Urban MAR for sustainable cities

Urban MAR—Working Group

IAH Commission—Managed Aquifer Recharge (MAR)

Working group initiated at the IAH Conference in Malaga, ES (September, 2019)
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Motivation: Globally, continuing urbanization and climate-change further are further aggravating urban challenges such as urban heat island effects and poor air quality. Not only does this increase the stress on the year-round availability of local water resources, urban areas are increasingly confronted with flooding due to intense rainfall and water shortages due to longer droughts. Moreover, in addition to primary water demand, the availability of water is a key requirement to allow the creation of greener, more healthy and sustainable urban environments, e.g. required to combat urban heat island effects and improve air quality. Retention of water in the city by capture and re-use is therefore necessary and more sustainable than solely relying on discharging in times of water surplus and importing in times in times of shortage. With above-ground space at a premium in urban areas, use of the subsurface to maximize water retention and flood protection, has significant potential to contribute to the sustainability and quality of urban living. One of the challenges for the successful application of such urban MAR technologies is the integration with the multi-function use of the above-ground urban space, for example to allow peak retention basins and pre-treatment with other urban functions such as parks, playgrounds and parking. Urban MAR solutions that work will vary with city, region and climate, but will in any case require close cooperation with non-hydrogeologists such as urban planners and architects.

Aims: This Urban MAR working group aims to exchange information and cooperate in the development of technical and non-technical aspects for the successful application of urban MAR and to showcase successful practical examples.

Intended outputs: To foster and develop the application of urban MAR, it is proposed to develop a position paper on the conditions, requirements and benefits of using urban MAR in cities. The aim is to present a (first draft) position paper at the MAR commission meeting at the 2020 IAH conference in Sao Paolo, Brazil.

The following steps are proposed to come to a position paper on urban MAR:

1. Collection of "Urban MAR" example summaries (1-2 pages, standardized format)
2. Thought development on what defines urban MAR and how it can contribute to more healthy and sustainable cities (commenting on this draft scope can be a first step already ☺)
3. Develop a perspective on how the conditions and goals for successful urban MAR application depending on local and regional (Using IAH regions, Latin America, Europe, Africa, etc, to coordinate contributions?) hydrogeological, economic and governmental conditions.
4. Write globally oriented draft position paper on potential and application of urban MAR