

Strong indications of freshened groundwater offshore the Maltese Islands

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A map of the location of the freshened water. Credit: Prof. Aaron Micallef

An international team of scientists has reported strong indications of

freshened groundwater offshore the coastline between Valletta and Marsascala, in the south-east of Malta.

This discovery is based on an oceanographic expedition carried out in 2018.

Seismic reflection profiles acquired during this expedition were used to generate a geological model of the seafloor offshore the Maltese Islands, whereas electromagnetic surveying was carried out to identify resistivity anomalies, or high values of electromagnetic resistivity beneath the seafloor.

These observations indicate that freshened [groundwater](#) occurs as an isolated body hosted in Globigerina Limestone located 3 km away from the coast.

Numerical modeling, on the other hand, suggests that a second offshore groundwater body may exist within 1 km of the Maltese [coastline](#), and that the bulk of the groundwater was deposited 20,000 years ago when sea-level was lower than today.

There are a number of important implications associated with this discovery.

Offshore freshened groundwater may constitute a new, unconventional source of potable water that should be considered in future national water management strategies for the Maltese Islands.

The occurrence of freshened groundwater offshore a dry, limestone coastline such as the Maltese one bodes well for similar settings in the Mediterranean region that are suffering from [water scarcity](#). On the other hand, the exploitation of the Maltese offshore groundwater system is likely unsustainable, because it is not being actively recharged, and

pumping rates are likely to be low.

The study, which is a product of the MARCAN project, has now been published in the international journal *Geophysical Research Letters* and may be read online.

The team involved in this study includes scientists from Malta, Germany, Spain and Italy.

More information: Amir Haroon et al, Electrical Resistivity Anomalies Offshore a Carbonate Coastline: Evidence for Freshened Groundwater?, *Geophysical Research Letters* (2021). [DOI: 10.1029/2020GL091909](https://doi.org/10.1029/2020GL091909)

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