizing an IAH Congress in the Americas in 2022. We are looking for volunteers who may want to spearhead this effort. IAH Vice President for Science and Programme, Dave Kreamer, has shared with us Guidance Notes for Organizing an IAH Congress to get a better idea of what is involved.

As you can tell from this 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 for their efforts on the USNC's behalf. In addition Dave Kreamer, IAH Vice President for Science and Programme, is serving in an ambassadorial role for the USNC carrying our torch internationally. Let's 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.

Jim

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 each other, 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 See if you can beat this picture—An old well was blocking the addtion of a new extension on an historic mansion in Southern Connecticut. Instead of demolishing the well, they built their new extension around it. In fact the extension interior was designed and furnished to match the well. Please consider contributing to the Spring issue.

USNC in Korea

The IAH 2018 international congress was held in Daejeon, Korea, September 6-15, 2018. The USNC was well represented. Here are some member pictures.

Jack Sharp and Frank Schwartz Reminisce

Jim LaMoreaux and Dave Jim Kreamer at the Springer booth. Environmental Earth Sciences of which Jim is Editor will publish a special issue on Ground Water Sustainability based on papers presented at the conference.

David Boutt, shown here with Abe Springer , presented the Birdsall Dreiss Lecture as part of the LaMoreaux International Lecture Series.

The next IAH congress with be held in Malaga, Spain on September 22-27, 2019.

A Note from the IAH Vice President for Science and Program

Hello all. The Congress in Korea was a great success and had a number of events in addition to regular technical sessions and wonderful keynote addresses. On a mid-week field trip I got to take a boat to a cave entrance, crawl and wiggle through 1.7 km of cave passage (and then back)!

The IAH Council, which includes Vice Presidents from different continents and regions, met before the Congress and discussed things like budget, publications, the "Forward Look" program, our Strategic Overview Series which addresses different topics of groundwater importance, and made decisions on where future Congresses will be held. Next year in September, our next Congress will be held in Malaga, Spain on the Mediterranean seacoast. In 2020, we are tentatively scheduled for a Congress in Brazil, and in 2021 in Brussels, Belgium.

Our members have been busy producing theme issues in our journals with an issue on Managed Aquifer Recharge in the Journal of *Sustainable Water Resources Management*, and a recent issue of *Hydrogeology* on coastal groundwaters. IAH has also had a presence in many conferences. For example, Callist Tindimugaya addressed the United Nations High Level Political Forum in July. Lots of good things are happening with our National Chapters, Commissions, and Networks. And our own Bridget Scanlon won the IAH Presidents's Award. Congratulations –well deserved!

I will be attending the National Ground Water Association's "Groundwater Week" in Las Vegas this December – perhaps I'll see you there!

Happy Autumn!

Dave Kreamer

Callist Tindimugaya, IAH Vice President for Sub-Saharan Africa addresses the High Level Political Forum on Sustainable Development Goal 6 - Water and Sanitation at the United Nations July 2018

News from the North - IAH-CNC President Diana Allen

IAH-CNC Conferences and Events: GeoOttawa2017, held in Ottawa in October 2017 in partnership with the Canadian Geotechnical Society (CGS), was a great success. Over the summer of 2017, IAH-CNC created two display banners on "Canadian Achievements in Hydrogeology", which were displayed for the first time at GeoOttawa2017. Also, the 2016 Farvolden award lecture by René Lefebvre, and the 2017 Farvolden award lecture by Mike Wei were given at this conference.
The IAH-CNC participated in an international conference "Resources for Future Generations" that was held in Vancouver June 16-21, 2018. They organized two sessions with a groundwater focus: one on unconventional oil and gas, and the other on mining. These sessions complemented other water- and groundwater-related sessions. This was the first ever international conference on energy, minerals, water and the Earth, and the IAH had a strong presence at the meeting.

The IAH-CNC partnered with the CGS to host GeoEdmonton 2018, which was held September 23-25, 2018. Our annual general meeting was held in conjunction with this conference. Masaki Hayashi, a Canadian hydrogeologist from the University of Calgary, presented his Darcy Lecture, and Larry Bentley, the 2018 Robert N. Farvolden award winner, presented his lecture at the conference.

