

NOTIZIE da IAH ITALIA

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The 6th National Meeting on Hydrogeology Flowpath 2023***Il 6° Convegno Nazionale di Idrogeologia Flowpath 2023***

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The organization of Flowpath 2023 in Malta goes back, I would say, to 2017 where with the support of Maurizio Polemio and Marco Petitta a proposal for linking up the hydrogeological community in Malta under the Italian Chapter of the International Association of Hydrogeologists (IAH) was presented during the IAH Congress in Dubrovnik. This proposal was accepted during the IAH Italy General Assembly, starting a fruitful and mutually beneficial collaboration between hydrogeologists in both countries.

Subsequently, in 2021 in the lead to the 5th edition of Flowpath discussions were held with Daniela Ducci, at the time Chair of IAH Italy about the possibility of the next edition of Flowpath being held in Malta. This presented an opportunity of further developing cooperation opportunities and a proposal for jointly developed. The proposal was presented and accepted in the IAH Italy General Assembly in Naples in December 2021. From then on, work started almost immediately on the logistical and technical preparations for hosting the 2023 Flowpath Meeting in Malta.

Detailed discussions were held with representatives of IAH Italy, where we sought to place the focus of the Workshop on emerging issues and challenges to groundwater management. Therefore the meeting in Malta would enable discussions to address specific topics of interest such as Groundwater

Protection Policies, Emerging Challenges to Groundwater Quantity and Quality and Groundwater Dependent Ecosystem. A special session on Hydrogeological Studies in Malta was also included with the aim of providing all participants with an outlook on the diverse hydrogeological characteristics of the Maltese Islands. It was the intention of all that Flowpath 2023 was to serve also to bring together our two hydrogeological communities, with the scope of fostering future joint cooperation initiatives.

It is therefore encouraging to note, the strong participation of 48 Maltese and 132 Italian hydrogeologists in this edition of Flowpath. We are sure that the contacts built during the three days of Flowpath will provide a platform for future joint projects and initiatives. The presence of a further six colleagues from other countries was much encouraging (Fig.1).

The opening session of Flowpath 2023 on the 14th June was addressed by HE Minister Miriam Dalli, Malta's Minister for the Environment, Energy and Enterprise followed by Prof Sergio Rusi President of the Italian Chapter of the IAH, Ing Karl Cilia Chief Executive Officer of Malta's Water Services Corporation (WSC) and Mr Manuel Sapiano Chief Executive Officer of the Energy and Water Agency (EWA). The Meeting was held in St Julians, on the north-eastern region of Malta.



Fig. 1 - A moment of the audience of Flowpath 2023.

Fig. 1 - Un istante dalla platea del convegno Flowpath 2023.

Following the official opening, technical discussions were started by a key note speech from Dr David Macdonald from the British Geological Survey (BGS) who presented an outline on the development of Malta's groundwater monitoring framework – highlighting current work being undertaken by EWA and BGS to upgrade Malta's national hydrogeological monitoring framework.

The first session of the workshop focused on “Policies and Practices to Protect Groundwater” and was opened by a keynote by Dr Isaac Ojea Jimenz from DG Environment within the European Commission. Dr Jimenz presented an outline of the EU Policy Framework for the protection of Groundwater referencing the current processes for the updating of the EU's Water Framework and Groundwater Directives, two central pieces of legislation in the EU's policy framework. This session was co-chaired by Dr Ondine Gaerty and Dr Stefania Stevanazzi. The keynote was followed by ten presentations which explored the subject from different policy and technical perspectives.

The second session was preceded by a key-note presentation by Dr Dario Masante from the Joint Research Centre (JRC) of the European Commission who presented the context of droughts and their relevance to groundwater management. In particular he highlighted JRC's EDORA initiative - the European Drought Observatory for Resilience and Adaptation.

The second session reflected the organization of Flowpath in Malta, and therefore focused on Hydrogeological Studies undertaken in Malta. The session was opened with two keynote speeches – a first from Dr Ariel Thomas from the University of Malta who presented the initiatives which the hydrogeology research group is undertaking in the field of offshore groundwater resources. This presentation was followed by Dr Yongcheol Kim from the Geological Survey of South Korea (KIGAM) who provided an outline of the work being currently undertaken by KIGAM and EWA in the development of a freshwater-saltwater interface monitoring network in Malta. The session was chaired by Manuel Sapiano and Prof Sergio Rusi. The ensuing seven presentations provided an excellent outline of research initiatives undertaken jointly by Maltese and Italian researchers to advance knowledge on the hydrogeological characteristics of the Maltese islands.

The first day of Flowpath 2023 was then concluded with a poster session during which 16 abstracts received were presented. The poster session was accompanied by a social event with the aim of further facilitating a broader discussion between all the participants of the workshop.

The second day of Flowpath 2023 started with a keynote speech by Prof Eriberto Euilisse, Executive Director of the Global Network of Water Museums entitled “The potential contribution of ancient water cultures to groundwater management in achieving the SDGs”. In this keynote, Prof Euilisse highlighted the importance of rediscovering traditional and historic groundwater techniques and practices and adapting these to support the optimization of today's groundwater management. In simple terms, whilst we need

to look forward, we need also to look backwards and learn from past experiences.

