



## MODELLING GROUNDWATER-SURFACE WATER INTERACTIONS IN THE SINES AQUIFER SYSTEM (SOUTHWEST OF PORTUGAL)

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### **Résumé/Abstract**

The Sines aquifer system, with an area of approximately 250 km<sup>2</sup>, located on the southwest coast of Portugal, is a multi-aquifer system consisting in a lower artesian karst aquifer supported by carbonate formations of the Jurassic, and a top detritic phreatic aquifer which lies in marine Miocene and Plio-Pleistocene formations. A numerical flow model for this aquifer system has already been developed previous to this study. However, the estimates of water transfers between the top detritic aquifer system and the stream network have not been validated and calibrated, due to insufficient monitoring to allow real data to be compared with the model simulations. Answering this issue, a monitoring plan was implemented, in the context of research project Groundscene, to continuously register hydraulic head and stream discharges data, in order to produce estimates of groundwater contributions from the top detritic aquifer to the stream network, allowing the calibration of the numerical flow model developed for the top detritic Sines aquifer system. The proposed model allowed the simulations of groundwater contributions in different scenarios of prospective exploitation and climate change, being useful as a forecast tool to support decision making regarding groundwater exploitation for human consumption while protecting groundwater dependent ecosystems.