The next big conference is the Geological Association of Canada – Mineralogical Association of Canada – International Association of Hydrogeologists (GAC-MAC-IAH) conference in Quebec City, May 12-15, 2019. A variety of groundwater-related sessions have been organized, and the call for abstracts is forthcoming.

In addition to these major events, the Regional Representatives have organized a variety of local events in the different provinces across Canada.

Groundwater News and Information

AGI News

AGI has created an AGI Geoscience Policy Annual Review which summarizes federal geoscience policy actions.

The Information Services group completed migration of the AusGeoRef, CanGeoRef and Groundwater and Soil Contamination databases to a new platform. The American Geosciences Institute (AGI) and the Canadian Federation of Earth Sciences (CFES) have launched a new website for CanGeoRef, the preeminent bibliographic database for Canadian geoscience literature covering publications from the early 19th century. See at https://cangeoref.americangeosciences.org/

AGI offers webinars from their website that has attracted thousands of views. Several that have been popular in 2018 are: New England Aquifers, Tracking the Global Supply of Critical Materials, Managing Groundwater Storage, and Geologic Mapping to Empower Communities.

AGI is looking to expand its pool of candidates for AGI officers and awards for the 2019 nominations cycle. The strength of our Federation is dependent on having participation from Member Societies in the form of nominations from within their membership to serve on AGI's Executive Committee or receive AGI awards. AGI's Past President Jean Bahr, who will be chairing AGI's 2019 Nominating Committee, or Diane Smith, a Member at Large of the AGI Executive Committee, may be contacting you to encourage your society to submit one or more nominations prior to the February 1, 2019, deadline.

Contributions from Leigh Sutherland, AGI, Tim Parker and Clint Carney

Excerpt from the AGI First Quarterly Update for 2018

AGU Geoscience and Society Summit

"The Summit aims to create a highly interactive forum for effective cooperation between scientists and users of scientific information to tackle global and local challenges around sustainability of natural resources and systems, global health, and resilience." Gary Robbins is helping to develop the groundwater and agriculture program. Visit the summit website for more information. https://connect.agu.org/gss/home

World Water Forum 8 (Brasilia March 18-23, 2018)

Organized by the World Water Council, the World Water Forum is held every three years and is the foremost international event in the water sector. World Water Forum 8 (WWF8) in Brasilia was the first time it has been held in the southern hemisphere. In some ways, WWF8 emulated the Olympics, with Opening and Closing Sessions that incorporated a strong cultural component. It attracted nine heads of state (Brazil, Cape Verde, Equatorial Guinea, Guyana, Hungary, Morocco, Sao Tome, Senegal, South Korea), approximately 100 ministers, parliamentarians and mayors, executives of Fortune 500 companies, as well as thousands of water and sustainable development experts. Thus, it provided a unique opportunity for water managers, policymakers, and investors to interact with scientists and citizens. More than 20,000 attendees from 170 countries participated, with an overarching goal of finding solutions to the world's water security challenges. The WWF8was a tremendous opportunity for scientists, water managers, business leaders, and politicians to share thoughts and converge on the importance of sustainable global water resources protection and management.

The breadth and depth of the more-than 300 technical and policy sessions was truly impressive, with both plenaries on water science and water policy issues, along with more-specific technical concurrent sessions. Because all sessions had simultaneous translation (Spanish, English,

Portuguese), language was not a barrier for U.S. attendees. While most of the meeting was focused on surface water, there were several sessions highlighting the great importance of groundwater in meeting future societal and environmental needs, along with the need for better transboundary cooperation.

In addition to plenary and technical sessions at the Convention Center, WWF8 had three other venues. The “Expo” tent hosted booths from numerous countries and international organizations, including the U.S. Department of Interior’s (DOI) Water and Science Branch’s booth, hosted by the U.S. Geological Survey (USGS) and Bureau of Reclamation (USBR). Unlike past Forums, the U.S. Water Partnership did not have a booth, so DOI’s was the only formal U.S. presence and served as "home base" for all US attendees at the meeting. The “Fair” tent hosted pavilions of private companies, including elaborate displays (and plentiful treats during cocktail hour). The “Citizens Village” tent had demonstrations and information for school children and the general public.

