

## ANNUAL REPORT OF THE IAH NETWORK ON GROUNDWATER IN URBAN AREAS (IAH-UGN) FOR 2015



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**Co-Director positions:** While these remained open throughout 2015, very fruitful discussions were held regarding IAH-UGN Directors. Formal announcements can be expected in early 2016.

### Activities and outputs during the calendar year 2015

The “Networking” function of the IAH-UGN continued with even more vigour and energy throughout 2015. Looking back, 2015 turned out to be an extremely productive year.

1) In May, 2015, I was invited to attend a workshop on “Current trends and approaches in urban hydrogeology” held in Bucharest, Romania under the auspices of TUD- COST Action TU1206 - SUB-URBAN - A European network to improve understanding and use of the ground beneath our cities. I gave the opening address on the “Management and protection of groundwater in modern growing cities” and this led to valuable discussions, most notably on the role of modeling and the importance of communication in urban groundwater. Importantly, the meeting also led to discussions regarding the future directions of the IAH-UGN and one or more individuals who could help carry the IAH-UGN into its next phase of growth and development.



*Project leaders: Diarmad Campbell (BGS)  
Radu Gogu (UTCB) and Hans de Beer (NGU)*

2) My work with the IAH-UGN also resulted in an invitation to join an advisory group of experts charged with steering UNESCO’s IHP-Theme 4 “Water and Human Settlements of the Future” (2014-2021).

<http://www.unesco.org/new/en/natural-sciences/environment/water/ihp-viii-water-security/4-water-for-human-settlements/>. Two meetings of this group were held in Paris during 2015 (July 8-10 and November 28-30). The first meeting of 2016 will be held in conjunction with the Singapore International Water Week.



3) The 2015 IAH Congress was held in Rome, Italy and featured well-attended urban groundwater sessions. I am especially grateful to Matthys Dippenar who worked hard to Chair our sessions on “Methods in Urban Hydrogeology” during long periods when I had to be absent for Presidential duties. In addition, Marco Masetti and Stefania Stevenazzi convened a popular session on “The consequence of urban sprawl on groundwater resources”.

The Rome Congress allowed me to bring to closure my involvement in the Saint John, New Brunswick urban groundwater project with a paper presented and published with IAH-UGN colleagues: Dickinson, G., Wiesel, K. and K. W. F. Howard (2015): “Developing and protecting an urban groundwater supply in a coastal sand and gravel aquifer” Aqua2015 42nd IAH Congress, Rome, Italy. September 14-18, 2015.

The Congress also provided me with an opportunity to present the Great Lakes urban groundwater work carried out with the USGS: Warner, K. and K. W. F. Howard (2015) “United States and Canada assess the impact of urban development on groundwater quality - example from the Great Lakes Basin”, Aqua2015 42nd IAH Congress, Rome, Italy, September 14-18, 2015. This project (see IAH-UGN Report for 2013) involved several Canadian IAH-UGN colleagues and is published on-line as Chapter 6 “Effects of Urban Development on

Groundwater” of the document: “Groundwater Science Relevant to the Great Lakes Water Quality Agreement: A Status Report” (October 2015 – “draft”):

[http://binational.net/wp-content/uploads/2015/12/gw\\_2015\\_full\\_en\\_final.pdf](http://binational.net/wp-content/uploads/2015/12/gw_2015_full_en_final.pdf) .

Authors of the chapter included Kelly Warner, Ken Howard, Rick Gerber, Gayle Soo Chan, Don Ford.

4) Another major IAH-UGN activity during 2015 was the development and delivery of a 2-hour session on “Urban Groundwater – Ignore at Your Peril” at the UNESCO-ARCEAU COP-21 Conference on “Megacities, Water & Climate” (December 1 to 4). I chaired the session but most of the preparatory work was carried out by Stephen Foster with the strong support of Ricardo Hirata (IAH- Brazil) and Bruno Nguyen (UNESCO-IHP). The conference was attended by 550-600 participants, with urban planners and socio-economists predominating over water-service utility reps and water-resource scientists. Details are available at:

<https://iah.org/news/iah-team-emphasises-key-role-of-groundwater> and at <http://eaumeqa2015.sciencesconf.org/>



5) Stephen Foster must also take great credit for the IAH-UGN contribution to IAH’s Strategic Overview Series, with a 6-page document on “Resilient Cities & Groundwater”. This was published online in December 2015:

<https://iah.org/wp-content/uploads/2015/12/IAH-Resilient-Cities-Groundwater-Dec-2015.pdf>



6) To round off 2015, it is worth drawing attention to two publications, one marking the end of an activity that extends back over a decade (IAH’s GEF project), and another marking what promises to be a new and exciting venture.

- To bring the GEF “urban groundwater governance” activity to a close, a paper was published during 2015 in a special commemorative issue of Environmental Earth Sciences: Howard, K.W.F., 2015. Sustainable cities and the groundwater governance challenge. Environmental Earth Sciences 73, 2543–2554.
- The new and exciting venture I refer to relates to Asia’s “New Silk Road” a venture that promises to bring massive urban growth and immense economic benefits to impoverished parts of western China and Central Asia. The potential downside of this project is the environmental degradation of largely arid and semi-arid areas, megacity growth, and the threat to water supplies. During 2015, I published with IAH-UGN colleagues in China, an article in Environmental Earth Sciences (volume 74: 7267–7270) entitled “Building a new and sustainable “Silk Road economic belt”” (authors: Peiyue Li, Hui Qian, Ken W. F. Howard and Jianhua Wu). A theme issue on the potential impacts of the development is expected to be published by Environmental Earth Sciences in 2016.

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