

**Assessment of the impacts of future scenarios of rainfall recharge and land use change in the “Plana Oropesa-Torreblanca” aquifer.
Abstract n°2282**

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KEYWORDS: global change impacts, coastal aquifer

Any change in the components of a coastal aquifer balance can modify the seawater intrusion process. Climate change and Land use change (LUC) can produce significant influence on water resources availability. The freshwater-seawater interaction in these coastal systems forces to perform an integrated analysis of quantity and quality issues using density dependent flow solutions. In the Plana Oropesa-Torreblanca aquifer (in the Spanish Mediterranean coast) important LUC has been produced during the last decades. The transformation from dry to irrigated lands has provoked an important increment in the pumping volume in the period 1975-1995, producing significant drawdowns and intrusion problems. Important future LUC (eg. a 70 % of the irrigated area will be transformed to Urban and Industrial Use+ 3 new golf areas) have been also approved for the future decades. In this work we propose a method to perform an integrated analysis of the potential impacts of global change (GC) scenarios in a coastal aquifer. A multi-criteria analysis has been proposed to assess different techniques to generate future scenarios of climatic variable. They use the available information about Regional Climatic Model simulations performed in some EU Projects. An integrated modeling framework will be defined by coupling a hydrological balance model and a density dependent SEAWAT flow model. It will be used to assess hydrological impacts for GC scenarios taking into account quantity and quality issues. The models have been calibrated with the available historical data (1973-2010). They allow testing a conceptual approximation of the aquifer and performing sensitivity analysis to future GC recharge scenarios. This method can be valuable to improve our knowledge about the aquifer being a helpful tool to design sustainable management strategies. This research has been supported by the CGL2013-48424-C2-2-R (MINECO) and the PMAFI 06 14 (UCAM) projects.