High-level US Government attendees included: Brenda Burman and David Palumbo, USBR Commissioner and Deputy Commissioner, respectively; Dr. Andrea Travnicek, DOI’s Deputy Assistant Secretary for Water and Science; Mr. Robert Mason, USGS Senior Water Adviser, Dr. William Logan, Director of the U.S. Army Corp of Engineers (USACE) International Center for Integrated Water Resources Management (ICIWaRM), Colonel Jim DeLapp, commander of USACE-Mobile District, and Dr. Sasha Koo-Oshima, U.S. Environmental Protection Agency (EPA) International Water Program Senior Advisor. Ms. Andrea Travnicek gave a keynote address at the “Science-Policy Dialogue for Solving Global Water Challenges” session, stressing the need for national stream gages networks, open data, national consistency, and international partnerships. Ms. Brenda Burman gave a keynote addresses and presentations at the “Strong Trans-boundary Natural Resources Organizations”, “Improvement of Water Infrastructure Resilience”, and “Crisis Management Strategies for River Basins” sessions. DOI also played a major role two Regional Processes sessions: “Hydrologic Networks of Continental Scale", coordinated by Dr. Ney Maranhað, Director of Brazilian National Water Agency (ANA), with presenters from Australia, Brazil, Canada, China, and the U.S.; and "Water Quality Networks of Continental Scale", with the same countries.

In addition, WWF8 presented an opportunity to meet informally with many international water agencies and universities. U.S. agencies were able to convene bi-lateral meetings on scientific collaboration, technical exchange, and capacity-building with many countries including Brazil, Paraguay, Cape Verde, Iraq, Mexico, Pakistan, Paraguay, and Peru. In particular, the USGS had several productive meetings with the ANA and the Brazilian Geological Survey (CPRM) regarding our ongoing assistance for their “National Hydrologic Networks” Program. The U.S Delegation also had the privilege of meeting with our U.S. Embassy in Brasilia, including an overview by Ambassador McKinley of Brazil’s pressing environmental and natural resources challenges.

International Association of Hydrogeologists (IAH) members in attendance included Dr. Antonio Chambel (IAH President), Dr. Luis T. Ribeiro (IAH Portugal National Chapter Past President),

Dr. Michael Campana (IAH U.S. Chapter Board Member), Vic Heilweil (Past IAH USNC President)

Contributed by Vic Heilweil and Brian McCallum, U.S. Geological Survey

Last Drop: An Update on the Cape Town Water Crisis

Micaela Unda is a recent graduate of Duke University with a degree in Environmental Science and Policy. She delves into all things environmentally-minded through her blog titled "No Roaming Charges," published by the Duke Nicholas School of the Environment. Posted on August 9th, this blog details her recent travels to Cape Town and the effects of the drought on everyday life. Recently relocating to Oakland, Micaela works as a Climate Associate for the County of Alameda .

"You know what to do with the bucket?" We knew this travel experience would be different when we began to Google how to go about shampooing with a bucket. This was on July 12. At this point, the reservoir was just below 50% and level 6b water restrictions were still in place. Although Day Zero had been called off, Cape Town's motto was still "If it's yellow, let it mellow" and the scarcity of water had transformed it into liquid gold, a sacred resource not to be wasted.

Upon landing in Cape Town International Airport, we were met with emboldened letters and hundreds of one liter water bottles hanging overhead reading "Water is Our Lifeline."

Signs entering Cape Town International Airport reminding visitors to conserve water

Water is our lifeline. We are bound both to and by its trickling streams and flowing rivers. We may want to deny

our reliance and our dependence on nature, but with every drought, we once again see our connection. Water does in fact equal life.

The signs only continued as we threw our backpacks over our shoulders and continued on, out of the terminals, down the stairs and into a taxi. “Less water, more solutions.” “Don’t waste a drop.” “Defend water.” The city was filled with reminders of urgency on billboards, hotel front desks, graffiti, advertisements, bathroom mirrors, everywhere.

