

**TITLE: Assessment of climate change and population growth impact on coastal Mediterranean aquifers**

**SHORT TITLE: Climate change and population growth impact on coastal aquifers**

**ACRONYM: ACCICMA**

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## **SUMMARY**

Climate change topic has been studied separately by hydrologists, ecologists, physicists or environmental engineers, but only an integrated approach can offer a global view of this issue. This project proposes the development of an integrated approach for the assessment of climate change and population growth impact on Mediterranean coastal aquifers using multidisciplinary expertise.

Population growth implies an increased groundwater use in different sectors (drinking, tourism, agriculture, industry). Particularly, this growth is followed by an intensification of crop production, causing the use of high amount of fertilizers and pesticides and large quantities of groundwater for irrigation purposes. The result is a significant decrease of groundwater level and its contamination, determining the degradation of the aquifer. In the same time, population growth has a large contribution to climate change by increased greenhouse gases emissions. Climate change generates both unpredictable extreme events and increased sea level, which have a significant impact on the qualitative and quantitative state of the groundwater. In fact, groundwater overexploitation and climate change have lead to seawater intrusion. Aquifer water quality and quantity is reflected in the peace and sustainability of every country. Water contamination and insufficient water involve the increase of drinking water price, perturbation of agricultural and industrial production processes, population migration and tourism decrease.

To avoid these issues, the project aims to identify the vulnerable zones exposed to seawater and contaminant intrusion, using hydro-geological data. Combined groundwater and seawater intrusion models will be applied to assess the current state of the aquifer using meteorological data for the current climate. Furthermore, these models will be used to simulate the groundwater flow for future climate. For this purpose, global circulation models will be downscaled to the study sites in order to generate a set of future climatic data. Finally, alternative scenarios will be generated in order to improve the groundwater quality and quantity.

The proposed consortium consists of multidisciplinary Institutes and Universities from countries belonging to the Mediterranean coastal area (Algeria, Italy, Tunisia and Turkey). Italian institutions will offer the necessary expertise for evaluating the important issues of seawater intrusion and groundwater contamination that Algeria, Tunisia and Turkey struggle with. The project relies on the previous Turkish institutions experience in these issues.

## **REQUESTED BUDGET:**

800000 EUR