

International Association of Hydrogeologists

the World-wide Groundwater Organisation

IAH Commission on Managing Aquifer Recharge

Enrique Fernández Escalante
Catalin Stefan
Yan Zheng
IAH-MAR Commission co-chairs



Catalin Stefan
Yan Zheng
Enrique Fernandez Escalante
Co-chairs of the IAH-MAR Commission

Welcome

IAH Commission on Managing Aquifer Recharge

IAH-MAR Commission Plenary

15:30-17:00 CET Tuesday, 2024 October 1st

ALL WELCOME!



AGENDA

- Presentation of IAH-MAR Commission (Enrique)
 Last memories of activities (2022 and 2023) Next 2024 report (Enrique).
- Working Groups and Communities of Practice (WG & COPs leaders)
- 3. MAR sites updates/new entries (Yan)
- 4. MAR at IAH2024 in Davos (Catalin)
- 5. Invitation to ISMAR12 (Fanus)
- 6. Call for ISMAR13 in 2028 (Enrique)
- 7. Elections of IAH-MAR Co-chairs (Co-chairs)
- 8. Upcoming IAH-webinars on MAR (Catalin)
- Call for action: Photo-album of the whole ISMAR series. Disclaimer and call for photos from previous ismar (1, 2 and 3 missed).
- 10. Information from attendees (new projects, events, activities, etc.)
- 11. Q&A, miscellaneous (all)

1- Presentation of IAH-MAR Commission

International Association of Hydrogeologists the World-wide Groundwater Organisation IAH Commission on Managing Aquifer Recharge

International Association of Hydrogeologists (IAH) Commission on Managing Aquifer Recharge



Photo: ISMAR10, Madrid, Spain

- Promotes the securing and expanding of water resources
- Encourages research, development and adoption of improved practices
- Facilitates international exchange of information between members
- Aligns with UNESCO IHP-VIII (2014-2021)

International Association of Hydrogeologists (IAH) Commission on Managing Aquifer Recharge



Current working groups:

- Clogging and its management
- MAR for Sustainable Development
- Economics of MAR
- MAR Regulations
- MAR Suitability Mapping
- Urban MAR
- MAR in Conferences

Recent closed working groups

- Global MAR Inventory
- 60 years History of MAR
- MAR to MARket
- Call to Action on Groundwater Management

MAR Communities of Practice:

Australia, Italy, China, Latin America

Re-order in ISMAR 12 plenary

Our website

https://recharge.iah.org

IAH Commission on Managing Aguifer Recharge



WELCOME

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ISMAR

Welcome



Attendees at ISMAR10, Madrid, May 2019 - the latest triennial symposium of IAH-MAR, UNESCO and ASCE

Welcome to the website of the International Association of Hydrogeologists Commission on Managing Aquifer Recharge (IAH-MAR). Here you can discover what our working groups are doing and contribute to their current projects, you can download resources on MAR, connect with people, get information on symposia coming up, and join our email list to stay informed of latest news. We also have sister sites in Spanish and Chinese.

Managed Aquifer Recharge

Managed aquifer recharge, also called groundwater replenishment, water banking and artificial recharge, is the purposeful recharge of water to aquifers for subsequent recovery or environmental benefit. It embraces methods such as riverbank filtration, stream bed weirs, infiltration ponds and injection wells, and uses natural water sources and appropriately treated urban stormwater, sewage and other waste waters to increase groundwater storage, protect and improve water quality, and secure drought and emergency supplies. Its growing scientific base supports its rapidly increasing use as a vital management tool in the sustainable use of the world's water resources.

Latest News



ISMAR12



CURRENT PROJECTS THAT YOU CAN

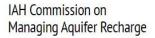
- New working group: MAR in Conferences. Coordinator: Daniela Benedicto van Dalen
- New working group: Urban MAR. Coordinator: Niels Hartog
- LatinMAR Community of Practice
 a new initiative to advance
 MAR in Latin America.
 Coordinator: Adriana Palma
- MAR Suitability Mapping Working Group. Coordinator: Jose Bonilla
- Contributions to a second monograph on clogglingfocussing on its management – Clogging Working Group. Coordinator: Russell Martin
- Groundwater Solutions Initiative for Policy and Practice (GRIPP) – a Collaborative International Project, Coordinator: Karen Villholth



Newsletters

https://recharge.iah.org/newsletters







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Newsletters

Stay updated with the latest news on managed aquifer recharge collected in our (almost) monthly newsletters:



2024

- 07-08-2024-IAH-MAR-newsletter
- 06-2024-IAH-MAR-newsletter
- 04-05-2024-IAH-MAR-newsletter
- 03-2024-IAH-MAR-newsletter
- 01-02-2024-IAH-MAR-newsletter

Please, keep reporting info: dinamar@tragsa.es

JOIN OUR MAILING LIST

Register with our large email group to share information, ideas and news concerning recharge enhancement.

