



**ismar**10

INTERNATIONAL SYMPOSIUM ON MANAGED AQUIFER RECHARGE

Madrid, 2019 May



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# Technical communications

## Oral presentations (pdf)

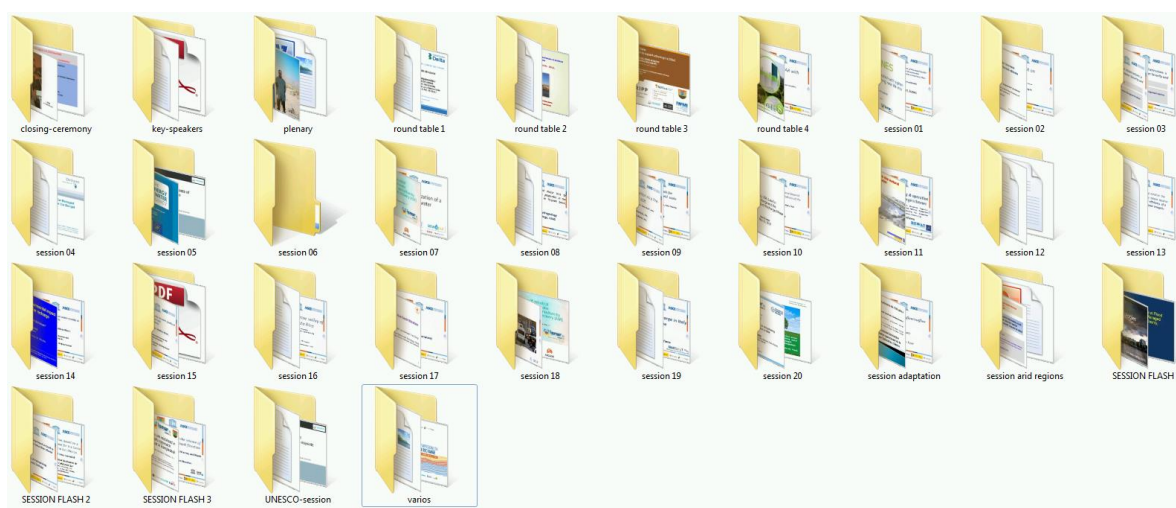
Oral and Flash presentations can be downloaded in their totality in four zip files:

[ismar10-presentations-0](#)

[ismar10-presentations-1](#)

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## ISMAR 10 Program

[ISMAR 10 FINAL SUMMARIZED PROGRAM](#)

[ISMAR 10 FINAL POSTERS LIST 2019](#)

[ISMAR 10. DETAILED FINAL PROGRAM](#)

## Abstracts book

[Abstracts book access](#)

## ISMAR 10 proceedings book

[Proceedings book access](#)

## Poster presentations and book

By 2019 September 2nd has been released the **P-ISMAR 10 book** gathering 66 of the posters exposed in ISMAR 10. It is the 7th number of this collection.

[Download P-ISMAR 10 book](#)

Current P-ISMAR collection accesses:

TISAR 98

P-ISAR 4

P-ISMAR 5

P-ISMAR 6

P-ISMAR 7

P-ISMAR 8

P-ISMAR 9

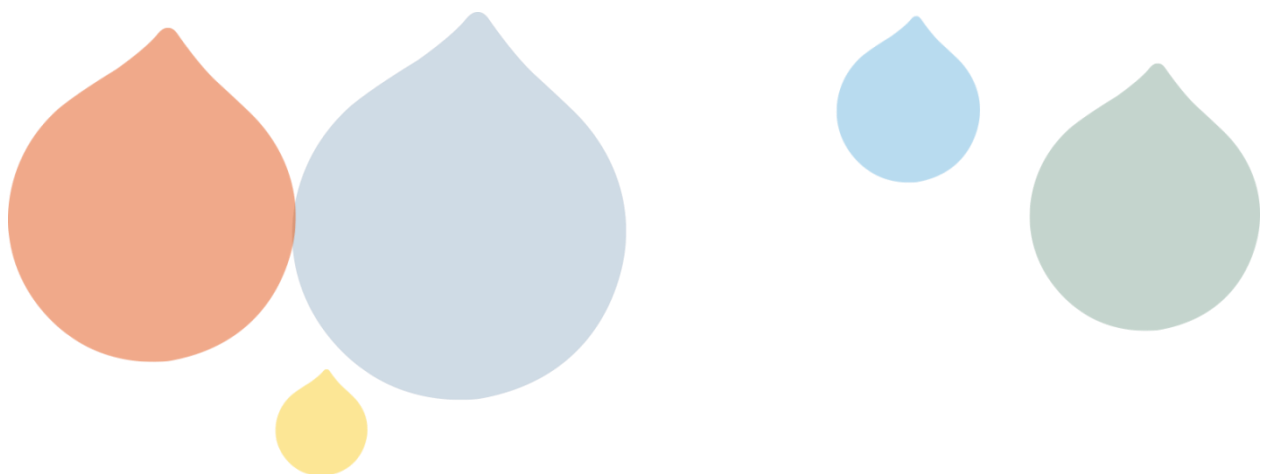
P-ISMAR 10

## Field trip guides

[1-LOS ARENALES AQUIFER FACILITIES IN SEGOVIA PROVINCE](#)

[2-GUADIANA CHANNEL AND DAIMIEL NATIONAL PARK](#)

[3-ASR/ASTR/DEPTH INJECTION BOREHOLES IN MADRID](#)



# Journal SCI articles

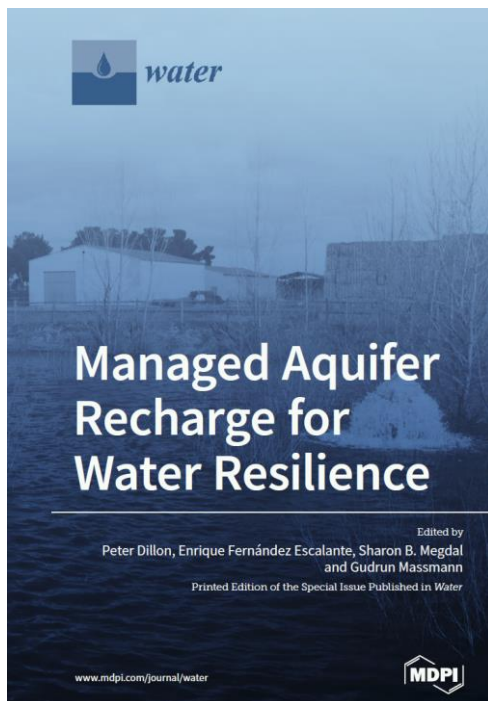
## MDPI Special Issue "Managed Aquifer Recharge for Water Resilience"



### Published Papers (23 papers)

[https://www.mdpi.com/journal/water/special\\_issues/ISMAR10\\_2019](https://www.mdpi.com/journal/water/special_issues/ISMAR10_2019)

### MDPI book. "Managed Aquifer Recharge for Water Resilience"



# Photo gallery

- [Field trip 14 photos](#)
- [ISMAR 10 GENERAL68 photos](#)
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- [Symposium Gallery35 photos](#)
- [Plenary15 photos](#)
- [Social events6 photos](#)
- [Workshops2 photos](#)

# Videos

## Ismar 10 oral presentations. Sala 1

### Auditory- Tuesday May 21th

-Lindhe, Andreas- Dynamic water balance modelling for risk assessment and decision support on MAR potential in Botswana-

<https://youtu.be/YyA21goQDb0>

– Anis Chekirbane- Tunisian experience in managed aquifer recharge by hill dam water release: case of some groundwater flow systems in North of Tunisia-

<https://youtu.be/q-hDccHsC48>

– Bob Bower- Integrated Water Management Utilising the tools of Managed Aquifer Recharge (MAR): Developing a Catchment-Scale Groundwater Replenishment System for the Hekeao/Hinds Plains, Canterbury, New Zealand-

<https://youtu.be/KegVme5iSnI>

– McGibbon, David- Emergency response to drought – the City of Cape Town's groundwater abstraction and MAR scheme (South Africa)-

<https://youtu.be/bgQRDyKmlzU>

– Tuthill, David R- Implementing Incentivized Managed Aquifer Recharge on a Basin Scale- <https://youtu.be/SAwk2Fm3JcU>