Street art along the Cape Town waterfront

“I’ve lived here for 8 years. We are surrounded by water, but we have none. They’ve kicked Day Zero, but it is still bad. We have 25 liters a day per person,” shared our Uber driver as we zigged in and out of the hills surrounding the city. For context, that’s enough for a 90 second shower, a half-gallon of drinking water, and one toilet flush. With only 6-7 gallons per day, every drop truly does count.

The Cape Town water crisis arises from a combination of issues – three years of drought, poor water management and delayed reactions. With a population rising to 3.7 million, the city and its outdated water infrastructure can no longer handle the demand for water. During the first two years of the drought, the city government failed to place harsh restrictions on water usage. Rather, a series of vague plans were released to be “water conscious” and “keep usage in mind.” For the most part, a majority of the population just crossed their fingers and prayed for rain.

It wasn’t until September that residents were met with level 5 restrictions, mandating a limit of 87 liters of water per day per person. At this point the dams and reservoirs were at 30% capacity. To worsen the matter, only 39% of residents complied with the mandates put in place (Dixon, 2018). Fees were imposed. And the water restriction was lowered even further. It will stay this way until the reservoirs reach 85% capacity. The City of Cape Town was met with a tragedy of the commons and it wasn’t going well.

During our time in Cape Town, although the same restrictions on water usage were in place, the reservoirs were on the rise. However, we were confronted with pressing stories from various hostel and AirBnb hosts of the drastic changes made to accommodate for Day Zero.

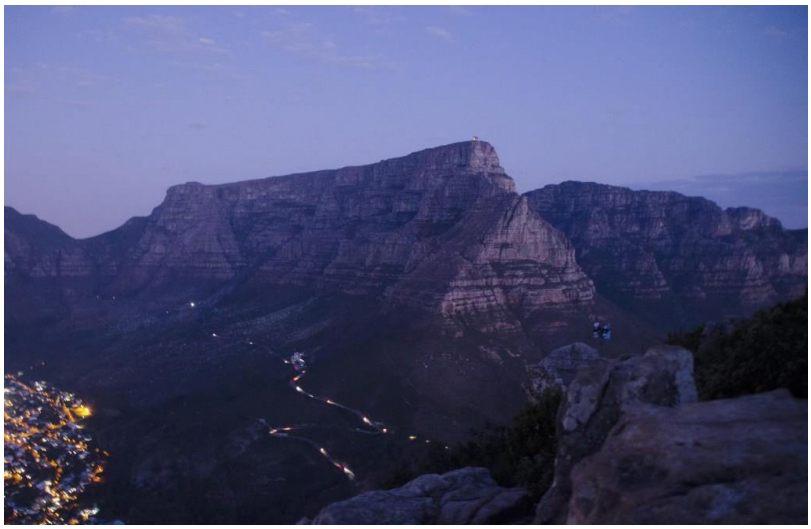
“How bad did it get?”

"At one point the government was going to take away private water sources as a last-ditch measure. Those water tanks down there, they were going to take them. The family down the hill had an $80,000 rand (~$6,000 USD) penalty for going over the water limit. We can normally fit at least 15 people in our household, but we are listed as a two person household so we haven't been able to host at full capacity or really at all."

Tips for avoiding Day Zero were plastered everywhere. "Take stop-start showers. Flush with greywater. Only flush when necessary. Use take away dishes which require no cleaning. Purchase bottled mineral water. Collect your shower water. Don't run the taps in the bathroom for shaving or teeth brushing. Use efficient shower heads." While sitting for a meal, restaurants would limit a glass of water with dinner to one. Waterless hand sanitizer became their best friend.

Small businesses and individual citizens weren't all that were affected either. Severe limitations were further placed on commercial businesses. We cringed with pity every time we would pass a laundromat. Certain businesses had it extra difficult. Commercial properties were to reduce consumption by 45% compared to their 2015 pre-drought consumption. Irrigation with municipal drinking water was prohibited. However, what came out of such restrictions was what truly made traveling throughout Cape Town inspiring.