Join IAH-MAR email community

https://lists.flinders.edu.au/mailman/listinfo/iah-mar.listcgs



JOIN OUR MAILING LIST

Register with our large email group to share information, ideas and news concerning recharge enhancement.

Join IAH-MAR email community

Stay informed!

COMMUNICATION







Edit profile

IAH MAR Commission

@IAHMARCom

IAH Commission on Managing Aquifer Recharge (MAR). Co-chairs: Enrique Fernández Escalante /-ef, Catalin Stefan /-cs, Yan Zheng /-yz

Ø recharge.iah.org Ⅲ Joined February 2020

11 Following 63 Followers



IAH MAR Commission @IAHMARCom · Sep 6

The 48th @iahgroundwater Congress #InspiringGroundwater just kicked off in #Brussels. Thank you @MarijkeHuysmans and the entire team for making this event possible!



IAH MAR Commission @IAHMARCom · Sep 2

Join us next week in #Brussels for the 48th @iahgroundwater Congress and attend our multi-session on managed aquifer recharge on Mon/ Tue / and Thu. Also don't miss our Plenary Commission Meeting on Thu evening. Check conference programme for details iah2021belgium.org/programme/deta... /-cs



IAH MAR Commission @IAHMARCom · Aug 31

If you are NOT in Belgium next week: sign up to participate in the online @iahgroundwater General Assembly



IAH MAR Commission @IAHMARCom · Aug 31

Featured research: Identification of suitable sites for managed aquifer recharge under semi-arid conditions employing a combination of numerical and analytical techniques. Read more: rdcu.be/cwpEe /-cs



IAH MAR Commission @IAHMARCom · Aug 25

New book on "Managed Aquifer recharge: Southern Africa" written by Eberhard Braune and Sumaya Israel for The Groundwater Project @groundwaterproj. Download for free: gw-project.org/books/managed-... /-

WhatsApp Group



Aquifer Recharge Management

Initiated before 47th IAH Congress in Brazil, still very active!









Grupo · 192 miembros

IAH MAR

Sister site/s

https://dinamar.tragsa.es/





MAR books repository:

 104 books to be
 downloaded freely

 (contributions welcome)

 dinamar@tragsa.es

https://dinamar.tragsa.es/post/actualizacion-update-libros-sobre-la-tecnica-mar-repositorio-mas-de-100-libros-mar-books-repository-more-than-100-free-books-on-mar-april-2021

1b. Last memories of activities (2022 and 2023). Next 2024 report (Enrique).



Recent Annual Reports

IAH Commission on Managing Aquifer Recharge



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Recent Annual Reports

The Commission provides annual reports each calendar year to the executive of IAH.

These are a snapshot of all the activities of the commission and are intended to be useful for all interested in managing aquifer recharge.

EVENTS

IAH-MAR-2023 Annual Report (summarized)

IAH-MAR-2022 Annual Report (summarized)

IAH-MAR-2021 Annual Report

IAH-MAR-2020 Annual Report

IAH-MAR-2019 Annual Report

IAH-MAR-2018 Annual Report

IAH-MAR 2017 Annual Report

IAH-MAR 2016 Annual Report

IAH-MAR 2015 Annual Report

https://recharge.iah.org/recent-annual-reports



International Association of Hydrogeologists Commission on Managing Aquifer Recharge



IAH-MAR REPORT OF ACTIVITIES 2023

CO-CHAIRS

Enrique Fernández Escalante (Spain)

Email: efernan6@tragsa.es

Catalin Stefan (Germany)

Email: catalin.stefan@tu-dresden.de

Yan Zheng (China)

Email: van.zheng@sustech.edu.cn

Website

https://recharge.iah.org/

Sister Websites:

