

## IAH MAR Commission Newsletter. 2024 June

Dear MAR family, good afternoon. Attached new pieces of news about MAR.

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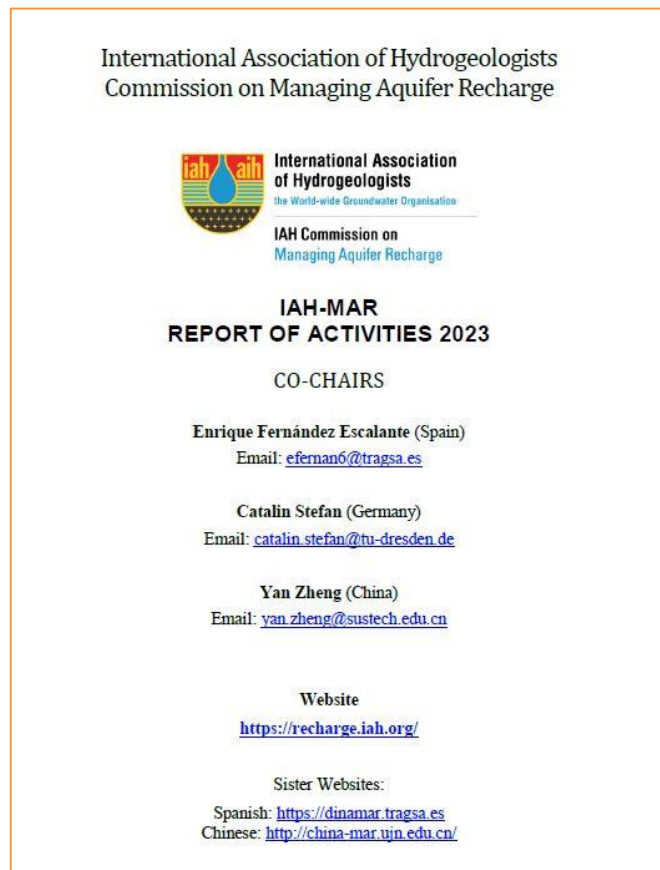
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## PUBLICATIONS ABOUT MAR

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### IAH-MAR Commission. Report of activities 2023

The Managing Aquifer Recharge (MAR) Commission has submitted to IAH the memory of activities during 2023.



Download the report from our website:

<https://recharge.iah.org/files/2024/04/IAH-MAR-Annual-Report-2023-all.pdf>

### IAH's call for newsletter - content

Message from Emma Clare: *"I am gathering content for the next News and Information newsletter, which is due to be published in early August. If you have any updates or news from your National Chapter, Commission or Network that you would like to include, can you please send some text to me (up to 250 words) and any images by Friday 14th June. If you are supplying images, please ensure we have permission to publish them"*.

Please, report to Emma Clare [eclare@iah.org](mailto:eclare@iah.org)

