



Assessment of changes in MEdiTerranean HYdro-resources in the South: river basin Trajectories (AMETHYST)

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In recent years, international organizations and a rich scientific activity have pointed the issue of water as a strategic issue in the Mediterranean region. The risk is particularly high in semi-arid areas in North Africa, where the particularities of climate (frequent droughts) combined with changes due to human activity reinforce the possibility of crises.

The main purpose of the AMETHYST project is to analyze the evolution of water resources and its use under the influence of climate and anthropogenic changes in North Africa. Two case studies are proposed: the Merguellil basin, located in the center of Tunisia, and the Tensift basin, in the Marrakech region of Morocco. This choice is linked to the strong representativeness of these two sites in relation to the problem of water scarcity, with a rich complementarity in terms of environmental context, use and management of resources. We proposed a project with three research axes:

The first axis was to analyze the functioning of hydrological processes (groundwater recharge, surface-vegetation-atmosphere interactions, surface-aquifer coupling). Different process and integrated models, satellite products and other observations were calibrated and validated with an exceptional database acquired over four years (2010-2014). The study of social and human sciences has helped to determine the impacts of water uses and regulatory policies on these hydrological processes.

The second axis was based on validated models and observations to discuss the evolution of water resources over the last 50 years. Particular attention is paid to the analysis of extreme drought events.

The third axis proposes to study different future scenarios, based on climatic and anthropogenic changes associated with socio-economic projections, and to analyze the evolution of the trajectories of water resources over the next thirty years.