1. Sessions at Conferences

The IWFC-2018 was the 6th of the ambitious bi-annual scientific international conferences focused on a joint understanding of water sources, groundwater functioning, water resources, as well as in water engineering approaches, management, and technology. This time the IWFC-2018 was held in Hammamet, Tunisia, 19-21 March 2018. The conference aimed to share updated information and methodologies to stimulate scientific discussion and an environmentally orientated communication among participants. This conference encourages the participation of students, experts, scholars as well as decision-makers in agreeable fields related to water, not only from the MENA region but, at an international level to partake in this endeavour. Research abstracts that were programmed to participate presented studies from Algeria, Benin, Canada, Congo, Côte d’Ivoire, Egypt, France, Germany, Hungary, Italy, Mexico, Morocco, Palestine, Tunisia, Turkey, and United States.

The total number of attendees was 278. The RGFC-IAH Special Session included 10 oral presentations on groundwater flow systems. The meeting had the participation of distinguished groundwater lectures Chair Judit Mádl-Szőnyi, Co-Chair Joel Carrillo-Rivera and Secretary Ádám Tóth, Udo Weyer (Canada), and local participants as Belgacem Agoubi and Faten Telahigue (Higher Institute of Water Sciences and Techniques, Gabes University) and Fayrouz Slama (Higher Engineering School, University of Tunis Al Manar). One of the Conference Chairs and keynote speakers was Joel Carrillo-Rivera.

This event was a very nice occasion for promoting the theory of groundwater flow.

Our Commission sponsored a session entitled “Groundwater flow understanding in water management: Environmental problems and potential interactions with subsurface water ecosystems” at the European Geosciences Union (EGU) General Assembly, 8–13 April 2018, Vienna, Austria. The 3 oral blocks and poster sessions attracted altogether 18 oral presentations and 25 posters. The session was a great success, it included a broad range of topics and techniques such as groundwater management and its protection from qualitative and quantitative degradation, geochemical characterization of groundwater flow systems and knowledge of groundwater flow system from local to regional scale. The presentations attracted great
attention. The presenters came from countries in Europe, Asia, the Americas and Africa to examine and discuss water management and groundwater flow system characterization related issues. The Convenor was Jim LaMoreaux with the help of Co-Convenors: Daniela Ducci, Manuela Lasagna, Xiao-Wei Jiang, René Lefebvre, Luc Aquilina, Judit Mádl-Szőnyi, Christine Rivard, Chrystel Dezayes and Alexis Defresne.

The Commission organized one of the 45th IAH Congress’ (Daejeon, Republic of Korea) sessions in Topic 7 entitled Innovation in regional groundwater flow understanding. In addition to 16 oral presentations in the session, around 20 other delegates, including students from more than 10 countries contributed with their oral and poster presentations on the topic of regional groundwater flow elsewhere in the Congress. We were delighted that many of these provided recent results regarding the theoretical progress, research methods and future development of regional groundwater flow.

Furthermore, RGFC held its annual meeting in Daejeon. Chair Judit Mádl-Szőnyi and Co-chairs Joel Carrillo and Xiao-Wei Jiang summarized the achievements of the past year and discussed tasks for the coming year.
2. Training workshops, short courses

Joel Carrillo’s short course in Daejeon, Republic of Korea, highlighted the importance of regional groundwater flow. The identification and usage of direct and indirect indicators of the flow systems were discussed in the course using a wide system view. Practical applications of the flow systems include efficient groundwater extraction and integrated water management practice.

North American IAH-RGFC co-Chairs René Lefebvre and John Molson presented hydrogeology seminars to employees of the provincial government, regional municipalities and watershed management groups as part of a groundwater knowledge transfer workshop in Drummondville, Quebec, Canada, February 2018. The workshop was organized by members of the Quebec Groundwater Network (RQES: https://rqes.ca/). The objective was to inform stakeholders on how to use information collected from the Quebec regional groundwater aquifer characterization program for planning and groundwater protection. Groundwater flow systems and resource protection were important themes of the workshop.
3. Dissemination of Knowledge

RGFC launched its LinkedIn page, which is a forum for scientific discussion, in autumn of 2014 and since then the number of members reached 308 (~20 new members during this report period).

Now, the news and activities of RGFC can be followed on another social media platform. We will share conference pictures and updates @rgfc_iah Instagram profile, as well. You can use hashtag #rgfc_iah if you would like to share a photo of regional groundwater related topics or even a memory of your daily hydrogeology practice.

The Commission launched a ResearchGate project entitled *Selection of papers related to Regional Groundwater Flow*. This project was created and is managed by the Regional Groundwater Flow Commission of the International Association of Hydrogeologists (RGFC-IAH) in cooperation with the József & Erzsébet Tóth Endowed Hydrogeology Chair. This project is a selection of international papers related to the research and practical application of regional groundwater flow theory. The project has 41 followers and 368 reads at the end of this reporting period.