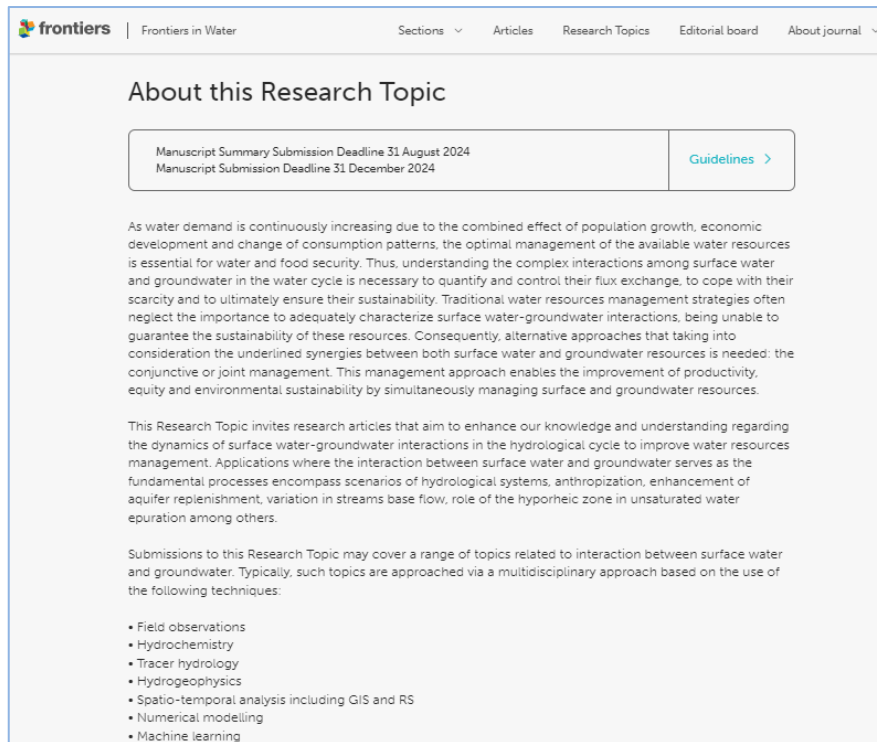
## NEW MAR-RELATED PUBLICATIONS

### Special issue: Hydrological Synergy: Exploring the Interaction Between Surface Water and Groundwater for Advancing Sustainable Water Resources Management (Frontiers in Water)

Invitation to participate in this Special Issue.

This Research Topic invites research articles that aim to enhance our knowledge and understanding regarding the dynamics of surface water-groundwater interactions in the hydrological cycle to improve water resources management. Applications where the interaction between surface water and groundwater serves as the fundamental processes encompass scenarios of hydrological systems, anthropization, enhancement of aquifer replenishment, variation in streams base flow, role of the hyporheic zone in unsaturated water epuration among others.

Editors: Drs Anis Chekirbane, Erhu Du, Constantinos F. Panagiotou



The screenshot shows the 'About this Research Topic' page on the Frontiers in Water website. The page includes a navigation bar with 'Sections', 'Articles', 'Research Topics', 'Editorial board', and 'About journal'. The main content area features a box with submission deadlines: 'Manuscript Summary Submission Deadline 31 August 2024' and 'Manuscript Submission Deadline 31 December 2024', with a 'Guidelines >' link. Below this, there is a paragraph explaining the importance of understanding surface water-groundwater interactions for water and food security. Another paragraph states that the research topic invites articles to enhance knowledge of these interactions. A third paragraph lists submission topics, such as field observations, hydrochemistry, and numerical modelling.

More

Info:

[https://www.frontiersin.org/research-topics/63385/hydrological-synergy-exploring-the-interaction-between-surface-water-and-groundwater-for-advancing-sustainable-water-resources-management?journal\\_id=2336850&sfmc\\_sub=398086594&is=94\\_HTML&u=86783717&mid=7236711&lb=1416&id\\_mc=398086594&utm\\_source=sfmc&utm\\_medium=email&utm\\_campaign=MSC-CIP-EOF-Reminder-1&utm\\_id=2336850&Business\\_Goal=MSC&Audience=CIP&Email\\_Category=Invitation&Channel=Email&BusinessGoal\\_Audience\\_EmailCategory\\_Channel=MSC\\_CIP\\_Invitation\\_Email&utm\\_source=sfmc&utm\\_term=&utm\\_content=3821798&utm\\_id=8ec20e47-c636-43b8-8cc3-7de95346541e&sfmc\\_id=398086594&sfmc\\_activityid=12c8f53a-71e6-4d3b-9f35-106855759694&utm\\_medium=email](https://www.frontiersin.org/research-topics/63385/hydrological-synergy-exploring-the-interaction-between-surface-water-and-groundwater-for-advancing-sustainable-water-resources-management?journal_id=2336850&sfmc_sub=398086594&is=94_HTML&u=86783717&mid=7236711&lb=1416&id_mc=398086594&utm_source=sfmc&utm_medium=email&utm_campaign=MSC-CIP-EOF-Reminder-1&utm_id=2336850&Business_Goal=MSC&Audience=CIP&Email_Category=Invitation&Channel=Email&BusinessGoal_Audience_EmailCategory_Channel=MSC_CIP_Invitation_Email&utm_source=sfmc&utm_term=&utm_content=3821798&utm_id=8ec20e47-c636-43b8-8cc3-7de95346541e&sfmc_id=398086594&sfmc_activityid=12c8f53a-71e6-4d3b-9f35-106855759694&utm_medium=email)

### Transformation hin zu nachhaltigen, resilienten Infrastrukturen (in German)

In Germany and around the world, new and innovative infrastructure solutions are constantly being developed that have the potential to contribute to greater sustainability. This potential is often insufficiently utilised. The TRAFIS 2 research project focuses on ways to better disseminate innovative solutions that can contribute to better climate protection, resource conservation,

economic efficiency, social justice and security of supply (resilience), in other words to greater sustainability overall.