– Kalbus, Edda- Strategic Water Storage and Recovery with Desalinated Seawater in Liwa, UAE- <https://youtu.be/dU7IPaAF2PM>

– Greg Woodside- Integration of Stormwater Capture at Flood Management Reservoir with Managed Aquifer Recharge, Orange County, California-

[https://youtu.be/lh\\_tIVpc710](https://youtu.be/lh_tIVpc710)

– Harrie Timmer- Seeking Simplicity, Reliability and Sustainability in Drinking Water Purification for Future: the River Bank Filtration Based One Step Reverse Osmosis Process: from Concept to Practice- <https://youtu.be/5at4ZyUgpnC>

– Karapanos, Ilias- Artificial recharge mechanisms via a leaky river bed – a case study in the outskirts of London, UK- <https://youtu.be/JUs5ADhdyHM>

– Karen Villholth- Groundwater-based natural infrastructure: a critical piece in supporting water security and resilience- <https://youtu.be/cEhJh8Esj0k>

– Lukas Rolf- Implementing an energy-neutral Aquifer Storage and Recovery (ASR) system in a complex geological context in Lebanon- [https://youtu.be/7Q\\_G0T65hiw](https://youtu.be/7Q_G0T65hiw)

- Towers, Luke- The Atlantis Water Resource Management Scheme – resource management is people management. – <https://youtu.be/sEek2j7mRjU>
  - Cruz A. Mary-Belle- Use of Managed Aquifer Recharge to improve Water Management in Arid and Semi-Arid Regions of Mexico- [https://youtu.be/al\\_sPB4e8JI](https://youtu.be/al_sPB4e8JI)
  - P.K. Singh- Managing Aquifer Recharge at Local Level in India: Developing a Framework for Village Groundwater Co-operatives- <https://youtu.be/oXEP-qWP4jk>
  - P. Soni- Managed Aquifer Recharge at a Farm Level: Evaluating the Performance of Direct Well Recharge Structures- <https://youtu.be/U2EcYyMbNiQ>
  - Navarro Venegas, Roberto & Massa, Francisco- The MAR system in Ica, Peru. Technical and social lessons learned from a Mega-scale MAR system and improvement possibilities- <https://youtu.be/oeLy6e8BIPc>
  - Steven Wallander- Postdoctoral Research Associate at University of Arkansas, Associate Professor at University of Arkansas and Economist at USDA Economic Research Service- <https://youtu.be/jXAGYAgbFts>
  - Kissane, Stephen- Managed Aquifer Recharge and Aquifer Storage and Recovery in Kabul, Afghanistan- <https://youtu.be/uFRoHemf6q4>
  - Grischek, Thomas- Riverbank filtration with siphon wells – breathing new life into an old idea- <https://youtu.be/hVVepCX0Ahw>
  - Hartog;van Nieuwkerk- Scaling-up river water-fed Managed Aquifer Recharge in the deeply anoxic Makauri Aquifer, Gisborne (New Zealand)- <https://youtu.be/BToV37X48ow>
- Auditory- Wednesday May 22th**
- Weisbrod, Alex- Geo-electrical monitoring of soil aquifer treatment- [https://youtu.be/u\\_o-ZqrqWh0](https://youtu.be/u_o-ZqrqWh0)
  - Weisbrod, Alex- On the mechanisms affecting and controlling SAT operation- [https://youtu.be/JLgV\\_OuGs7I](https://youtu.be/JLgV_OuGs7I)
  - Mukhopadhyay, Amitabha- Numerical modeling of pumping test data at an artificial recharge site in Kuwait- <https://youtu.be/d6RTXlipoCc>
  - Kacimov, Anvar- Dipolic MAR “Bubble” Inside Confined Brine Formation or Floating “Lens” on Top of Unconfined Saline Aquifer- [https://youtu.be/R-aFNOo\\_Rio](https://youtu.be/R-aFNOo_Rio)