The third session of the workshop focused on “Emerging Challenges to Groundwater Quantity and Quality”. This session can be considered to have been the most popular session with nineteen selected presentations. It was opened by a keynote presentation by Prof Christoph Schuth from the Technical University of Darmstadt (Germany) titled Water Management in times of Climate Change – Do we have a water problem in Germany? The presentations in this session highlighted a range of different quantitative and qualitative challenges to groundwater status coming from different hydrogeological typologies, reflecting the diverse environment in which groundwater is sustained, thereby enabling a comprehensive discussion on the diverse challenges facing the groundwater environment. The session was chaired by Dr Claudio Arras and Dr Julian Mamo.

The fourth and final session of Flowpath 2023 presented an outlook on “Groundwater Dependent Ecosystems” and started with a keynote by Dr Tiziana Di Lorenzo from the Italian National Research Council (CNR) titled “Diversity, traits, services, vulnerability and conservation of groundwater ecosystems”. This keynote provided the opportunity for a discussion on groundwater ecosystems, in itself an emerging topic in groundwater management. The session was chaired by Dr Maria Filippini, and included six presentations.

The closing session of Flowpath 2023 provided the opportunity for the launch of the Eurokarst 2024 Conference, to be held in Rome, by Prof Marco Petita. In this session Manuel Sapiano and Sergio Rusi thanked all the presenters and attendees to Flowpath 2023, in particular the staff from the Energy and Water Agency who were heavily involved in the organizational and logistical aspects of the conference.

The third day of Flowpath 2023 was then dedicated to technical site visits (Fig. 2). Participants could follow one of five different site visits focusing on different water management aspects. The first visit presented Malta's National Groundwater Monitoring Network with visits to monitoring sites within the Unsaturated Zone Monitoring Network and the Freshwater-Saltwater Transition Zone Monitoring Network. The second visit presented Malta's geological structure and highlighted the role which local geology plays in the development of Malta's perched and mean sea-level groundwater bodies. The third visit focused on Non Conventional Water Resources presenting Malta's sea-water desalination plants and New Water reclamation programme. The fourth visit enabled participants to descend 100m below ground level to one of the groundwater pumping stations operating in Malta's mean sea level aquifer system, presenting the galleries which were developed during the early to mid-1900's for spreading groundwater abstraction to limit sea-water intrusion. The fifth visit presented the educational experience at GHAJN – Malta's National Water Conservation Awareness Centre where the importance of water conservation is presented in an informal and “fun” setting, promoting the



Fig. 2 - Two images taken from the field trips.

Fig. 2 - Due immagini dalle escursioni.

importance of using water resources effectively to our future generations.

Following the technical site visits, all five groups converged to the Hagar Qim Neolithic Temple Complex in Qrendi, and were entertained to a guided tour of these impressive historical sites dating back over 5000 years. The Hagar Qim Temples have an inherent link with water management as they include the first rainwater retaining cisterns in the Maltese islands, highlighting the importance of water management throughout the history of the islands. This brought Flowpath 2023 to an end, with a social event at the interpretation centre of the Neolithic Park, with the Temples providing an impressive backdrop to an important conference which strengthened the links between Maltese and Italian hydrogeologists.

To close off this review of Flowpath 2023, I would like to thank the organizing team in Malta who have provided extensive support in the logistical and technical planning of the meeting: Michael Schembri, Henry Debattista, Aaron Cutajar, and Vanessa Vella, as well as the communications team who were deeply involved in the promotion of the meeting: Nadine Vella, Gilbert Gauci and Veonica Mizzi. Definitely, also a merited thanks goes to Prof Sergio Rusi and IAH Italy Committee including Luca Alberti, Stefania Da Pelo, Giovanna De Filippis, Diego Di Curzio, Giovanni

Forte, Manuela Lasagna, Marco Petitta, Vincenzo Piscopo, Elisabetta Preziosi, Marco Rotiroti, Glenda Taddia, Alberto Tazioli, Daniela Valigi, Valentina Vincenzi for their assistance in the organization of the technical aspects of the meeting, as well as the members of the scientific committee who provided key support in the selection of the oral and poster presentations. Additional appreciation goes to the 8 keynote speakers, the 42 presenters of the oral presentations and the 45 posters who were the core technical element of the meeting, and definitely an important element the strong technical element which emerged. Last but not least to the 186 attendees of the meeting who contributed to making this meeting the successful event it was (Fig.3).

I would like to remind you that the website of Flowpath 2023 is still online <https://energywateragency.gov.mt/flowpath2023/> and includes various photos from the meeting and technical site visits as well as a downloadable version of the proceedings.

I am sure that Flowpath 2023 continued to strengthen the cooperation between the hydrogeological communities in Malta and Italy and that it will lead to new interesting opportunities for furthering cooperation in the field of hydrogeology between our two countries.



Fig. 3 - Group photo in the conference room.

Fig. 3 - Foto di gruppo nella sala del convegno.