Recent publication edited by four Germany and The Netherlands universities.



Download:

[https://www.umweltbundesamt.de/sites/default/files/medien/11850/publikationen/55\\_2024\\_texte\\_trafis.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/11850/publikationen/55_2024_texte_trafis.pdf)

## MAR AND MAR-RELATED CONFERENCES AND SEMINARS

### ISMAR 12. Call for abstracts OPEN!



***“From Theory to Implementation and Operation”***

***28 April – 2 May 2025 – Stellenbosch, South Africa***

**Less than one year to go... ISMAR is going to South Africa, are you ready?**

The Main Theme of ISMAR 12 is “From Theory to Implementation and Operation”, with 8 Sub-themes to guide abstract submissions for consideration.

A detailed expansion of each sub-theme on the ISMAR12 website, <https://ismar12.org.za/> is provided to help clarify the Sub-themes for both presenters and attendees. The Sub-themes were selected to address various MAR methodologies, applications, and developments.

Register for the Symposium from June 2024 to secure your attendance at the workshops, presentations, networking, and tours. The Sponsorship/Exhibition Prospectus and the Call for Pre-Conference Workshops for Day 1 will be available in the next few weeks. Three exciting excursions are planned for Day 5 showcasing the latest developments in the field of MAR in South Africa...

Interesting opportunities for sponsorship: <https://ismar12.org.za/sponsorship/>



More info: <https://ismar12.org.za/>

## ISMAR 13. Call for proposals. Open!

Have you thought about hosting an ISMAR? Please, consider hosting ISMAR 13 and contact a co-chair...

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		
11.	2022 Palm Beach California		
12.	2025. South Africa...		

## **IAH 2024 Conference. Davos, Switzerland. September**

The IAH 2024 conference will take place in Davos, 2024, September 8-13<sup>th</sup>.

There is a specific session on MAR: “*Managed Aquifer Recharge into modern hydrogeology. The time to push MAR to the forefront is now*”.

### **20 ORAL SLOTS WILL BE EXPOSED DURING THE MAR SESSION**



THANK YOU TO ALL OF YOU SUBMITTING AN ABSTRACT AND PARTICIPATING IN THE SESSION.

Probably an IAH-MAR plenary (the last one before ISMAR 12’s general assembly) will be organized (to be informed in the next newsletter).

More info: <https://www.iah2024davos.org/>

## **IUCN World Water Forum sustainable groundwater management**

MAR present in the 10th World Water Forum, May 18-25, 2024, Bali, Indonesia. WATER FOR SHARED PROSPERITY

IWRA’s session Basins Segment, 4:45 pm - 5:20 pm (CET+6), room Singaraja 1: The session shared best practices and experiences, advocating for basin-specific needs, networking, and partnership building, influencing policy, and committing to action mainly based on the basin view. These outcomes can help to build capacity, nurture collaboration, and stimulate effective water governance at the basin level.

During the Round Table of Basin Champions to support IWRM’s improvements at basin level launched the Special Issue of *Water International Journal* on “*Water management in basins of rivers, lakes and aquifers: the challenges ahead after 30 years of innovation*”.

More info: <https://youtu.be/uQZ49uG7oFI>



Thank you IWRA, Bob Bower, Sharon Megdal... for reporting.

## Use of MAR as a water management strategy in Western Australia's mining industry

The event was a one-day seminar showcasing the use of MAR as a water management strategy in Western Australia's mining industry.

Doug Brown helped drive and promote the event in collaboration with the WA IAH and gave the key note presentation about establishing the FMG MAR scheme in the Pilbara region, where a total of ~360 ML dewatering water is re-injected to the aquifer each day to mitigate against environmental impact on a RAMSAR listed wetland, and which has now been operating for over 10 years.

# MAR IN MINING

WA ONE DAY SEMINAR

The Managed Aquifer Recharge (MAR) in Mining seminar brought together a diverse array of industry experts and enthusiasts, marking a significant milestone in advancing groundwater practices. Hosted by IAH WA, the event was a resounding success, drawing in a remarkable turnout of 250 attendees from various sectors within the groundwater industry.

