



ANNUAL REPORT 2018

IAH NETWORK – GROUNDWATER IN URBAN AREAS (IAH-UGN)

Director: Helen Fallas, British Geological Survey, The Lyell Centre, Riccarton, Edinburgh, UK

Co-Directors: Ken Howard, University of Toronto, CANADA

Stephen Foster (GW-MATE), UK

Hans de Beer, Norwegian Geological Survey, Trondheim, NORWAY

Activities during 2018

The network continued to develop collaboration activities in 2018, strengthening links with other global organisations and initiatives, and urban research groups (UPGro, AfriWatSan, EU COST Action). There is an increasing cohesion being developed by these network activities linking research groups (African and European) into broader knowledge exchange networks – e.g. IWA, UN, and ICLEI. This is resulting in: an increasing number of co-chaired conference sessions between these groups with the UGN; joint publication opportunities with leading research groups; and a development of cohesive narrative with wider stakeholders (e.g. urban planning and policy).

Connections between the IAH-UGN and IWA, and IAHS, ICLEI and UN were strengthened in 2018 in the urban context. This led to two joint specialist meeting proposals between IAH-UGN and IWA (listed below) in 2018 and the commitment to a Joint IAHS/IAH urban groundwater session at the IAHS Groundwater Quality conference in 2019, which will be focused to urban groundwater in an African context.

Key 2018 activities included:

Specialist Meeting: Groundwater Futures in Urban Africa Workshop, Cardiff, UK

14 March 2018

This specialist meeting was hosted by Water Research institute at Cardiff University, and IAH UGN – and led a focused discussion and exploration of issues of access to groundwater supply in urban areas, in particular discussing resilience and distributional equity. Key discussions centred on the need to understand and manage rural-urban interface; and the rising proliferation of privately-commissioned boreholes, and unimproved hand-dug wells for domestic water supply in African cities with rapid rates of urban migration and growth of informal dwellings in peri-urban areas, and inability of centralised utilities infrastructure to keep pace. There are complex issues of managing groundwater and surface water resources in this context, equity of access, and sustainability of services, particularly in the lack of sanitation infrastructure, and the impact of this on different communities. A joint workshop report was published and communicated.

Nordic Water Congress, Bergen NORWAY 13-15 August 2018

HF invited to give a keynote at the 30th Nordic Water Congress, on some of the knowledge exchange activities being led by UGN and HF's own work. There was a joint chaired UGN urban groundwater session, which focused on discussions around: understanding of optimal design of green roofs for storage and retention of high levels of rainfall; new groundwater and soil monitoring networks to help understand groundwater resilience to increased climate variability in Nordic regions; and improving the understanding the linkages between bedrock and quaternary hydrogeology. There was a strong focus throughout the conference on stimulating cooperation between research institutions, and developing understanding how hydrogeological and hydrological knowledge can improve urban planning approaches.



A field visit to the Bryggen UNESCO world heritage site gave insight to the unique sustainable urban drainage (SuD) scheme that has been recently installed in the centre of Bergen to protect and maintain groundwater levels beneath the world heritage site.



Photographs: Bryggen UNESCO World Heritage site, sustainable urban drainage scheme.

IAH Congress UGN conference session and Network meeting, Daejeon, KOREA 9-14 September 2018

The scientific conference session convened by UGN at the 2018 IAH congress focused on the challenges and opportunities in managing Asian urban groundwater resources. Discussions from the presentations and sessions centred on challenges in hydrogeological characterisation of urban environments within Asia. Presentations within the session highlighted the importance of developing better understanding of integrated management of urban groundwater resources to maintain resilience of groundwater supply. Discussions within the network meeting of the UGN at the Congress highlighted the need for further cross-cutting research and science programmes was highlighted.

Outputs and outcomes 2018

Webpages: <https://urbangw.iah.org/>.

Membership: the UGN mailing list now stands at over 200 members for the first time since 2016

Paper Publication: *Urban groundwater use in Tropical Africa – a key factor in enhancing water security?* Water Policy, 2018; 20 (5), 982-994. Doi: [https://doi.org/10.2166.wp.2018.056](https://doi.org/10.2166/wp.2018.056)

Forthcoming activities 2019

Joint BGR, IWA and IAH-UGN conference session – ICLEI Resilience Cities 2019 26-28 June 2019

The ICLEI (global forum for global forum Local Governments for Sustainability) forms a very useful engagement platform to widening awareness of groundwater within urban development and planning context. This session proposal between BGR, IWA and IAH-UGN aims to develop discussion and understanding around the *role of groundwater in supporting urban water management and utilities*, particularly opportunities for combined surface water – groundwater management¹.

Joint IAHS/IAH UGN conference session – IAHS Groundwater Quality, Liege 9-12 September 2019

Jointly organised between IAHS and IAH UGN this scientific session will be focused to urban groundwater quality challenges in the African context. The session will be opened by a Keynote Lecture by Callist T.

IAH-UGN congress conference session 2019, Malaga 22-27 September

Entitled ‘understanding urban groundwater resources for future resilience’ this scientific session will review some of the current issues and advances with urban groundwater management around the world.

IAH-UGN congress conference session 2019, Malaga 22-27 September

¹ Unfortunately this conference session was withdrawn at a late planning stage, due to it being merged with another workshop proposal. IWA and UGN identifying other opportunities for 2020 session.