

## **Evolution of the water salinity in two shallow lagoons. Implications of human-induced modifications of the recharge in the Adra river delta aquifer (southeastern Spain)**

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### **ABSTRACT**

The delta of the Adra River forms a coastal aquifer of nearly 40 km<sup>2</sup>, located within a mountainous and semiarid area in SE Spain. Its evolution has experienced different anthropogenic impacts since historical times. These impacts have affected both the dynamics and morphology of the river and the coastline, and conditioned the genesis of small lagoons. At present, only two of them exist in one of the aquifer edges, closely surrounded by a heavily transformed agricultural environment (greenhouses) and are environmentally protected. Both groundwater and stream water resources are used to irrigate, but the surface resources are progressively losing their importance because of regulation/diverting works upstream. The long-term (1975-2007) evolution of the electrical conductivity (EC) and water level in these lagoons indicate marked differences in the evolution of the water salinity. This has been interpreted as a consequence of their different hydrological regime. Additionally, short-term (2003-2008) analysis of the hydrochemical characteristics of the water of the lagoons exhibit a behavior that is supposed to be influenced by recent limitations in the recharge of the aquifer due to man-made activities such as urbanization in the basin and changes in irrigation techniques.

