

## New Analytical Data for Identifying the Causes of Groundwater Salination in the Muravera Plain (Se Sardinia)

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### ABSTRACT

The Department of Land Engineering has been investigating the coastal aquifers of the Muravera plain (SE Sardinia) for more than twenty years now. The applied geology and geophysics research carried out to date has provided a detailed, but as yet incomplete, picture of the complicated hydrogeological system.

So far geometry of the aquifers hosted in the thick alluvial deposits, the Quaternary stratigraphy and the groundwater's main physico-chemical properties have been determined. Useful information has also been obtained for estimating the depth of the Paleozoic basement and the spatio-temporal evolution of the salination process, that dates back to the 1930's-40's, has been monitored.

Both the surficial and the deep aquifer are extensively and strongly salinated. For the surficial aquifer, overexploited in the summer and autumn months to satisfy irrigation requirements, it seems reasonable to assume that salination is caused by the ingress of seawater directly through former river channels and the Flumendosa river, rather than by the sea itself. Salination of the deep aquifer, which until a few years ago was little exploited, is thought to be caused by the marine environment inherited by the Muravera plain presumably during the Tyrrhenian transgression during the Quaternary.

This work intends to elucidate the hypotheses advanced to explain the underlying causes of the progressive aquifer salination.

Samples have been collected in the two aquifers, upstream, where the groundwater is fresher, and downstream where it is far more saline, for groundwater dating with tritium, a radioactive isotope of hydrogen widely used for dating relatively recent geological history

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