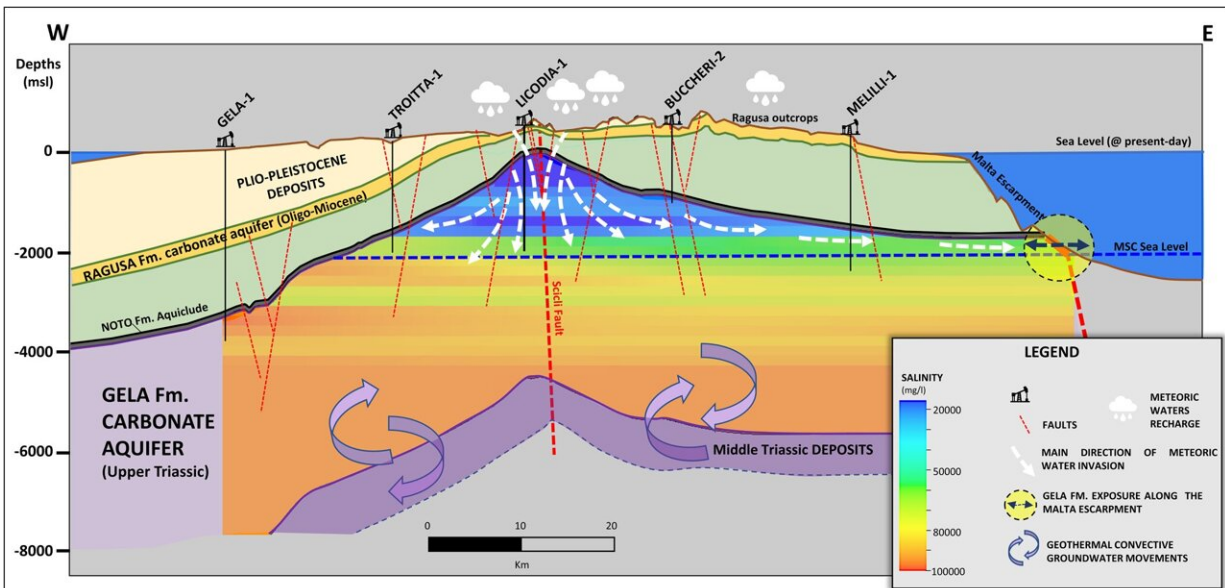


# Six-million-year-old groundwater pool discovered deep under Sicilian mountains

December 8 2023, by Bob Yirka



Conceptual model proposed for the deep groundwater circulation system within the Gela Fm. aquifer. Credit: *Communications Earth & Environment* (2023). DOI: 10.1038/s43247-023-01077-w

A multi-institutional team of geoscientists has discovered a deep, ancient underground pool of fresh water underneath part of the Sicilian mountains. In their study, [reported](#) in the journal *Communications Earth & Environment*, the group used publicly available data gathered from oil discovery efforts to study the groundwater in and around the Gela formation beneath the mountains on the island of Sicily.

As the number of people living on islands grows, scientists continue to look for resources to support them. One such island is Sicily, which lies off the coast of Italy in the Mediterranean Sea. Officials there are worried about the water supply for a [growing population](#). So the researchers undertook a study of underground freshwater supplies that have not yet been tapped.

The researchers analyzed maps and data from prior surveys looking for oil deposits. They discovered what they believe to be a previously unknown aquifer thousands of feet below the Hyblaean Mountains. They made 3D models of the aquifer to validate their findings and found evidence suggesting that not only is it an aquifer, but it holds approximately 17.5 cubic kilometers of water.

The team then set out to explain how so much fresh water could have come to reside, locked in, beneath a mountain range. They suggest it was trapped there during the Messinian salinity crisis millions of years ago—the 700,000-year period saw a blockage at the Strait of Gibraltar that allowed many parts of the Mediterranean Sea to dry up, exposing the seafloor to rainwater.

The research team suggests that this rainwater trickled down into the crust. Such rainwater, the researchers note, could have accumulated underground as it was soaked up by carbonate rock acting as a sponge. When sea levels returned to normal, the underground [fresh water](#) was locked in due to seawater pressure.

The researchers also found what they believe to be a likely conduit for the ancient [rainwater](#)—the Malta Escarpment, which extends around eastern parts of Sicily.

**More information:** Lorenzo Lipparini et al, Extensive freshened groundwater resources emplaced during the Messinian sea-level

drawdown in southern Sicily, Italy, *Communications Earth & Environment* (2023). DOI: [10.1038/s43247-023-01077-w](https://doi.org/10.1038/s43247-023-01077-w)

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