

Thematic area

Water Management



Section II

Topic 1.1 - Water resources availability and quality within catchments and aquifers



Budget

1.268.000,00 €



Duration

36 months
from 01/06/2019



Project

14/MEDSAL

Salinization of critical groundwater reserves in coastal Mediterranean areas

Context

The salinization limits and menaces the availability of groundwater resources in the most populated and productive coastal areas of the Mediterranean. As a phenomenon, salinization is a complex process often related to multiple causes such as lack of internal drainage, seawater intrusion, increased evaporation of water-logged areas, upconing of deep-brines by over-abstraction, geogenic factors (e.g. evaporite dissolution, etc) and pollution.

Objectives

The MEDSAL Project aims to secure availability and quality of groundwater reserves in Mediterranean coastal areas, which are amongst the most vulnerable regions in the world to water scarcity and quality degradation. This will be addressed by providing a novel holistic approach, towards the sustainable management of coastal aquifers, which are affected by increased (single or multi-source) groundwater salinization risk, especially under the variable meteo-climatic conditions of the Mediterranean and the rapidly changing socio-economic context.

MEDSAL aims at developing innovative methods to identify various sources and processes of salinization and at providing an integrated set of modelling tools that capture the dynamics and risks of salinization. In this context, MEDSAL will provide a classification of groundwater salinization types for Mediterranean coasts and innovative methods to detect these types, also in complex karstic and data-scarce environments. These outcomes will be reached by a better integration of hydrogeochemical and environmental isotope data with physical-based groundwater flow and transport models and advance geostatistics. Artificial intelligence and deep learning methods will be also used to improve detection of patterns in multi-dimensional hydrogeochemical and isotope data.

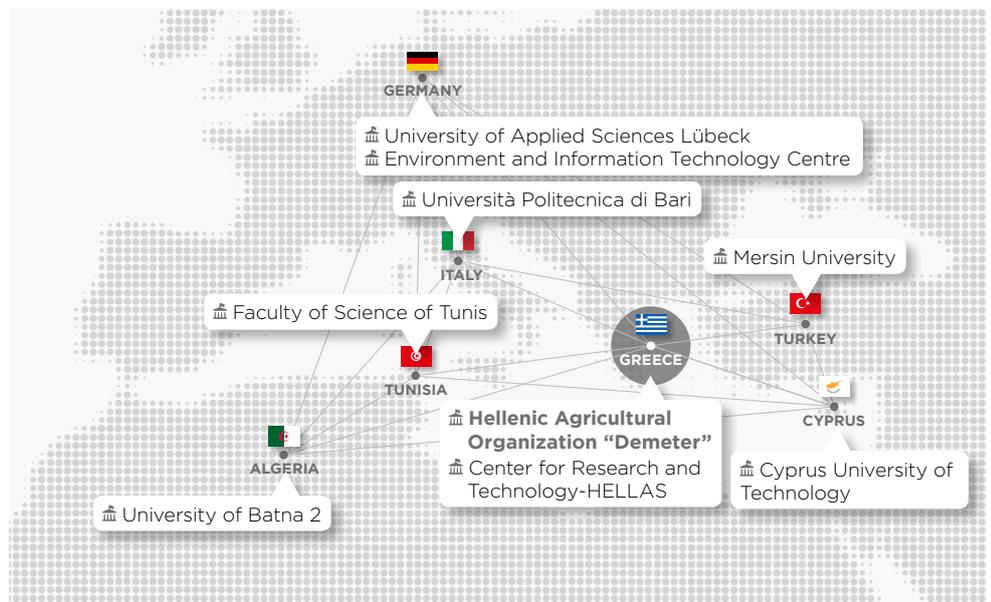
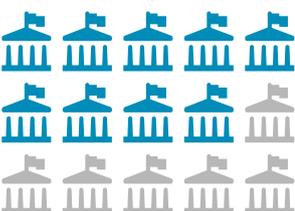
Coordinating country

Greece

Participating countries / 7



Research units / 9



Coordinating institution

**Hellenic Agricultural
Organization "Demeter" -
HAO**



HELLENIC AGRICULTURAL ORGANIZATION "DEMETER"

Scientific Coordinator:
TZIRITIS, Evangelos
tziritis@gmail.com
e.tziritis@swri.gr

Expected impacts

MEDSAL is expected to have significant impact on water resources availability and quality by improving the identification and definition of adequate strategies and measures for the protection and management of salinization in coastal aquifers.

Mediterranean Coastal Aquifer: 6 case-studies of MEDSAL

SPECIFIC OBJECTIVES OF THE PROJECT

- ✓ Deliver new tools for the identification of variable (multi-induced) and often cascading salinization sources and processes
- ✓ Identify new patterns and develop new proxies for monitoring, assessment and forecasting of groundwater salinization in areas with scarce data and/or limited financial and human resources
- ✓ Elaborate tailor-made risk assessment and management plans by coupling salinization forecasts with climate change impacts and future scenarios
- ✓ Develop a public domain web-GIS Observatory for monitoring, alerting, decision support and management of coastal groundwater reserves around Mediterranean



**web-GIS
Observatory**