Acknowledgements were extended to the sponsors whose support was instrumental in orchestrating the event, as well as to Doug Brown and Karen Johnston for their indispensable roles in curating the seminar.

Throughout the day, participants were treated to a series of 11 captivating presentations and engaging panel discussions led by industry-leading MAR specialists. These experts shared their wealth of knowledge and real-world experiences, offering insights in the implementation of aquifer recharge on a global scale.



No links to access info have been received (yet).  
Thank you Karen Johnston for reporting.

[ManagedRecharge](#)



## SEMINARS AND WEBINARS

### 2024 SGMA Implementation Summit. 2024 June 5-6<sup>th</sup>

The popular Annual GSA Summit is being revamped in collaboration with the ACWA Groundwater Committee and SGMA Implementation Subcommittee. This is a once-a-year GSA and communities of interest get-together to foster progress on SGMA implementation, collaborating with ACWA members and implementers and GRA technical experts.



*The 2024 SGMA Implementation Summit is in full swing! Our panels have sparked insightful discussions on managing water quality and addressing groundwater depletion. The expert roundtables provided deep dives into critical topics, fostering great collaboration and knowledge sharing.*



More info: <https://www.grac.org/events/EventDetails.aspx?id=1855354>

Thank you Christy Swindling Kennedy for reporting.

## GRAC's groundwater week



*"We are excited to announce the upcoming "Groundwater 101 Week," hosted by GRA from July 15-19, 2024. **Save the date** and get ready to register soon for this informative multi-day virtual event packed with insightful sessions tailored for professionals and students passionate about groundwater research and management"*

### Wednesday 7/17

**9:00 am** - Improving Well Rehabilitation Outcomes with Science Based Approaches

**1:00 pm** - Basic Design Principles for Monitoring, Production, and **Recharge Wells**.

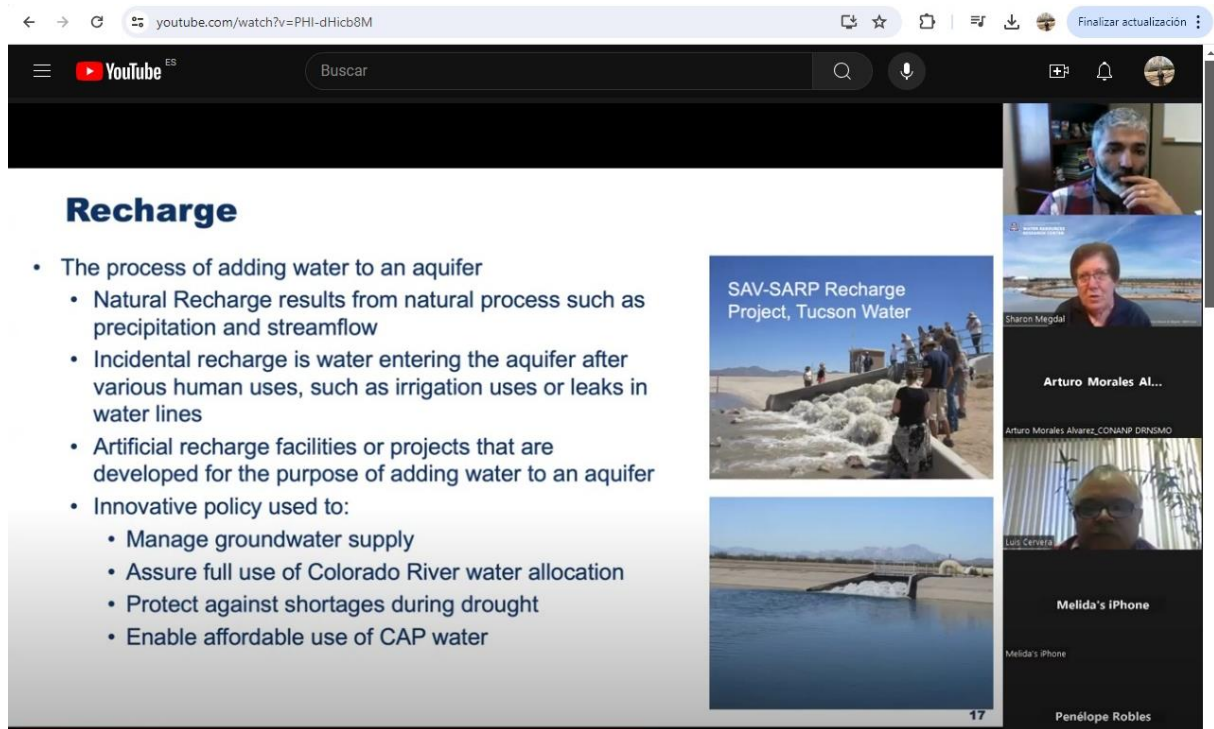
More info: <https://www.grac.org/events/EventDetails.aspx?id=1865115&group=>