Spanish: https://dinamar.tragsa.es
Chinese: https://china-mar.ujn.edu.cn/

2. Working Groups and Communities of practice (WG & COP Leaders)



Working Group: MAR Economics

Contact: Andrew Ross; <u>a.ross@anu.edu.au</u>

- 1. 2008-2016 Initial discussions and development
- 2. 2016-2018 Development of methodology for estimating costs of MAR using levelised cost analysis (Ross and Hasnain 2018)
- 3. 2019-2023 Estimation of benefits of MAR and benefit cost ratios of MAR schemes (UNESCO 2021, Ross 2022)
- 4. 2024-2027 Further development of methods for estimating the benefits and costs of MAR and water banking

Working Group: MAR Economics

References

- Ross, A. and Hasnain, S. (2018) 'Factors affecting the costs of managed aquifer recharge schemes',
 Sustainable Water Resources Management 4(2) pp. 179-191.
- Zheng, Y., Ross, A., Villholth, K.G. and Dillon, P. eds (2021) Managing Aquifer Recharge: A Showcase for Resilience and Sustainability, UNESCO,
 Paris. https://unesdoc.unesco.org/ark:/48223/pf0000379239
- Ross, A. (2022) 'Benefits and Costs of Managed Aquifer Recharge: Further Evidence', Water 14:20 p3257.

Working Group on Clogging During MAR

Contact: Russell Martin: rmartin@wga.com.au

2013 Clogging issues associated with managed aquifer recharge methods Monograph.

Available for download via: https://recharge.iah.org/files/2015/03/Clogging_Monograph.pdf

2013 to 2024 Working on Clogging case studies for Volume 2 of monograph Various calls for authors wishing to present their case studies.

Seven studies in various stages of write up to be included in Volume 2

2024 CSIRO - Declan Page has kindly offered assistance to co-edit Volume 2 which will endeavour to release in the next 12 to 18 months.

Contributions from others with clogging case studies most welcome.

Working Group: MAR in Conferences

Leaders

Daniela Benedicto van Dalen, daniela.benedicto@acaciawater.com (Acacia Water, The Netherlands) and IAH MAR Commission co-chairs, plus future local members.

Aims

The Working Group "MAR at Conferences" (MAR-CO) aims to assist conference organizers worldwide with the integration of MAR into the conference programmes. Whenever possible, a dedicated session is proposed, together with additional events and side activities.





Latest activities

- Support at the 50th IAH in Cape Town (abstract selection, session chairing, summary of the conference)
- Advertising ISMAR 12
- Supporting ISMAR 12 LOC in the preps (supporting in several tasks, finding donors for the event)

Working Group: MAR Suitability Mapping

Leaders

Dr. Catalin Stefan (Research Group INOWAS at TU Dresden, Germany – catalin.stefan@tu-dresden.de)

Aims

- Review available studies on GIS-based selection of sites suitable for MAR application and publish the results in an open access paper - DONE
- Initiate a network of scientists and stakeholders to share experience on MAR suitability maps (criteria, scales, objectives, applications, etc.) - ongoing
- Establish common GIS-based suitability mapping language and methodologies
 ongoing

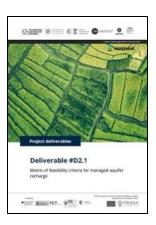


Review paper:

Sallwey et al. 2019 (https://doi.org/10.1139/er-2018-0069)
Update in preparation (+proposal for guiding principles for MAR mapping)

Mapping methodology

- Comprehensive criteria database (>150 criteria)
- Co-participative methodology centered on stakeholders engagement







https://www.agreemar.inowas.com

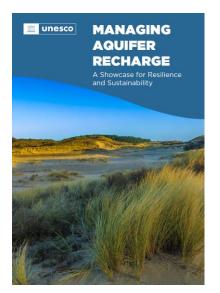
Networking

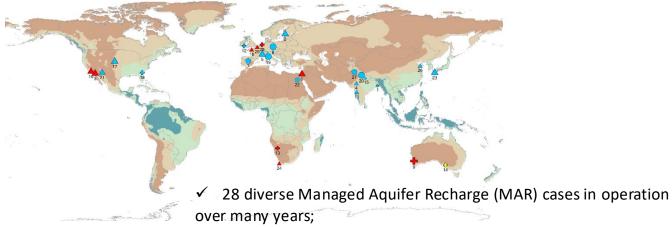
 Side-workshop on MAR suitability mapping at ISMAR12 (and also one dedicated session)



