Groundwater modelling in Keritis basin, Western Crete, Greece

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Crete is the biggest Greek Island with 600K citizens which doubled during summer months. Groundwater is the main water resource for domestic, agricultural and industrial usage. Until today there isn't a central water resources management system mainly due to the lack of accurate knowledge about the limit and the temporal behaviour of groundwater resources. A step onwards to this direction is the evaluation of behaviour of flow system under different stresses. Numerical groundwater modelling is an important predictive tool for the management of water resources in aquifers. Groundwater models can be used as predictors to aquifer's response due to climate or pumping changing, to estimate hydraulic parameters and to verify or reject different conceptual models.

The area of Keritis basin in western Crete is an area with groundwater resources under investigation. Results from current studies indicate the existence of a rich and well defined aquifer covering an area around 140sq.km. The results are verified from wells that took place last years. In order to provide an accurate model for this aquifer a 3D finite difference groundwater flow model was implemented. By using appropriate modelling software we investigate the variance of hydrogeological conditions, simulate the behaviour of the flow system under different stresses, estimate the hydraulic parameters and recharge amount. Results produced for three different scenarios and presented in GIS form in to be part of a water management system.