4. Future plans

- AGIC2019 is the 2nd International Congress of Atlas Georesources, to be held in Hammamet, Tunisia, 28–30 March 2019. It will bring together researchers, research scholars, experts and policy makers to share their research, experiences and discuss recent advances in applied Geosciences for Groundwater. The conference will cover many aspects related to groundwater.

  The special session entitled “Regional Groundwater Flow Systems” anticipates analysing issues connected to groundwater management and related environmental protection defining physical and chemical degradation in the context of groundwater flow system functioning. Contributions related to alternative methods of defining groundwater flow components and their application in establishing, regulating and mitigating negative environmental impacts to and from groundwater are also encouraged to be submitted.

  Additional information at https://lgr-certe.com.tn/

- We are pleased to invite you to attend the EGU2019 (7–12 April 2019, Vienna, Austria) and our two sessions supported by the Regional Groundwater Flow Commission, entitled *Groundwater flow understanding in water management and environmental problems*, and *Geofluids as natural resources or sources of contamination: Research and Innovation*.

  Additional information about the EGU2019: https://www.egu2019.eu/
Where geosciences converge. Three geological provinces converge toward Québec City: the Grenville Province of the (Precambrian) Canadian Shield, the (Paleozoic) St. Lawrence platform and the Appalachians. Three geoscientific associations (the Geological Association of Canada, the Mineralogical Association of Canada and the Canadian National Chapter of the IAH) have converged their efforts to organise the GAC-MAC-IAH Québec 2019 conference. In May 2019, Canadian and international geoscientists will also converge toward Québec city to be part of this exciting conference.

Additional information at https://gacmac-quebec2019.ca/

IAH–NCGRT Australasian Groundwater Conference, 24–27 November 2019, Brisbane, Australia

Additional information at: https://www.groundwaterconference.com.au

5. Publications

Papers and books


Janos D, Molson J, Lefebvre R 2018: Regional groundwater flow dynamics and residence times in Chaudière-Appalaches, Québec, Canada: Insights from numerical simulations. Canadian Water Resources Journal, Special Issue: Quebec PACES Projects


Conference Presentations

Benoit N, Marcotte D, Molson J, Pasquier P, Mulligan R 2018: Characterization of full 3D hydraulic conductivity tensors of hydrostratigraphic units applied to the Innisfil Creek watershed, Ontario. GSC-OGS Open House, Guelph, ON, March 2018


Carrillo-Rivera JJ, Cardona A, Ouysse S 2018: Groundwater flow systems definition and the control of changing water quality extracted by boreholes. Higher Institute of Water Sciences & Techniques of Gabés, Tunisia, 2 April 2018

Carrillo-Rivera JJ, Huizar-Alvarez R, Ouysse S, Cardona A 2018: The understanding of Tothian groundwater flow systems functioning for proposing adequate groundwater management in Mexico City. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018

Csondor K, Tóth Á, Müller I, Erőss A 2018: Hydrogeological characterization of the lukewarm spring lake in Kistapolca (South Hungary). EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018

Erőss A, Csondor K 2018: Radionuclides in groundwater flow systems – case studies from drinking water supply systems in Hungary. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018


Laurencelle M, Lefebvre R, Parent M, Molson J 2018: Paleo-hydrogeological evolution of a fractured-rock aquifer since the Champlain Sea incursion in the St. Lawrence Valley (Quebec, Canada). EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018

Iván V, Mádl-Szőnyi J 2018: Possibilities of recession curve analysis in karst water management, Gömör-Torna Karst, Hungary and Slovakia. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018
Mádl-Szőnyi J, Zentai-Czauner B, Simon Sz, Tóth Á 2018: Workflow for the involvement of regional fluid pressure regime evaluation in geothermal resource characterization. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018

Szijártó M, Galsa A, Tóth Á, Mádl-Szőnyi J 2018: Numerical investigation of the combined effect of basin-scale forced and free thermal convection. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018

Verweij H 2018: 3D spatial variation in salinity of shallow to deep groundwater in the Dutch on- and offshore. EGU General Assembly 2018, Vienna, Austria, 8–13 April 2018


Ouysse S, Wehncke EV, Carrillo-Rivera JJ 2018: Regional Paradigm for Studying Ecosystems Conservation in Baja California Peninsula (Central Desert Region). International Symposium Ecology, Kastamonu, Turkey. 18–22 June 2018


Havril T, Molson J, Mádl-Szőnyi J 2018: Sustainable use of groundwater as a source of heat. 45th IAH Congress, Daejeon, Republic of Korea, 9–14 September 2018


Tóth Á, Kovács-Bodor P, Mádl-Szőnyi J 2018: Springs as natural tools for groundwater flow understanding. 45th IAH Congress, Daejeon, Republic of Korea, 9–14 September 2018


Budapest, 11 February 2019

Ádám Tóth, Secretary of RGFC

Judit Mádl-Szőnyi, Chair of RGFC