Geophysical Research Abstracts
Vol. 17, EGU2015-11930, 2015
EGU General Assembly 2015


# Modelling Contributions of the Local and Regional Groundwater Flow of Managed Aquifer Recharge Activities at Querença-Silves Aquifer System.

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The Querença-Silves (QS) aquifer system is one of the most important natural groundwater reservoirs in the Algarve region of southern Portugal. With a surface area of 324 km2, this karst aquifer system is the main source of supply for irrigation as well as an important source of water for the urban supply. Due to the importance given to QS aquifer system by both governmental actors and end users, ongoing research during the last two decades at the University of Algarve has attempted to provide a better understanding of the hydrogeology and hydraulic behavior, which has resulted in the development of regional scale numerical models. The most recent hydrogeological data has been acquired during the ongoing MARSOL project (MARSOL-GA-2013-619120) which aims to demonstrate that Managed Aquifer Recharge (MAR) is a sound, safe and sustainable strategy that can be applied with great confidence in finding solutions to water scarcity in Southern Europe. Within the scope of the project large diameter well injection tests (with and without tracers) as well as geophysical surveys have been carried out in order to determine the infiltration capacity and aquifer properties. The results of which allowed the use of analytical methods to determine local scale values of hydraulic parameters (e.g. hydraulic conductivity and storage coefficient). These values will be compared with results from pre-existing numerical flow and transport models in order to obtain complementary solutions to the problem at local and regional scales. This analysis will contribute to the selection of the most appropriate methods to interpret, reproduce and model the impacts of MAR activities planned within the scope of the MARSOL project. Subsequent to the planned injection tests and, with the support of modelling efforts, the capacity of infiltration of rejected water from water treatment plants or surface storage dams in the large diameter well will be assessed.