



Influence of the bad realization of pumping wells on the intrinsic vulnerability degree of a confined carbonatic aquifer: the Brindisi Plain case.

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Apulia is one of the Italian region lacking in superficial water resources, therefore it satisfies its water necessities drawing conspicuously (over 40%) from the underground resources.

The diffuse withdrawals of the last years, due to an increasing anthropization of the land, brought about a fall of quality of the groundwater resources circulating in a hydrogeologic and geostructural contexts with a low intrinsic vulnerability.

This problem finds particular reference in the Brindisi Plain: a large portion of territory situated between “Sierra of Salento” and Adriatic Sea.

The examined zone is characterized by the presence of two overlapped and separate hydrogeologic environments; in the deep one, constituted by Mesozoic carbonatic rocks, a conspicuous groundwater circulates, satisfying about the 30% of the request; in the shallow aquifer, constituted by the calcarenitic-sandy sediment of the Quaternary, there are water resources that have a fair local value.

For each aquifer, the study has estimated the intrinsic vulnerability through a parametric model with scores and weights (SINTACS), standardized to national level and modified by the authors with the purpose to fit it to the main characteristics of the zone; then, the collected information are compared with the real situation that happens on the land; this last one has been parameterised through the nitrate concentration and it has nevertheless highlighted some low vulnerability areas that are unexpectedly affected by nitrate pollution.

The comparison between the two aquifers has verified diffused forms of underground water pollution that are referable to a bad realization of pumping wells working and to the lack of suitable managerial criterions for water resources. Therefore there is the need to introduce, in the criterion adopted to evaluate vulnerability, a weights string that better highlights the effects produced by anthropic activities.