



## **Climatic and anthropogenic impact on underground water quality: an example from Agrigento province (Sicily, Italy)**

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The alluvial plain of Licata (southern Sicily, Agrigento province) has been investigated to evaluate the influence of the human activities and that of the climatic changes in the hydrological cycle in terms of qualitative and quantitative impact on the groundwater resources. In this area, the evolution of the Salso river (in Italian 'salty river') and the coastal dynamics, characterised by consecutive transgressions and retreats of the coast-line, qualitatively and quantitatively influenced the underground water resources. In this complex geological contest, also the anthropogenic activities played a crucial role, especially the farming activity as largely testified by the occurrence of numerous greenhouses that cover most of the plain. The analysis of thermopluviometric data concerning the last 75 year allowed to obtain inferences on the climatic evolution of this region characterised by a mean annual temperature of about 18 °C and mean annual precipitations of only 454 mm. In particular, during the last 24 years a 12 % decrease of the precipitation with respect the previous period of observation is observed together with the increase of the temperature of the air about 1°C. The research was focused on the unconfined, mainly sandy, aquifer developed in the Quaternary deposits of the Licata plain. The water depth of this aquifer is between to 0.3 to locally 5 m from the surface and the principal alimentation occurs via infiltration from precipitations and lateral outflow from the Salso river. The high salinity of the river especially during Summer periods and the intense farming activities played a crucial role for the quality degradation of the aquifer.