

ANNUAL REPORT

A. Division name: IAHR Hydro-Environment

Committee name: [Committee on Groundwater Hydraulics and Management](#)

Reporting period: June 2009 ó June 2011

B. Mission statement / Long range objective

Groundwater hydraulics covers the flow of water in aquifers and involves, more generally, the flow and transport processes in porous media. The management of water as a resource, plus the environmental issues related to this management are the main topics of concern. Groundwater is part of the hydrological cycle and represents a complex ecosystem which needs a multidisciplinary understanding. Groundwater constitutes the largest available freshwater resource of the earth, quantified as much as two orders of magnitude larger than the total water volume of rivers and lakes. Because it is less prone to pollution than surface waters, it is most important as a drinking water resource.

Groundwater systems vary greatly, depending on the geological formation of the aquifer (sand and gravel aquifers, fissured rock aquifers, karstic aquifers). Their hydraulics are characterised by large water bodies, very small flow velocities and hence extremely long exchange times. Transport at the regional scales is affected by local heterogeneities of the geological formations, and is governed by advection and molecular diffusion at pore/grain size scale. Chemical reactions of pollutants and bacterial life take place at the pore/grain size scale. Groundwater is recharged by rainfall, when it percolates through the unsaturated zone to the aquifers, and by infiltration of surface water. Across its open boundaries, groundwater can be polluted by local sources of accidentally released contaminants or by pollutants released from diffusely distributed sources like agricultural activities.

Groundwater contamination has developed into one of the key environmental issues in most industrialised countries. Industrial contamination sources include waste sites, leakage, accidental spills and leaking septic tanks. Liquid contaminants (e.g., oil products or halogenated hydrocarbons), which are not miscible with the water can exist underground as non-aqueous phase as well as dissolved in the water, adsorbed at the solid phase, and mixed in the soil-air. In such cases the subsoil is a multi-phase system. In agricultural areas fertilisers, herbicides, and pesticides are potential contamination sources. Air pollution contributes by depositing contaminants that make their way into the groundwater.

C. Committee Membership

1. Number of committee membership:

Primary affiliation: 499

2. Leadership Team (as of April 2011):

Chair

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D. Affiliation with other professional associations

Affiliation with international programmes

E. Report on activities in reporting period

1. Committee meetings
At the IAHR Groundwater Symposium September 22-24, 2010 Valencia, Spain
2. Specialty conferences
IAHR Groundwater Symposium September 22-24, 2010 Valencia, Spain

- Activities related to World Congress and Division Congress
Participation in the review of submissions to the European IAHR Congress held in Edinburg, Scotland.
3. (Continuing) education activities: Workshops, training seminars, courses, etc.
4. Working Group meetings and output
5. Publications: proceedings; papers for IAHR Journals; state-of-the-art papers; Monographs; books

CD of the Proceedings of the IAHR Groundwater Symposium September held in Valencia, Spain in 2010

From Groundwater Management Practices Monograph, Editors Angelos Findikakis, Kuniaki Sato, Taylor and Francis, 2011

6. Contacts with other organizations

The groundwater hydraulic and management committee of IAHR has cosponsored the MODEL CARE conference organized by IAHS. IAHS has cosponsored the IAHR International Groundwater Symposium

7. Other activities.

F. Short range plans (1 to 2 years)

- Specialty conferences

The committee is heavily involved in the organization of the 7th IAHR International Groundwater Symposium, to be held 19 - 21 November 2012 in Kuwait. The main organizers of the event is KISR (Kuwait Institute for Scientific Research), Kuwait.

- Activities related to next IAHR World Congress

Prof. Xavier Sanchez-Vila (Universitat Politecnica de Catalunya, Spain) is the recipient of the 2011 Arthur T. Ippen Award. He will offer the Ippen Lecture at the 34th IAHR Congress to be held in Brisbane, Australia

Participation in the review of submissions to the 34th IAHR Congress to be held in Brisbane, Australia.