A purple Table Mountain



With every breath and step, we clambered over the sandstone and granite cliffs. Each staple and ladder brought us one step closer to the top of Lion's Head, one of the three mountain peaks surrounding the city. Reaching the top, you are met with breathtaking views of the distinguishable city skyline, or rather mountain skyline. The expansive southern Atlantic Ocean surrounds you and the sunset turns the mountain range a glowing shade of yellow, slowly muting to a deep purple. Table Mountain stood proud and tall to our right. The famed mountain itself took its own necessary measures to combat the drought. After visitor hours, waste water is transported to the base of the mountain via the Table Mountain cable car and is then pumped into the municipal sewer system. Taps were turned off and compost waterless toilets replaced ablutions at the top of the mountain. Waterless hand sanitizer stations were installed. One of the top tourist attractions in the city did its part.

Although some places within the city were struggling, others lived in their own water haven. After a ferry ride out to Robben Island, I landed on the island prison that held Nelson Mandela for 19 of his 27 years in jail. There, they were busy taking hour long showers. Robben Island served as an example of possible solutions to the drought. Although desalination is highly costly, the small island off the coast of Cape Town installed a desalination water plant prior to the drought. Producing 500,000 liters of water per day, the small former prison town lived worry free. Furthermore, with a solar plant producing 500 kilowatts of electricity, they had saved 2,000 tons of carbon emissions.

However, as we were not living on Robben Island, we did our part. Who needs showers anyway? Every drop was watched, which led to a few comical endeavors of trying to wash our hair and shave. Before we discovered the technique of filling up a cup of water, shaving entailed rapidly turning on the faucet, wetting the razor, and turning it off. Pile on the shaving cream. Rinse. Repeat. Like the signs said, not a drop to be wasted.

Yet, with environmental news perpetually disheartening, the tragedy that struck Cape Town filled me not with discouragement nor worry, but rather hope. Higher income families cut water usage by 80%, with lower income families cutting back by 40%. People were doing what they were able to. The city decreased its water consumption from 1.2 billion liters per day in 2015 to 516 million liters per day in 2018. Other cities don't even compare. When Melbourne was met with extreme drought, it took the city 12 years to do what Cape Town did in three. California was only able to decrease water consumption by 27% during the severe drought that struck the state a few years ago (De Villiers, 2018).

People were making progress. Drastic progress. Real progress. Although a certain level of carelessness led to the drought in the first place, concerted effort and consciousness created a wave of change. Every person we encountered gently reminded us of the value of water and to save like a local. Water was no longer a resource taken for granted, wasted drop by drop. It was conserved, saved and valued. Cape Town is the story of one of the first major urban cities in the world to

almost run out of water. But it is also the story of what is possible when a city bands together to reverse environmental dilemmas. So yes, we do know what to do with that bucket.

Sources:

Cape Town's Water Crisis. (n.d.). Retrieved from http://www.capetowndrought.com/

De Villiers, J. (2018, March 7). How Cape Town avoided Day Zero and cut its water usage by 50% in 3 years. Retrieved from https://www.businessinsider.co.za/how-cape-town-cut-its-water-usage-by-50-in-3-years-it-took-melbourne-12-years-to-do-the-same-2018-3

Dixon, R. (2018, April 01). How Cape Town found water savings California never dreamed of. Retrieved from http://www.latimes.com/world/africa/la-fg-south-africa-drought-20180401-story.html

Contributed by Micaela Unda, blog posting August 9, 2018

IAH Headquarter News

Reminder: The Future of Hydrogeological Science and Engineering Needs Your Input

IAH would like your input on what you view to be the future, biggest challenges in hydrogeology. What new areas of groundwater investigation are over the horizon for our science and what are the next topics that will dominate our discussions in the coming years? As part of IAH's Forward Look, a preliminary panel of Clifford Voss (Executive Editor of our Hydrogeology Journal), Wendy Timms (Vice President for Australasia and the Pacific) and David Kreamer (Vice President for Science and Programme) are asking for your vision, and what you predict will be the most exciting and needed areas of research and investigation in groundwater science in the coming years. Please contact Dave Kreamer at dave.kreamer@unlv.edu with your questions, ideas, and feedback. Your insights are greatly appreciated.