- Guo Chunyan- Using environmental isotope and major ions to characterize recharge and mixing properties in the aquifer system along Fen River in Taiyuan basin, northern China- <https://youtu.be/-F8Dwclv4Lc>
- Houlbrooke, Clare- Initial Results from Managed Aquifer Recharge Trials in the Hekeao/Hinds Plains, Canterbury, New Zealand- <https://youtu.be/LVpmjBwEyzA>
- Pyne, R. David- Conjunctive Use of Aquifer Storage Recovery Wells and Desalination to Mitigate Salt Water Intrusion and Achieve Water Supply Reliability- <https://youtu.be/c-vg-1PD7rE>
- Bartlett, R. Douglas- Comprehensive Guidelines for Managed Aquifer Recharge to Be Published by ASCE/EWRI- <https://youtu.be/5wCtEn1Hpwv>
- Fernández Escalante, Enrique- Ancient techniques of Managed Aquifer Recharge: Spanish Careos and Peruvian Amunas as an Adaptive Complex System. Breakdown, pathology and comparative analysis- [https://youtu.be/ct1J-Oxx\\_Zc](https://youtu.be/ct1J-Oxx_Zc)
- Musche, Fabian- Flood-protection of riverbank filtration wells- <https://youtu.be/TBDXwUznHfw>
- De Filippis, Giovanna- Design and operation of the MAR infiltration scheme in Suvereto (Italy)- <https://youtu.be/XYP5o8B6Zbg>
- Sallwey, Jana- MAR assessment through physical models: comparison of laboratory and field experiments- <https://youtu.be/jCKSEcePzAM>
- Brindha, K.- Influence of aquifer recharge structures and surface water bodies on geogenic fluoride contamination- [https://youtu.be/NfxKwRV\\_ZUM](https://youtu.be/NfxKwRV_ZUM)
- Li Ya-song- Study on the groundwater recharge based on South to North Water Diversion Project in Hutuo River Alluvial Plain, North China- <https://youtu.be/1x-W6tslBYQ>
- Pascual, M<sup>a</sup> Dolores- The Water in Spain- <https://youtu.be/l0S-ajiK-HY>
- Imaz Lamadrid, Miguel A.- Managed Aquifer Recharge Plan based on a surface water- groundwater model for the Santo Domingo creek, Baja California Sur, Mexico- <https://youtu.be/Vlub6bAauBQ>
- Stuyfzand, Pieter J- Environmental impact and mitigation of intake interruptions for Basin Aquifer Transfer Recovery systems- <https://youtu.be/qsAz0hdFr3U>
- Rossetto, Rudy- ECT solutions from monitoring and operation- [https://youtu.be/wm2wy\\_FmJ6k](https://youtu.be/wm2wy_FmJ6k)



-Roehl, Karl, on behalf of-Ortega, R; Fernández, E; Sapiano, M; Lobo, J P.; Guttman, Y; Schütz, C\*.; Weffer-Roelh, A.; San Sebastián, J.; Kallioras, A. & Dietrich, P- Managed Aquifer Recharge Solutions (MARSOL). Final statements VIDEO- <https://youtu.be/t9kvVRrKEMg>

### **Auditory- Thursday May 23th**

– Benton, Andrés- Recharge of aquifers through wells in urban areas of Mexico City- <https://youtu.be/q3g-bEfaBlS>

– Page, Declan- Managed aquifer recharge as a strategic storage and urban water management tool in the Darwin rural area, Northern Territory, Australia- <https://youtu.be/ECAXAtZgl-Y>

– Kruisdijk, Emiel- Push-Pull test – Reactive transport modelling: A new approach to study water quality changes- <https://youtu.be/7gKII4f0XTk>

– Prieto Leache, Ignacio- SUDS and resilience to climate change- [https://youtu.be/HuA\\_BZwlnGo](https://youtu.be/HuA_BZwlnGo)

– Masse-Dufresne Janie- Anticipating pathways and timing for cyanobacteria 12 breakthrough at a 2-lake bank filtration site via environmental tracers- <https://youtu.be/rDOsuYQE3kQ>

– Drewes, Jörg- Next generation Managed Aquifer Recharge Systems for Enhanced Trace Organic Chemical and Pathogen Removal- <https://youtu.be/ANe62Nf9Ew>

– Zuurbier, Koen- Preventing pluvial flooding and water shortages on various scales by integrating aquifer storage and recovery in urban areas- <https://youtu.be/2yGdVAYaAUM>