3. MAR sites updates/new entries

- Express your interest to submit updates and new entries of sustainable MAR sites/projects that have been in operation to yan.zheng@sustech.edu.cn
- Selected entries for posting on IAH-MAR website / MAR Portal
- Selected entries, after editing, can form a collection of a new book





of Hydrogeologists

Managing Aguifer Recharge

✓ Irrefutable evidence that MAR produces a wealth of benefits. https://recharge.iah.org/unesco-iah-mar-publications

IAH Commission on Managing Aquifer Recharge



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MAR Community of Practice China

Leader: Weiping Wang

Activities:

Workshop - 17-21 Sept 2018 - Development of MAR on North China Plain

led by Simon Stisen and Yan Zheng

The Denmark Ministry of Foreign Affairs approved a project entitled MAR in the North China Plain and this involves the Geological Survey of Denmark and a number of Chinese partners (all involved in the MAR Network China) including Southern University of Science and Technology, University of Jinan, Beijing Water Science and Technology Institute and Chinese Geological Survey. The kick-off workshop for this project was held in Beijing and included visits to field sites in Beijing and Jinan and a seminar in Shenzhen.

Workshop- Sept 2015 - MAR Guidelines for China

Yan Zheng (MAR for Development Working Group Leader and Weiping Wang (Commission Co-Chair, and Leader of the China MAR Network) coordinated a workshop in Beijing on 7 Sept 2015 to discuss the formation of MAR Guidelines for China and upscaling of demonstration projects. This workshop resolved that this was essential and collaboratively determined a pathway to progress this work with the National Government.

ISMAR8 Symposium, Beijing 2013 – evolved from the establishment of the concept of a National MAR networks that were an outcome of a UNESCO hosted workshop at the Thailand Groundwater Conference, Bangkok, early 2009



MAR CoP in Italy (2024)



Growing activities on MAR in Italy:

- mainly driven by innovation projects (new projects in Piemonte and Emilia Romagna);
- still slow uptake by authorities;
- few multi-national companies aiming at water neutrality in their business.

Training and dissemination activities, by this year with the support of the

National Chartered Ordered of Geologists



Also research is ongoing at the LIFE REWAT MAR scheme.

The LIFE REWAT MAR scheme is fully equipped with multi-level piezometers and several sensors (h, T EC, pH, redox, ...).

It is open to international groups for performing joint research activities.

(please contact rudy.rossetto@santannapisa.it)







建筑



Contents lists available at ScienceDirect

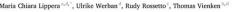
Advances in Water Resources

iournal homenage: www.



Understanding and predicting physical clogging at managed aquifer recharge systems: A field-based modeling approach





3. MAR at IAH2024 in Davos (Catalin)

https://www.iah2024davos.org

Workshops

Parallel Sessions

Plenary Sessions

Excursions

Accompanying Persons

Ice Breaker

Wednesday Night

Evening activities

brown bag Lunch Lecture

Network/Comm Meetings

Exhibition

Music by glaciers

ECHN Award

- over 1000 participants
- 55 parallel sessions
- 14 technical trips to different places in the Alps
- tons of social events and evening activities
- a water-tasting contest
- a photo contest
- a great gala dinner with excellent Swiss food and videos from water-related expeditions
- a very interesting glacier art pavilion "Encounter Iced Sound 2.0" where you could literally "hear" the ice cracking and making noises
- "water music" in the opening







3. MAR at IAH2024 in Davos (Catalin)

Session 4.05 "Managed aquifer recharge in modern hydrogeology"

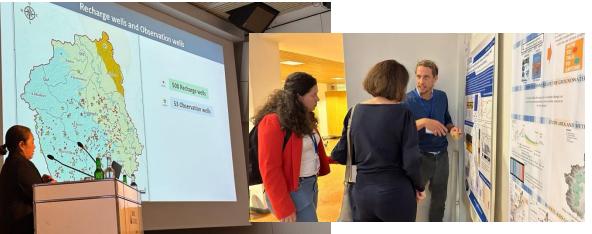
14 presentations + poster session + more MAR presentations in other sessions during the week (33 abstracts submitted to this session)

See book of abstracts soon on the conference website!!!