## NEW MAR OR MAR-RELATED ACTIVITIES

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**The Facultad de Ingeniería, Secretaría de Investigación y Posgrado from Chihuahua University has organized a webinar on Water Solutions through partnership.**

Dr. Sharon Megdal has presented a summary from the WRRC 2024 Annual conference: Implementing Water Solutions Through Partnership, and reflections to the 10<sup>th</sup> World Water Forum (Bali, Indonesia).



The screenshot shows a YouTube video player with a presentation slide. The slide title is "Recharge". The content includes a bulleted list of points and a video thumbnail. The list of points is as follows:

- The process of adding water to an aquifer
  - Natural Recharge results from natural process such as precipitation and streamflow
  - Incidental recharge is water entering the aquifer after various human uses, such as irrigation uses or leaks in water lines
  - Artificial recharge facilities or projects that are developed for the purpose of adding water to an aquifer
  - Innovative policy used to:
    - Manage groundwater supply
    - Assure full use of Colorado River water allocation
    - Protect against shortages during drought
    - Enable affordable use of CAP water

The video thumbnail is titled "SAV-SARP Recharge Project, Tucson Water" and shows a large concrete structure with water flowing over it. The video player interface includes a search bar, a microphone icon, and a list of participants on the right side: Sharon Megdal, Arturo Morales AL..., Arturo Morales Alvarez, CONANP, DRNSMO, Luis Cervera, Melida's iPhone, and Penélope Robles. The slide number "17" is visible in the bottom right corner.

Presentation in YouTube: <https://www.youtube.com/watch?v=PHI-dHicb8M>

Thank you Miguel Ángel González for reporting.

## **Global Water Partnership webinars on “Oportunidades y desafíos en el cumplimiento de las Contribuciones Nacionalmente Determinadas para la resiliencia hídrica en Latinoamérica”**

Currently, GWP, as associated member of NDC-P, is conducting five projects in Latin America to support climate change adaptation in El Salvador, Panamá, Chile, Peru and Uruguay.

More info:

[https://www.linkedin.com/posts/global-water-partnership-sudamerica\\_resilienciahiedrica-activity-7201937916929916928-0\\_Ww/?utm\\_source=share&utm\\_medium=member\\_desktop](https://www.linkedin.com/posts/global-water-partnership-sudamerica_resilienciahiedrica-activity-7201937916929916928-0_Ww/?utm_source=share&utm_medium=member_desktop)



**WEBINAR**

**Oportunidades y desafíos en el cumplimiento de las NDC para la resiliencia hídrica en Latinoamérica**

 **30 de mayo**

 **8:30 am (GMT -6)**

Zoom: Meeting ID 846 4950 1913 / Passcode 930374

## Panel discussion “Evaluating Managed Aquifer Recharge (MAR) Opportunities and Methods in a Challenging Farm Setting”

Wednesday, May 29, 2024

12:00 PM - 1:00 PM PST

Managed Aquifer Recharge (MAR) on farmlands is challenging. This GRACast will present work done in a MAR feasibility study that engaged novel techniques for correlating geophysics with soils data. The project area is a 1,000-acre farm located near Le Grand, California where the sediments in the unsaturated zone near surface and deeper are not conducive to recharge.



**GRACast**  
**Evaluating Managed Aquifer Recharge (MAR) Opportunities and Methods in a Challenging Farm Setting**

  Speakers:  
**John Lambie, P.E., P.G.**  
**& Gordon Osterman, PhD**

**May 29, 2024**  
12:00 PM - 1:00 PM Pacific (Virtual)

More info: <https://www.grac.org/events/EventDetails.aspx?id=1857127&group=>

Looking for news whether the conference was recorded... May anybody inform, please?