– Jones-Sánchez, Mark- Riverbank filtration in a narrow river valley of the Barranca River, Costa Rica- [https://youtu.be/Ls\\_08\\_tGBtU](https://youtu.be/Ls_08_tGBtU)

– Rodríguez-Escales, Paula- Modeling the influence of temperature in the infiltration rates and redox reactions of an infiltration pond located in the Llobregat River Basin- <https://youtu.be/6Tf1DSLQ2iw>

– Dillon, Peter- Principles for rainwater management in a multisponge city using soil, unconfined- and confined aquifers- <https://youtu.be/Oy29jv6Mts8>

– Rafiq, Muhammad- Key hydrogeochemical processes (im)mobilizing trace metals (arsenic, iron, manganese) in MAR for drinking water provision in Bangladesh- <https://youtu.be/TxJfeNOI7hQ>

- S.K. Sharma- The role of organic matter in the release of iron and manganese during bank filtration- <https://youtu.be/Y80eINBDIjs>
- Kissane, Stephen- Groundwater and Water Bourne disease in Kabul Matti, Boris; Klein, Hugh; Tookhi, Mohammad Naim- <https://youtu.be/dx2t8yxINvE>
- Price, Victoria- Investigating a Strategic Aquifer Storage and Recovery Scheme in the Sherwood Sandstone to Improve Resilience- <https://youtu.be/9J7UIkN1HGY>
- Jadeja Y. J- Participatory Aquifer Management an Alternative Approach to Sustain Urban Water Supply – a case study of Bhuj City – Gujarat, India- <https://youtu.be/13v0CLeeBTs>

### **Ismar 10 oral presentations. Sala 2**

#### **-Sala 2-Tuesday 2019 May 21<sup>th</sup>**

- Miguel Ángel González Nuñez- Correlation of the infiltration velocity with the hydraulic load of operation of the treated wastewater infiltration basin- <https://youtu.be/6pSEfPh0B-M>
- Miguel Ángel González Nuñez- Manejo de la recarga de acuíferos: Un enfoque hacia Latinoamerica- <https://youtu.be/w8kEX5Si3xE>
- Rania Abd-El-Baky- Groundwater Hydraulics – Computing Groundwater Into/Out Flow for Lakes. (Study Case Lake Qarun, Egypt)- <https://youtu.be/COp4GpeXyeA>

#### **-Sala 2- Wednesday 22<sup>th</sup>**

- Troeger, Uwe- Flash floods – possibilities of artificial recharge, example Egypt- <https://youtu.be/VKm2A5utBbg>
- Alam, Mohammad Faiz-Underground Taming of Floods for Irrigation (UTFI): Global to field scale assessments- <https://youtu.be/CixLQUWhVWU>
- Kalwa, Fritz-Biological and Physical Clogging in Infiltration Wells – The Effect of Well Diameter and Gravel Pack- [https://youtu.be/CS\\_T7qZ\\_O9s](https://youtu.be/CS_T7qZ_O9s)
- Keller, Jason- Alluvial Aquifer Filtration as a Pretreatment Option for ASR- <https://youtu.be/eOxXpB0GUVg>
- Zhang Hexuan- Laboratory Research on the Laws of Fe(III) Clogging during Urban Stormwater Groundwater Recharge-<https://youtu.be/JPztqMKaYNE>
- Barquero; Felix- Laboratory experiments for the assessment of the impact of solar irradiance on clogging of MAR basins- <https://youtu.be/Cf5abprzDj4>

-Shechter Tamir-The Effect of Soil Tillage Equipment on Recharge Capacity of Infiltration Ponds-<https://youtu.be/AjxVYdUVogA>

**-Sala 2- Thursday 23<sup>th</sup>**

-Dahlqvist, Peter, Karin, Lindhe- MAR on the Island of Gotland, Sweden – exploring the potential and feasibility in comparison to alternative measures-  
[https://youtu.be/Z8UCn\\_klcvE](https://youtu.be/Z8UCn_klcvE)

-Hasan, Mohammad Imran- Assessment of aquifer storage and recovery efficiency in coastal aquifers-<https://youtu.be/IAgY9qpuaus>