4. Invitation to ISMAR12 (Fanus)







International Symposium on Managed Aquifer Recharge

Theme

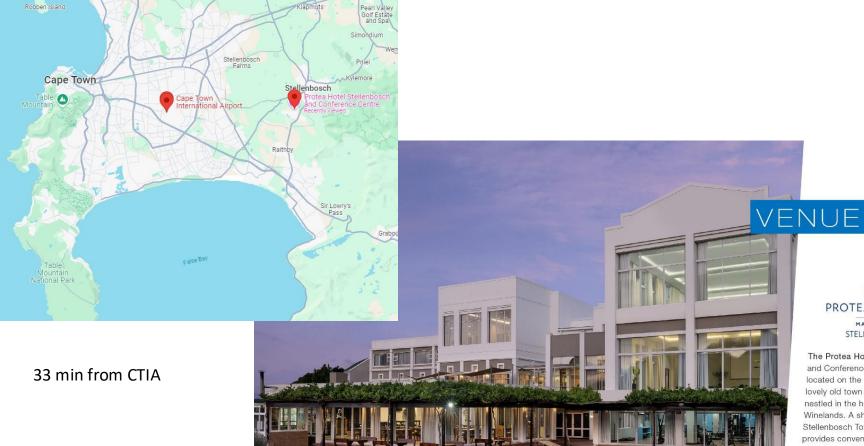
From **Theory** to **Implementation** and **Operation**





28 April – 2 May 2025 Stellenbosch | South Africa

For more information please visit https://ismar12.org.za/



Robben Island

PROTEA HOTELS.

MARRIOTT STELLENBOSCH

The Protea Hotel Stellenbosch and Conference Centre is ideally located on the outskirts of the lovely old town of Stellenbosch, nestled in the heart of the Winelands. A short distance from Stellenbosch Town Centre, the hotel provides convenient access to local attractions. With state-of-the-art conference facilities, well-appointed rooms, dining options, a spacious pool, and breathtaking views of mountains and vineyards.

ISMAR12 PROGRAMME 28 April 2025 - 02 May 2025

International Symposium on Managed Aquifger Recharge

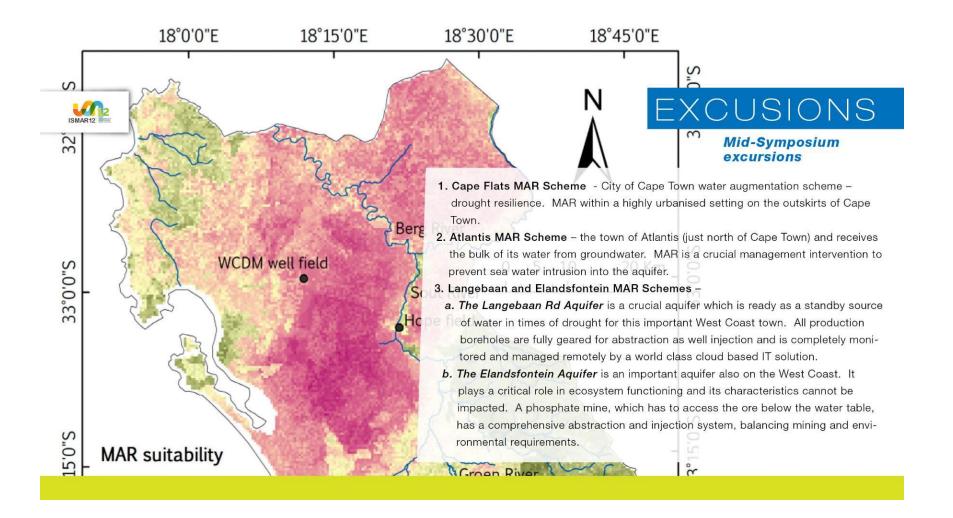
	Monday 28-Apr-25	Tuesday 29-Apr-25	Wednesday 30-Apr-25	Thursday 01-May-25	Friday 02-May-25	
09:00 - 10:30	Registration Workshop Session No. One	Official opening Plenary Session Key Note Speaker 1	Plenary Session Key Note Speaker 2	Plenary Session Key Note Speaker 3	Aquifer)	
10:30-11: 00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	pe Flats	ours
11:00 - 13:00	Workshop Session No. Two	3 Parallel Sessions	3 Parallel Sessions	3 Parallel Sessions	TRIP	ium T
13: 00 - 14:00	LUNCH	LUNCH	LUNCH	LUNCH	LD '	sodı
14:00 -16:00	Workshop Session No. Three	Panel Discussion	3 Parallel Sessions	Panel Discussion	FIELD TRIP (Atlantis, Langeb aan Road, Elandsfontein, Cape Flats Aquifer)	Post Symposium Tours
16:00 -16:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	antis, Lar	Pc
16:30 - 17:30	Workshop Session No. Four	Poster Session	AGM	Closing	(Atl:	
18:00	Welcome Reception		Gala Dinner			