## MORE ACTION


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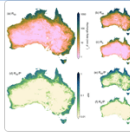
Although IAH-MAR newsletter does not include references to scientific papers (unless convenience), some contributions have been reported and received:

### **New study shows how quickly surface water moves to groundwater reservoirs across Australia**

A new study from Charles Darwin University (CDU), Monash University and The University of Newcastle has presented almost 100,000 estimates of groundwater recharge rates across Australia, by far the largest known [database](#) of its kind.

A high-resolution map of diffuse groundwater recharge rates for Australia

Stephen Lee , Dylan J. Irvine, Clément Duvert, Gabriel C. Rau, and Ian Cartwright



**Abstract**

Estimating groundwater recharge rates is important to understand and manage groundwater. Numerous studies have used collated recharge datasets to understand and project regional- or global-scale groundwater recharge rates. However, recharge estimation methods all have distinct assumptions, quantify different recharge components and operate over different temporal scales. We use over 200 000 groundwater chloride measurements to estimate groundwater recharge rates using an improved chloride mass balance (CMB) method across Australia. Groundwater recharge rates were produced stochastically using gridded chloride deposition, runoff and precipitation datasets. After filtering out groundwater recharge rates where the assumptions of the method may have been compromised, 98 568 estimates of recharge were produced. The resulting groundwater recharge rates and 17 spatial datasets were integrated into a random forest regression algorithm, generating a high-resolution (0.05°) model of groundwater recharge rates across Australia. The regression reveals that climate-related variables, including precipitation, rainfall seasonality and potential evapotranspiration, exert the most significant influence on groundwater recharge rates, with vegetation (the normalised difference vegetation index or NDVI) also contributing significantly. Importantly, the mean values of both the recharge point dataset (43.5 mm yr<sup>-1</sup>) and the spatial recharge model (22.7 mm yr<sup>-1</sup>) are notably lower than those reported in previous studies, underscoring the prolonged timescale of the CMB method, the potential disparities arising from distinct recharge estimation methodologies and limited averaging across climate zones. This study presents a robust and automated approach to estimate recharge using the CMB method, offering a unified model based on a single estimation method. The resulting datasets, the Python script for recharge rate calculation and the spatial recharge models collectively provide valuable insights for water resource management across the Australian continent, and similar approaches can be applied globally.

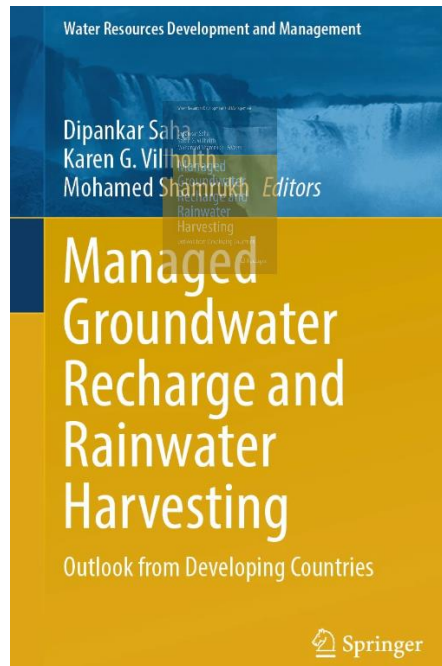
**How to cite.** Lee, S., Irvine, D. J., Duvert, C., Rau, G. C., and Cartwright, I.: A high-resolution map of diffuse groundwater recharge rates for Australia, *Hydrol. Earth Syst. Sci.*, 28, 1771–1790, <https://doi.org/10.5194/hess-28-1771-2024>, 2024.

Received: 18 Oct 2023 – Discussion started: 26 Oct 2023 – Revised: 19 Feb 2024 – Accepted: 05 Mar 2024 – Published: 17 Apr 2024

More info: <https://www.cdu.edu.au/news/new-study-shows-how-quickly-surface-water-moves-groundwater-reservoirs-across-australia>

### **Two cases of artificial recharge in Colombia**

Chapter of the book (already introduced in the previous newsletter):

