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Water management and climate change monitoring in Tunisia and Egypt using remote sensing techniques

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This project deals with the implementation of an innovative water management system in Mediterranean countries (i.e. Tunisia and Egypt), which suffer from chronic water scarcity, together with two European countries (Germany and Italy). The consortium is developing and applying synergic methods and algorithms for investigating the water cycle, using remote sensing techniques.

The focus is on the use of satellite data (both optical and microwave) for monitoring vegetation cover and water status along with soil moisture temporal evolutions in order to improve the knowledge of the water cycle in arid areas. Both local and regional monitoring are carried out in order to investigate different spatial scales.

Environmental models and algorithms for the retrieval of hydrological parameters have been developed in the frame of this project in order to match the main goal of the project, i.e. to propose practical and cost-effective solutions for driving and updating a method for the sustainable use of water in agriculture.

An optimized management of water resources for cultivated lands on Egyptian Delta (Northern part) and Tunisian territory will be realized by analyzing the available spatial and temporal data for the areas of interest appropriately selected for this purpose. As such, an efficient water use, equitable distribution of water resources, community participation in decisions, and sustainable system operation over time can be supported.

First of all, we aim to localize different crop and irrigation techniques for the study regions. This information is required as a basis for further investigations and assessments. Secondly, the water efficiency for different lands, crop types and irrigation systems will be assessed.

Afterwards, possible improvements in agricultural practice with respect to climate change

scenarios and information on water efficiency will be determined by rating the outcome from the assessment.