Workshops

Sessions	Venue 1	Venue 2	Venue 3	
Morning	Achieving Successful Groundwater Recharge and Recovery Through Wells - David Pyne	Hydrogeochemistry and Managed Aquifer Recharge (MAR) – Speciation Modelling of Mixing Waters - Corne Engelbrecht	Operational Stage of the Well - Thom	
Afternoon	Technical solutions for IWRM by means of MAR schemes - Alvaro Enrique Fernandez Escalante	MAR Scheme Design Considerations for Bore Recharge (Science meets Engineering) - Russell Martin	Hanna and Michael Schnieders	

Tuesday	Wednesday		
Recent advancements in MAR feasibility mapping - Catalin Stefan	Overview of American Society of Engineers (ASCE) Standard Guidelines for Managed Aquifer Recharge Surface Spreading Facilities (ASCE/EWRI 69-19) - Adam Hutchinson and Mike Milczarek	Part 1: Managed Aquifer Recharge Concepts and Planning Part 2: Design, O&M, Data Collection and Site Characterization Methods	















SPONSORSHIP AND EXHIBITOR PROSPECTUS

PLATINUM SPONSORSHIP	R 200 000
GOLD SPONSORSHIP	R 125 000
SILVER SPONSORSHIP	R 75 000

OPPORTUNITIES SPONSOBSHIP

Additional Sponsorship	o Opportunities
Invited speaker support (selected by the ISMAR 12)	
Session sponsor (one sponsor per session)	R45 000
Audio Visual Sponsorship	R40 000
Conference gift sponsorship (technical cable pouch)	R35 000
Poster Sessions (duration of the Conference)	R27 000
Conference Name badge and Lanyard	R25 000
Conference Shopper Bag	R25 000
Field Trip	R20 000
Online Registration Form	R18 000
Pre Conference Workshop	R15 000
Student Registration Support	R10 000
Best Student Poster Award	R3 000
Best Student Oral Award	R5 000
Best Oral Award	R75 00
Best Poster Award	R5 000

R10 000 = €519





International Symposium on **Managed Aquifer** Recharge

28 April - 2 May 2025 Stellenbosch | South Africa







For updates | https://ismar12.org.za/

5. Call for ISMAR13 in 2028 (Enrique)



International Symposia on MAR



International Symposia on MAR

- 1. 1988 Anaheim California, USA (ASCE)
- 2. 1994 Orlando, Florida, USA (ASCE)
- 3. 1998 Amsterdam, Netherlands (IAH, ASCE & UNESCO)
- 4. 2002 Adelaide, Australia
- 5. 2005 Berlin, Germany
- 6. 2007 Phoenix, Arizona, USA
- 7. 2010 Abu Dhabi, UAE
- 8. 2013 Beijing, P.R. China "
- 9. 2016 Mexico City, Mexico
- 10. 2019 Madrid, Spain
- 11. 2022 Long Beach, CA, USA
- 12. 2025 Stellenbosch, S. Africa

















The bid is open until the end of 2024.

