

EDITORIAL MESSAGE**Flowpath 2023 Conference**

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The issue 175/1 of *Acque Sotteranee – Italian Journal of Groundwater* presents contributions from the Flowpath 2023 Conference which was held in Malta between the 14th and 16th of June. The scope of Flowpath focused on ensuring that hydrogeology can play an important role in supporting the development of groundwater management and protection policies; on strengthening the knowledge and research initiatives on emerging challenges to the groundwater environment and to highlight research initiatives undertaken in the Maltese islands, and improve technical cooperation between Maltese and Italian hydrogeologists. Flowpath brought together in Malta almost 200 hydrogeologists from Italy, Malta and six other countries who together contributed to 8 keynote speeches, 42 oral presentations and 45 posters. In fact this edition includes three papers from the Flowpath conference, two of which highlight joint work undertaken by researchers from Italy and Malta in the characterization of groundwater bodies.

De Carlo et al (2024) provides an outlook on the mapping of sea-water intrusion by Electromagnetic Induction in the Pwales Groundwater Body in Malta, which research work was undertaken to guide the future development of a Managed Aquifer Recharge (MAR) scheme to sustain this small groundwater body which however sustains a dense agricultural activity. As part of the research activities, more than 20,000 apparent electrical conductivity (ECa) data were collected to generate a quasi 3D high-resolution model of electrical conductivity, confirming Electromagnetic Induction as a useful tool for an effective hydrogeological characterisation. Caputo et al (2024) presents the hydraulic characterisation of the same groundwater body, undertaken through field and laboratory analysis intended to assess the water retention and hydraulic conductivity functions of the Upper Coralline Limestone formation sustaining this groundwater body. The third contribution from Flowpath, Cocca et al (2024) focuses on the spatio-temporal variability of groundwater hydrochemical features in different hydrogeological settings in the Piedmont and Campania regions in Italy. The paper undertakes a comparative analyses of the two study areas in Italy which are different in their geographical, geological and climatic conditions to highlight similarities and difference in the hydrogeochemical behavior in space and time, and in spite of the different settings identifies factors and processes such as anthropogenic impacts which have common characteristics, thus reinforcing the importance of undertaking comparative studies.

The Flowpath papers are well complemented by four other submissions addressing similar hydrogeological issues. Escalante et al (2024) provides an outlook on water quality aspects from Spanish sites intended to support the development of MAR guidelines which are not based on maximum allowable concentration standards. The study recommends that regulating water quality for MAR through Maximum Allowable Concentrations is not the best approach. Instead, it might be recommendable to establish local standards at the regional or aquifer-wide level to better reflect the diversity of groundwater occurrence. Ltifi et al (2024) presents the outcome of a hydrochemical and geoelectrical investigation to determine the origin and spatial distribution of salinization in the confined plio-quaternary aquifer of Tabeditt, in Southern Tunisia.

Merouchi et al (2024) present the mapping of natural groundwater potential recharge zones in the Upper Cheliff alluvial aquifer in Algeria employing a cartographic approach. The resulting map was validated using data from 66 wells distributed in the plain, where 47 of the well exhibited good agreement with the outcomes of the mapping exercise. Finally, Somia et al (2024) presents the integration of geoelectrical, hydrochemical and geothermal data to identify the origin of thermal water in the piedmont of the Tlemcen Mountains in northwestern Algeria and enable the development of a schematic geological model, which explains hydrodynamics, origin and role of structure in the groundwater flow. . Finally, Tateo et al. (2024) present a geochemical model related to the presence of AS-sulfides minerals in the groundwater of the Venetian Plain in Italy. They provide a review concerning this issue in the study area, which represents a typical toxic threat shared with the groundwater of several other locations in Italy as well as elsewhere.

True to the objectives of the Flowpath Conference these contributions illustrate the importance of hydrogeological research in developing increased understanding of the groundwater environment and hence enabling the development of comprehensive systems for protecting our groundwater resources for the future.

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