

Quantitative and Qualitative Evaluation of the Underground Hydraulic Resource of the Plain of Oristano (Center-Western Sardinia)

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The plain of Oristano, located in center-western part of Sardinia, is from several years subject of research from the “Gruppo Nazionale per la Difesa delle Catastrofi Idrogeologiche del CNR.”.

The peridic monitoring of aquifers have pointed out a general depauperation of the underground hydraulic resource, in terms of quality and amount. The problems are particularly complex dealing of coastal aquifer of a deltaic plain, feed from east by the residual discharge of the Tirso River, damed upstream, and from nord by the discharge of a basalt plateau.

The coastal aquifers are exposed at salt water intrusion processes, prevalently caused by prolonged and ever more dry periods and by over-exploitation of the aquifer.

Starting from the collection and the analisys of the existing data, a series of hydrogeology and hydrochemical investigation has been carried out, and monitoring of more than one hundred wells along a area of 500 km². This has permitted the evaluation and characterzation of the underground hydraulic resource, distribuited all over a freatic or semi-confining stratificated system of depth aquifer.

The collected data has been permitted the processing of the hydrogeological mathematical and conceptual model of the studyed area, obtaining the numerical solution with finite differences method codes

The process of calibration-validation has been defined a model usable also for anticipatory reason for a integrated use of the hydraulic resource.