6. Elections of IAH-MAR Co-chairs (Co-chairs)

ISMAR12 PROGRAMME 28 April 2025 - 02 May 2025

International Symposium on Managed Aquifger Recharge

	Monday 28-Apr-25	Tuesday 29-Apr-25	Wednesday 30-Apr-25	Thursday 01-May-25	Friday 02-May-25	
				,	<u> </u>	
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10:30-11: 00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	pe Flats	Tours
11:00 - 13:00	Workshop Session No. Two	3 Parallel Sessions	3 Parallel Sessions	3 Parallel Sessions	D TRIP Eandsfontein, Cape Flats Aquifer)	ium T
13: 00 - 14:00	LUNCH	LUNCH	LUNCH	LUNCH	LD .	Symposium
14:00 -16:00	Workshop Session No. Three	Panel Discussion	3 Parallel Sessions	Panel Discussion	FIELD	Post Syn
16:00 -16:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	antis, Lar	Pc
16:30 - 17:30	Workshop Session No. Four	Poster Session	AGM	Closing	(Atl:	
18:00	Welcome Reception		Gala Dinner			

Oraliminary programms subject to change without prior notice

Call for candidacies: From 2025 January



7. Upcoming IAH-webinars on MAR (Catalin)

IAH Call for Webinars by Commissions, Networks and National Chapters

IAH-MAR Commission aims to initiate a series of webinars (proposed format: 90 min, 2 speakers + Q&A):

- 1. Managed aquifer recharge for resilient future
 - overview of activities of the IAH-MAR Commission
- 2. Managed aquifer recharge in developing countries
 - challenges and opportunities for MAR
 implementation in developing countries + selected
 case studies
- 3. Open for your suggestions...



NEWS & information

IAH - THE WORLD-WIDE GROUNDWATER ORGANISATION

Furthering the understanding, wise use and protection of groundwater resources throughout the world



IAH WORLD GROUNDWATER CONGRESS 2024

The 2024 IAH World Groundwater Congress takes place in Davos Switzerland, from 8-13 September 2024. Register to join groundwater professionals, students, scientists, and stakeholders in the sharing and exchange of knowledge and ideas. Page 6

A thank you from IAH President, David Kreamer

Our outgoing President, David Kreamer, reflects on his last four years as President of IAH and the achievements the Association has made, and extends his thanks to the many people involved in supporting IAH and furthering the IAH mission. Page 4 Vote in the IAH 2024 Council Elections

Voting is open for the election of IAH's Officers, and all IAH members are entitled to vote. IAH elections take place every four years, and IAH is now undertaking elections for the next term of office for the period 2024-2028. Voting closes on 6th September. Page 10

Find us at https://iah.org. Connect by email info@iah.org and on social media:











Find IAH groups



8. Call for action: Photo-album of the whole ISMAR series. Disclaimer and call for photos from previous ISMAR (1, 2 and 3 missed).

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material

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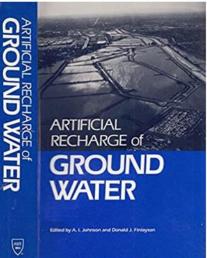


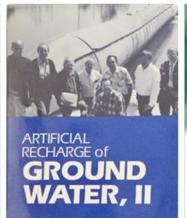






Call for photos, specially from "ISMAR" 1, 2 and 3







Management of Aquifer Recharge for Sustainability

Editor P.J. Dillon



Recharge systems for protecting and enhancing groundwater resources

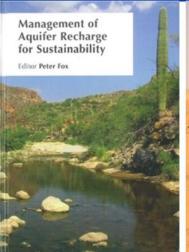


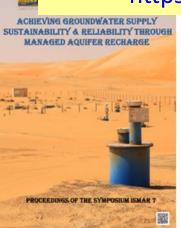
Proceedings of the 5th International Symposium on Management of Aquifer Recharge ISMARS, Berlin, Germany, 11-16 June 2005



ISMAR Materials

https://recharge.iah.org/ismar











9. Information from attendees (new projects, events, activities, etc.)



Symposium on MAR in Middle East, Amman, 19.11.2024

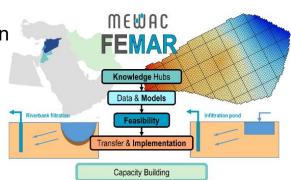
- Project MEWAC-FEMAR "Symposium on Managed Aquifer
 Recharge in Middle East", 19 November 2024, Amman, Jordan
- Objectives
 - provide a perspective on MAR/RBF in the Middle East
 - highlight "open-source" model-based systems in context to MAR/RBF
 - present results from regional MAR/RBF case studies or associated/related topics.
- Further information:

https://recharge.iah.org/





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MAR Autumn School, Madaba (Amman), Jordan, 20.-22.11.2024