-Kurtzman Daniel- Monitoring and modeling MAR of desalinated seawater to a Mediterranean fresh-water aquifer, from ground-surface to wells' perforations-  
<https://youtu.be/sLkMcvDEyiQ>

-Jylhä-Ollila, Maija- Seasonal Variations in Water Quality and NOM Removal in Natural Bank Infiltration of Boreal Lake Water-<https://youtu.be/vZyV6J-07fU>

-Reeve, Peter- Emerging organic contaminants in managed aquifer recharge: investigating their removal to ensure a sustained, safe, high quality water resource-<https://youtu.be/Hu0rSDScyhI>

-Pontoreau Coralie- Deciphering the long-term evolution of groundwater mixings at a multi-aquifer river bank filtration site-<https://youtu.be/6m6xkUW5Dag>

-Burke, Victoria- Coupling bank filtration to pond infiltration – a useful option in terms of quality improvement?-<https://youtu.be/VEBSK5VSDxI>

-Modrzyński, Jakub- Combined removal of organic micropollutants and ammonium in a column study with reactive barriers simulating MAR-  
[https://youtu.be/-uul\\_A\\_9Dns](https://youtu.be/-uul_A_9Dns)

-Donn, Mike- E. coli attenuation during infiltration of treated wastewater-  
[https://youtu.be/uv\\_wvUFwxZc](https://youtu.be/uv_wvUFwxZc)

-Eisfeld, Carina. Fate of plant pathogenic bacteria in drainage water during managed aquifer recharge for agricultural irrigation-  
<https://youtu.be/Q8sWiNwFh1c>

-Ma, Yunjie- Antibiotic Degradation during Riverbank Infiltration of Reclaimed Water at Beiyun River in the North China Plain-<https://youtu.be/w1nWpcQPLWo>

-Zsuzsanna Nagy-Kovács- Water quality changes during river bank filtration at Budapest, Hungary-<https://youtu.be/vakFgH4ua1Q>

*\*Video edition and production: Pablo Hernandez Matas (Tragsa)*

# ISMAR 10 Media

In this space are exposed some of the most relevant Media publications:

- Agencia EFE

[https://www.efe.com/efe/espana/comunicados/madrid-acoge-ismar-10-el-mayor-congreso-internacional-de-recarga-gestionada-acuiferos-como-tecnica-gestion-integral-del-agua/10004010-MULTIMEDIAE\\_3981629](https://www.efe.com/efe/espana/comunicados/madrid-acoge-ismar-10-el-mayor-congreso-internacional-de-recarga-gestionada-acuiferos-como-tecnica-gestion-integral-del-agua/10004010-MULTIMEDIAE_3981629)

- EFEverde

<https://www.efeverde.com/noticias/acuiferos-subterraneos-cambio-climatico-objetivo-del-congreso-ismar/>

- iAgua

<https://www.iagua.es/noticias/ministerio-agricultura-pesca-y-alimentacion/mapa-subraya-importancia-agua-produccion>

- Factor CO2

<https://www.factorco2.com/es/acuiferos-subterraneos-contra-cambio-climatico-objetivo-del-congreso-ismar/noticia/5057>

- Ministerio de Agricultura...

<https://www.mapa.gob.es/es/prensa/ultimas-noticias/El-Ministerio-de-Agricultura,-Pesca-y-Alimentaci%C3%B3n-subraya-la-importancia-del-agua-para-la-producci%C3%B3n-de-alimentos-y-para-la-fijaci%C3%B3n-de-la-poblaci%C3%B3n-rural-/tcm:30-509360>

- Aguasresiduales.info

<https://www.aguasresiduales.info/revista/noticias/madrid-acoge-esta-semana-el-ismar-10-el-mayor-congreso-internacional-de-recarga-gesti-WGFTs>

- Retema

<https://www.retema.es/noticia/madrid-acoge-ismar-10-el-mayor-congreso-internacional-de-recarga-gestionada-de-acuife-RrYof>

- Plataforma Tecnológica Española del Agua

<http://www.plataformaagua.org/index.php/77-eventos-noticias/168-international-symposium-on-managed-aquifer-recharge-ismar10-madrid-del-20-al-24-de-mayo-de-2019-abierto-el-plazo-de-envio-de-resumenes-y-definidos-siete-cursos-especializados-durante-el-congreso>