IAH Karst Commission News

Here are some key points from the Commission meeting in July.

1. The KC Annual meeting was successfully conducted during EUROKARST2018 in Besançon, France on July 3. . The next KC Annual meeting will take place during the IAH 2019 Congress to be held in Malaga Spain (September 22-27).

2. A formal proposal was sent to the International Standard Organization (ISO) for establishing a new Technical Committee on Karst. The proposal

was prepared and submitted by IRCK and IKG, Guilin, China, and according to the last information was accepted by the Executive Committee of ISO.

3. EUROKARST2018 was perfectly organized between 2-5 July, 2018 thanks to Catherine Bertrand and her organizing team. Around 180 attendees participated in three parallel oral sessions, three post-excursions, and several social events and workshops. They were great opportunities for learning, establishment of new contacts and friendships, and especially for enjoyment of French foods and drinks.

4. The Young Karst Researcher Prizes for 2018 were awarded to Pierre Fischer, Alessandro López-Tamayo and Simone Carrière for their excellent and innovative presentations at EUROKARST2018. It was a very hard task to select the best ones from among 36 candidates. Never before had that many competed since the prize was established in 2009.

5. Andreas Hartmann together with data base expert Tunde Olarinoye presented in Besançon a new project they are working on. They are seeking data on discharges for springs but the data must cover at least three years of observation. If you want to contribute data, please get in contact with Tunde Olarinoye (tunde.olarinoye@hydmod.uni-freiburg.de).

Find out more about the Karst Commision at their website: https://karst.iah.org/

Contributed by Zoran Stevanovic

Geological Society of America Annual Meeting 2018.

John Molson, together with René Therrien of Université Laval, are co-chairing a 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.

The USNC will hold its biannual meeting at GSA in Indianapolis November 4-9. Our meeting will be at its usual time on Sunday afternoon from 5:15 to 7pm in Room 103 of the JW Marriott.

Contributed by J. LaMoreaux

National Center for Groundwater Research and Training News

Upcoming Courses

Environmental Tracers in Groundwater Hydrology: Tools for Improved Process Understanding October 15-17, Adelaide, South Australia For information click here

Introduction to Aquifer Pump Test Analysis, November 15-16, Adelaide, South Australia For information click here

ECHN News

We have lots of new and exciting developments for our ECHN. First, we'll be holding another ice breaker event at the GSA Meeting in Indianapolis. Stay tuned for more details in the coming months.

We are constantly updating our website (http://echn-usa-iah.org) with job opportunities, fellowships, and water-related events so be sure to check it out often. We hope it can become a valuable resource to early career hydrogeologists, provide a way to connect with one another, and take part in our ongoing activities.

Speaking of activities, we continue to build our 'find a mentor' program where ECHN members will have a chance to communicate with senior hydrogeologists from academia, industry, and government to help them with career development. Again, please email us at echn.iah.usa@gmail.com if you are interested in signing up for this program as a mentee or mentor. We're also in the process of creating a database of hydrogeology professors for potential graduate school advisors and updating our social media sites.

We're 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). We will continue to develop content so check back often. 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.

Adam Milewski examines the freshwater well in the Rawdatain Depression, Kuwait.

Adam Milewski and Dr. Nour-eddine Laftouhi examining wadi runoff and recharge in Morocco.

Contributed by Adam Milewski (Chair of ECHN: echn.usa.iah@gmail.com)

Member News and Notes

IAH Members Logging for Salt

IAH Members Ed Romanowicz, Director of the Center of Earth and Environmental Science at SUNY Plattsburgh, Meredith Metcalf, Associate Professor at Eastern Connecticut State University, Gary Robbins (your editor) and Mark Higgins, Ph.D., candidate at the University of Connecticut and new student member of the USNC, are evaluating how salt is getting into bedrock wells in Sherman, Connecticut. Deicing salt contamination of bedrock wells is on the rise in Connecticut. In Sherman, the research is directed at determining what fractures are discharging salty water into wells, providing guidance on the construction of new wells to avoid the problem and recommendations on modifications to existing wells as a means of remediation. The Sherman effort entails geophysical logging (Ed's job), profiling water quality with depth (Mark's job), application of the dissolved oxygen alteration method (Gary's job) and downhole sampling of active flow zones (Meredith's job).