- Projects MENAWAT & MEWAC-FEMAR "Managed Aquifer Recharge Autumn School", 20. –
 22.11.2024, German Jordanian University, Madaba (Amman), Jordan
- Target group: graduates, PG, Ph.D. students, young engineers & researchers
- Content includes:
 - applied aspects of MAR, RBF & modelling of MAR systems
 - lectures, computer work and field methods
 - condensed version of International Summer Schools on MAR in Dresden (MARISS 2021–2023)
- Further information will follow on IAH MAR Commission news/website or contact: cornelius.sandhu@htw-dresden.de







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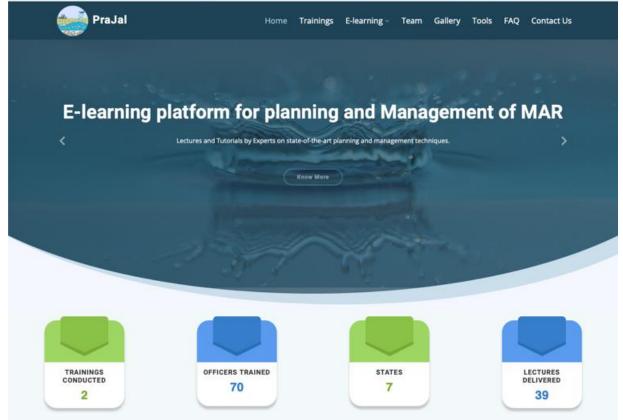












Welcome to PraJal

Disseminating Knowledge on Managed Aquifer Recharge

PraJal is a joint initiative by the Department of Water Resources Development and Management, Indian Institute of Technology, Roorkee, and the National Institute of Hydrology, Roorkee, DoWR, RD&GR, Ministry of Jal Shakti, Gol.

It is a platform to provide details about various Managed Aquifer Recharge initiatives and advancements made in the field of groundwater recharge.

It also provides web-based tools for site suitability of MAR sites.

http://prajal.org/

Any future WG or CoP?



MAR & Governance?
MAR Modelling?
Benchmarking on MAR cases?
MAR dissemination materials?

• • •

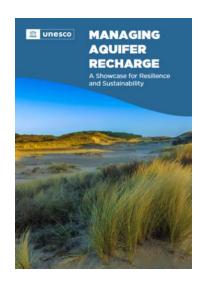
Contact co-chairs

Enrique Fernández Escalante efernan6@tragsa.es Catalin Stefan catalin.stefan@tu-dresden.de Yan Zheng yan.zheng@sustech.edu.cn

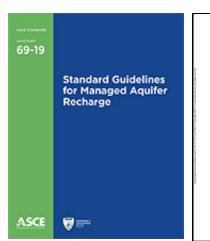
https://recharge.iah.org/contact-us

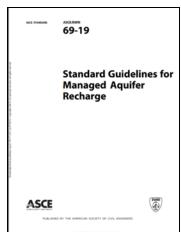
10. Q&A, miscellaneous (all)



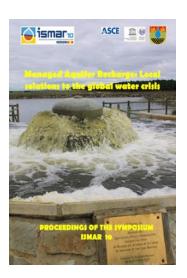


https://unesdoc.unesco.org/ark:/48223/pf0000379962





https://ascelibrary.org/doi/book /10.1061/9780784415283



https://dinamar.tragsa.es/file.axd?file=/PDFS/ISMAR10-proceedings-book_EF.pdf

P-ISMAR series

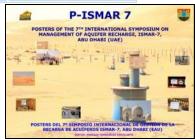






https://dinamar.tragsa.es/post/P-ISMAR-









We encourage early-career researchers to join our IAH-MAR commission!!



Your benefits:

- interact with our large MAR community
- have direct access to plenty of MAR resources
- get the chance to implement your ideas
- reach beyond the academic / research networks

Your tasks:

- assist the co-chairs with coordinating the commission's activities
- assist in preparing and distributing the monthly newsletters
- assist in organizing the upcoming webinars (registration, co-moderation etc.)

Contact us!

https://recharge.iah.org/contact-us



International Association of Hydrogeologists

the World-wide Groundwater Organisation

IAH Commission on Managing Aquifer Recharge

https://recharge.iah.org

