

International Association of Hydrogeologists

COMMISSION ON MANAGEMENT OF AQUIFER RECHARGE ANNUAL REPORT 2006

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Aims of Commission

IAH-MAR was established in January 2002 by the IAH Executive aiming “to expand water resources and improve water quality in ways that are appropriate, environmentally sustainable, technically viable, economical, and socially desirable. It will do this by encouraging development and adoption of improved practices for management of aquifer recharge. This will be achieved by increasing awareness of MAR among IAH members, related professions and the community, by facilitating international exchange of information between members (e.g. via a web page and an email list), by disseminating results of research and practical experience (e.g. via conferences and reference database), and by undertaking joint projects and activities identified as important by its members.”

Major Activities in 2006:

- Procs ISMAR5 Symposium, Berlin (11-15 June 2005) Recharge systems for protecting and enhancing groundwater resources were published by UNESCO & web mounted (140 papers, 910 pages) <http://unesdoc.unesco.org/images/0014/001492/149210E.pdf> (cover picture below) Abstracts will be added to the IAH-MAR searchable database of references.
- ISMAR6, Phoenix, 28 Oct-2 Nov 2007 call for papers yielded more than 150 abstracts and draft scientific program released (www.ismar2007.org)
- Global MAR inventory - IGRAC (Netherlands) is drawing together a database of MAR at a global scale. Information gathered will be made available via the IGRAC portal to provide a shared knowledge resource.
- The IAEA Regional Cooperation Project involves 7 countries in the Arab region (Syria, Jordan, Lebanon, Iraq, Yemen, United Arab Emirates and Saudi Arabia) entitled "Isotopic and geochemical study of artificial recharge of groundwater". This promotes the use of isotopic and geochemical techniques to execute MAR investigations. Phase 1 was 2006-07 and an extension was granted for 2007-08. There was a training course held in Damascus Feb 5-17, 2006 and a Regional Coordination Meeting held in Dubai, Jan 29-Feb 1, 2007.
- Submission made to UNESCO Intergovernmental Council for establishment of an International Groundwater Replenishment Initiative. This would aim to establish regional demonstration projects and training centres in MAR. While this was not considered as a motion, it has further raised awareness in UNESCO and opportunities are being explored.
- In response to a request by the GEF to provide advice on groundwater in Small Island Developing States (SIDS), STAP convened a workshop "SIDS, Groundwater, and Interlinkages", 6-9 November 2006 at Port of Spain, Trinidad. The workshop brought together 45 stakeholders (scientific and technical community, government officials from Trinidad, SIDS practitioners, and managers of GEF projects on SIDS) to examine groundwater issues in SIDS, and their interlinkages with GEF activities on biodiversity, climate change, and sustainable land management. A report on the workshop will go to GEF council in June 2007. A link to this report will follow on the IAH-MAR web site
- IAH-MAR 5th Plenary, Beijing, 13 Oct (<http://www.iah.org/recharge/meetings.html>) 20 people from 10 countries attended. Several new publication initiatives were discussed and actions agreed on arid city water management, quantifying benefits and costs of MAR, and on management of clogging. Proposals to host ISMAR7 are sought now for 2009/2010.
- IAH-MAR was represented at UNESCO G-WADI (www.gwadi.org) meeting on water harvesting. Aleppo, Syria. 20-22nd November 2006. The meeting was hosted by ICARDA and was attended by about 20 delegates from the immediate region as well as from India, Pakistan, the UK and USA. The aim of the meeting was to develop the G-WADI programme on Water Harvesting, including the development of a programme of case studies of best

- practice from all regions. Also to consider ways to disseminate information through the G-Wadi web site, on which the final report will be posted in February 2007. – photo below
- 2006 MAR Calendar – IAH Netherlands National Committee & UNESCO – shown below
 - WMO-NWC Workshop on Artificial Recharge, San Luis Potosi, Mexico (17 – 19 July) (50 attendees) see photo below
 - American Ground Water Trust Workshop: Aquifer Storage Recovery 6, Orlando, Florida. 16-17 October.
 - Artificial Recharge and Water Treatment for Sustainable Development of Groundwater, Muscat, Sultanate of Oman. 12-13 December 2006. www.menafn.com Supported by Oman Research Council, Schlumberger Water Services and GE Water, this was attended by delegates from the Middle East region as well as several international presenters. Efforts in the Middle East to treat wastewater and the potential for MAR to assist with recycling and storage of water were explored.
 - Final report of a DFID-funded AGRAR project, assessing the effectiveness of Managed Aquifer Recharge, mainly in rural India, was published. Findings included demonstration that MAR should be combined with a range of other activities, including demand management, to be effective and sustainable. Report available at <http://www.iah.org/recharge/report.html> - cover photo below
 - Technical Guidance on ASR – Dillon and Molloy – web-published, Mar 2006 http://www.iah.org/recharge/pdf/technical_guidance_for_ASR.pdf
 - Research programs and projects page established on IAH-MAR web site – Ian Gale
 - 2nd Edition of David Pyne's book 'Aquifer Storage Recovery' has now been published and is available from: <http://www.asrforum.com/>
 - IAH-MAR Web site includes searchable grey literature data base, containing more than 500 abstracts. Currently these are all in English, but abstracts in Spanish will also be welcome. Special thanks to BGS for hosting website and in particular to Sam Jones of BGS for web site maintenance.
 - IAH-MAR Email list membership stable at 210. Thanks to Centre for Groundwater Studies and Flinders University for hosting this list.
 - Page on MAR written for 'Groundwater Primer', John Moore, IAH by Chair

Forthcoming Conferences and Workshops

*** International Symposium on Managed Aquifer Recharge - ISMAR6 ****

Phoenix, Arizona, USA. 28 October to 2 November 2007.