Sherman Research Team (upper left conducting downhole geophysics, upper right conducting downhole water quality profiling, Lower left, Team in front of the UCONN mobile lab, lower right active zone sampling)

Gary Robbins
Water Systems of Rome: Ancient to Modern

For the 4th year in a row, Gary Robbins at the University of Connecticut will be offering the study abroad field course *Water Systems of Rome: Ancient to Modern.* The course is designed for science and engineering undergraduate students and goes from May 13 to May 29, 2019. The course entails field excursions in Rome, Pompeii, Ostia Antica and the Apennines. The 3 credit course is open to undergraduates from any university. Students must register and commit by February 28, 2019. To learn more go to: Water Systems of Rome

Gary Robbins

Meeting Water Challenges in the 21st Century
Study Abroad Summer Course in Florence, Italy

Gary Robbins will be offering a new study abroad course entitled: Meeting Water Challenges in the 21st Century at the International Studies Institute in Florence, Italy from June 1 to 30, 2019. The 3 credit course is open to undergraduates from any university. The course is an introduction to the challenges in meeting water resource needs. Nowhere but in Italy can one observe how water supply issues have been confronted over a span of two thousand years. The course meets Monday through Thursday with local field trips and two weekends traveling to Tuscany, Sienna and Rome. Visit the ISI Florence website for more information.

Jack Sharp Emeritus Professor
University of Texas, Austin TX

Jack's Tale

I asked Jack to fill us in on his career. How it started and such.

"My entry into hydrogeology probably started with bass fishing and scouting in Minnesota. My father was an attorney in Minnesota, and consulted with George Schwartz (Director of the Minnesota State Geological Survey) in 1959. Dad said, "My son, John, loves the outdoors. Should he become a geologist?" Schwartz replied, "No. No jobs in geology! Try geological engineering." I think there was an oil industry downturn at the time. However, I did major in geological engineering at the University of Minnesota.

After my stint in the US Air Force, I joined Pat Domenico at the University of Illinois for my graduate studies, which was a most fortunate choice. My hydrogeology career commenced. I taught at the University of Missouri from 1974-1982 and have been at The University of Texas since then. I think I am one of the few professors who has directed both groundwater and geology summer field courses. I am most proud of the 100 graduate students I have supervised and the over 50 undergrads who completed projects with me. They have gone onto successful careers in government, academia, and industry. Academic colleagues provided great scientific stimulation.

Hydrogeology is a wonderful profession. It allows one to work outdoors (every place on the land surface has groundwater issues of interest) and to address processes that are important to society as well as fascinating for their own sake. Meetings and collaboration with colleagues at the Geological Society of America, the American Institute of Hydrology, and the IAH have provided friends and opportunities to visit many parts of the globe, and I'm humbled to receive honors that I hope I have deserved. We need to encourage young scientists to become active in such organizations as it benefits one professionally, scientifically, and personally. As I merge into emeritus status, I intend to keep on studying groundwater in a variety of facets. Water is indeed our most precious natural resource."

Jack and Quicksand –Our First Meeting

I first met Jack almost 40 years ago when I worked for the Nuclear Regulatory Commission on a GSA conference field trip to the Darlington nuclear power station in Canada to see the foundation construction. While exploring the floor of the sandy foundation excavation, I got stuck in quicksand. As I sank down in the cold wet sand and shouted for help, Jack, along with others, laughed and took pictures. When it seemed that I might actually die, he and others helped pull me out. Unfortunately, I lost my work boots which were sucked off my feet. My pants and socks were soaked and I began to freeze in the cold November air. Bob Leggett was kind enough to loan me his thick warm socks for the rest of the trip. Subsequently I found out that Jack had the late Pat Domenico as his Ph.D. advisor. As it happened Pat became my advisor at Texas A&M when I went back to school for my Ph.D. Since then I have met Jack at many other meetings. Despite the years, we still talk about his picture taking of me when we first met.

Contributed by the Editor