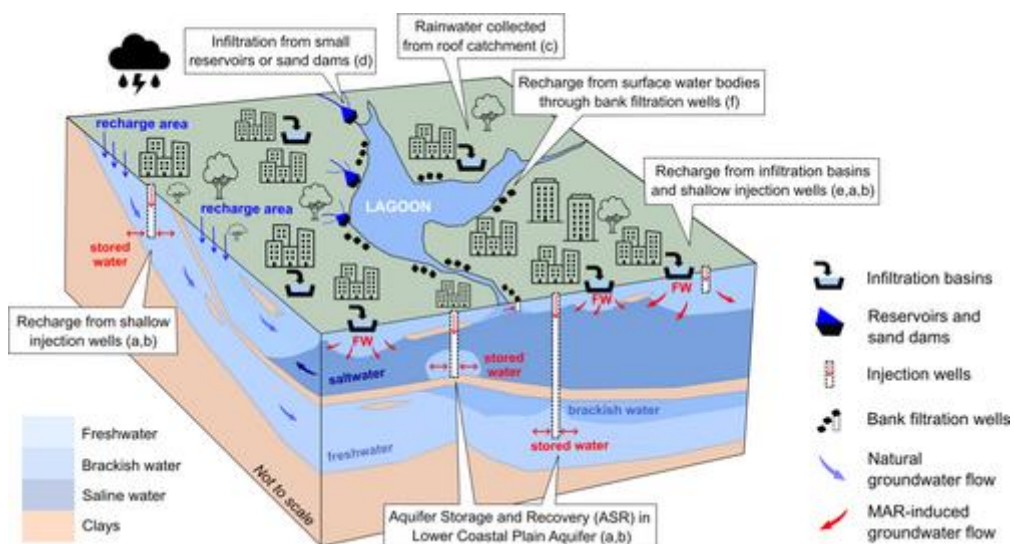


More info:

[https://www.researchgate.net/publication/379377025\\_Artificial\\_Groundwater\\_Recharge\\_in\\_Santa\\_Marta\\_and\\_Bogota\\_Colombia](https://www.researchgate.net/publication/379377025_Artificial_Groundwater_Recharge_in_Santa_Marta_and_Bogota_Colombia)

Thank you Carlos Molano for reporting.

## Water scarcity in the fast-growing megacity of Lagos, Nigeria and opportunities for managed aquifer recharge



More info:

<https://wires.onlinelibrary.wiley.com/doi/10.1002/wat2.1733>

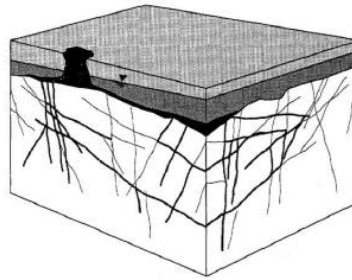
Thank you Oluwaseun Franklin Olabode for reporting.

## A pill of nostalgia

Although not specific on MAR, the book dates from 1995, and not very much has changed in hard rocks... have a look...

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### Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators



**Andrew J. B. Cohen**

Earth Sciences Division  
Ernest Orlando Lawrence Berkeley National Laboratory  
University of California  
Berkeley, CA 94720

October 1995

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Download:

[https://www.researchgate.net/publication/328345857\\_Hydrogeologic\\_Characterization\\_of\\_Fractured\\_Rock\\_Formations\\_A\\_Guide\\_for\\_Groundwater\\_Remediators](https://www.researchgate.net/publication/328345857_Hydrogeologic_Characterization_of_Fractured_Rock_Formations_A_Guide_for_Groundwater_Remediators)

## Whatsapp group on Aquifer Recharge Management

This is the link to join the group, with 188 participants



IAH MAR 

Grupo · 188 miembros

<https://chat.whatsapp.com/DGh9YGv833OAXr6yQ65liN>

## Previous IAH-MAR Newsletters

Please, remember that you can access the previous newsletters in our website:

<https://recharge.iah.org/newsletters>

## IAH-MAR Commission on Twitter (X)



@IAHMARCom

<https://twitter.com/IAHMARCom>

## IAH-MAR Commission's sister Web sites

<http://china-mar.ujn.edu.cn/>



<https://dinamar.tragsa.es/>



@4dina\_mar

<https://www.linkedin.com/groups/4690290/> (536 members)

## IAH MAR Commission Forum

Please, remember you can book freely in the IAH MAR Commission Forum:

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

That's all by now... **please, keep reporting** ([dinamar@tragsa.es](mailto:dinamar@tragsa.es)). We miss pieces of news, especially from Asia

Dr. Enrique Fernández Escalante, on behalf of the IAH MAR Commission co-chairs.  
2024 June 18<sup>th</sup>