- dina-mar.es

<http://www.dina-mar.es/post/2019/06/11/ISMAR-10-e2809cThe-MAR-society-has-to-collaborate-better-to-make-more-impact-Lete28099s-get-it-goinge2809c.aspx>

- Molecor

<http://molecor.com/es/node/2111>

<https://smartwatermagazine.com/news/molecor/molecor-sponsor-and-speaker-ismar10>

- Comunidad ISM

<http://www.comunidadism.es/agenda/10%C2%BA-congreso-internacional-de-recarga-gestionada-de-acuiferos-ismar10>

- Tecniberia

<https://tecniberia.es/mc-events/ismar-10-10o-congreso-internacional-de-recarga-gestionada-de-acuiferos/>

- Ecotoxan

<https://ecotoxan.blog/2018/06/19/10th-international-symposium-on-managed-aquifer-recharge/>

- AECID

<https://www.redes-agua-aecid.org/index.php/event/73>

- The Circonomist.com

<https://www.circonomist.com/general/salutions-and-coastar-presented-at-international-symposium-on-managed-aquifer-recharge/>

- UN-IGRAC

<https://www.un-igrac.org/agenda/ismar10>

- GRIPP

<http://gripp.iwmi.org/2019/06/07/ismar10-managed-aquifer-recharge-best-practice-is-showcased-and-shared-in-madrid/>

- AIH-GE

<http://www.aih-ge.org/wp-content/uploads/banner-ismar.pdf>

- An-Najah Nat University. Palestina

<https://www.najah.edu/en/research/news/2019/05/27/an-najah-participation-in-ismar-10-international-symposium-on-managed-aquifer-recharge-in-spain/>

- Allevents.in

<https://allevents.in/madrid/ismar-10-international-symposium-on-managed-aquifer-recharge/20001286590555>

- Arizona University

<https://wrrc.arizona.edu/publications/weekly-wave/summer-wave-wrrc-graduate-student-presents-international-conference>

- Radio Intercontinental, El Faro ([enlace pdf](#))  
Audio Player

# Certificates of appreciation

## Certificates of appreciation

The IAH Certificates of appreciation ISMAR 10 2019 have been for (2019 Citations):

### **Catalin Stefan and IGRAC**

Catalin led the MAR Global Inventory working group liaising with IGRAC to produce the most widely read paper in MAR (SWARM) and update the MAR Portal.

### **Adriana Palma Nava**

Adriana initiated and led ISMAR9 Mexico City and co-edited one of two special issue journals (SWARM) arising from this symposium.

### **Yan Zheng**

Yan leads the working group on Sustainable MAR – including workshops in Beijing in 2015 and 2018, at ISMAR9, and fostering the Chinese MAR network.

### **Andrew Ross**

Andrew leads the working group on Economics of MAR producing a quantitative paper and developed standardised approaches.

### **Doug Bartlett**

Doug led ISMAR6 and several BSMARs for AHS contributed to ISMAR9, and over many years led the production of the new ASCE/EWRI MAR Standards.



# IAH MAR Commission WGs

## Working Groups

Working groups have evolved out of ideas raised by attendees of IAH-MAR Plenary Meetings to advance knowledge of MAR in areas considered important to improved knowledge, reliability, information, communication and wise uptake of MAR. If you see a working group in which you could make a contribution, this would be welcomed and you are invited to contact the working group. The links below for each working group describes the motivation, the activity planned and expected outcomes, and gives contact information for the relevant leader.

Current working groups are:

- [Clogging and its management](#)
- [MAR for Sustainable Development](#)
- [MAR to MARKET](#)
- [Economics of MAR](#)
- [MAR Regulations](#)
- [MAR Suitability Mapping](#)
- [Urban MAR](#)
- [MAR in Conferences](#)

Some working groups already achieved their initial objectives and have been officially closed. Nevertheless, activities are still possible within these groups and the contact persons are still listed in case you want to contribute with some input to their activities. The closed working groups are:

- [Global MAR Inventory](#)
- [60 years History of MAR](#)
- [Call to Action on Groundwater Management](#)