Draft program (www.ismar2007.org) includes 4 workshops on 28 October, as follows, and IAH-MAR plenary on 29 October:

Workshop 1: Surface Recharge and Well Recharge Methods. David Pyne, Herman Bouwer

Workshop 2: State of the Art Techniques in Hydraulic Property Characterization and Monitoring for Groundwater Recharge Projects. Bob Rice, Geosystems Analysis

Workshop 3: Application of Geochemical Techniques in MAR Studies. Jordon Clark, University of California Santa Barbara

Workshop 4: Design and Construction Techniques for Recharge and Recovery Wells. Marvin Glotfelty, Clear Creek Associates

Doug Bartlett (Chairman Organizing Committee), Herman Bouwer and committee are organizing ISMAR6 which will merge with the 13th Arizona Hydrological Society's Artificial Recharge Symposium and, as with last two conferences in this series, co-hosted by IAH-MAR and EWRI/ASCE. Highlights will include workshops, field trips to innovative aquifer recharge projects, technical and poster sessions, an **IAH-MAR plenary**, **IAH-MAR Working Group Meetings** and

optional sightseeing tours to places such as Las Vegas and the Grand Canyon. This will be a brilliant conference, relevant to the needs of developing and developed countries.

3rd International Groundwater Conference, Coimbatore, India. 7-10 February 2007.
(<http://www.cig.ensmp.fr/~iahs/conferences/2007Coimbatore.pdf>)

1st Joint Workshop of EC Projects Reclaim Water & Gabardine, 20-23 March 2007, Sabadell (Barcelona), Spain. Artificial groundwater recharge recovery and reuse. Natural and reclaimed water. <http://www.tilea.es/reclaimwater-gabardine/index.htm>

Centre for Groundwater Studies **5th ASR national workshop**, Surfers Paradise, Queensland 2-3 May 2007,
(http://groundwater.com.au/images/stories/courses_and_conferences/cgs_blue_book_07.pdf)

The **IAEA Regional Cooperation Project** tentative plan for the next 2 years is a **1 week practical training course** to be held either in Lebanon or Jordan in July 2007, and a final meeting in Vienna in October/November 2008.

IWA Water Reuse Symposium

Anwerp, Belgium. 9-12 October 2007. (www.iwahq.org)

This will also have attached a workshop on Artificial Recharge

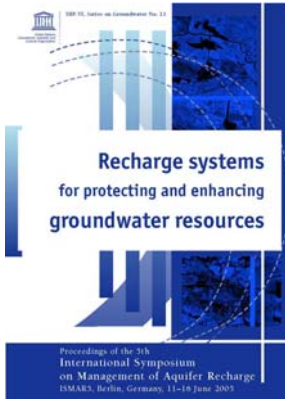
FUTURE DIRECTIONS: Progress continues and greater engagement with developing countries is needed within the commission for its benefits to be realised where they are can have a most effect especially in arid and semi-arid regions. We have yet to find a capability to establish a regional network of demonstration projects and training hubs. This requires more effort.

UNESCO has offered to support the translation of Ian Gale's booklet on MAR strategies (see below) into Spanish and Chinese. Oscar Escolero will lead a publication in Spanish on arid city water management with a focus on groundwater and MAR supported by National Water Commission of Mexico. Publications are also under consideration in the areas of management of clogging, governance of MAR, and economic benefits and costs of ASR in relation to alternatives. Members who wish to contribute to these, please contact Peter Dillon.

MAR needs to be an integral part of groundwater and catchment management, to achieve its unifying and catalytic role in integrated natural resource management, urban planning, water and wastewater systems planning and management, salinity abatement and biodiversity conservation. This will require well-trained people at regional and local levels and the Commission has much to do.

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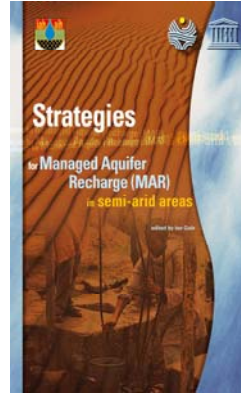
A sample of 2006 publications and meetings:



ISMAR5 proceedings



AGRAR report



UNESCO booklet



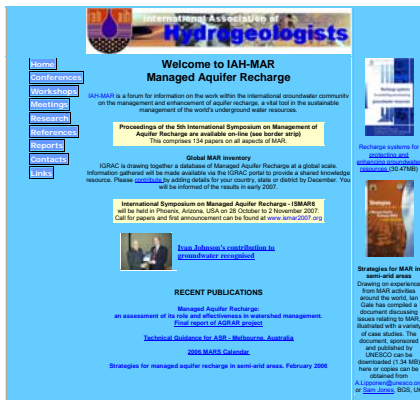
IAH-NL MAR calendar



Participants in Aquifer Recharge Workshop, National Water Commission of Mexico (CONAGUA) and World Meteorological Organisation (WMO/OMM), San Luis Potosi, Mexico 17-19 July 2006



Delegates at the UNESCO G-Wadi meeting on water harvesting, Aleppo, Syria 20-22 Nov 2006



www.iah.org/recharge

Submitted by
Peter Dillon and Ian Gale
22 Feb 2007