



TERENO-MED: Terrestrial Environmental Observatories in the Mediterranean Region

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The Mediterranean region is one of the most imperilled regions in the world concerning present and future water scarcity. The region is delicately positioned at the crossroads between East and West, interlinking Europe, Asia and Africa. Societal and economic changes causing population growth, industrialisation and urbanisation lead to significant increases in food, water and energy demand. Hence, natural resources, such as water and soils, as well as ecosystems are put under pressure and water availability and quality will be severely affected in the future. At the same time, climate and extreme event projections from climate models for the Mediterranean are, unlike for most regions worldwide, consistent in their trends based on various scenarios. This consistency in the model predictions shows that the Mediterranean will face some of the most severe increases in dryness worldwide (based on consecutive dry days and soil moisture), and indicate a decrease of up to 50 % in available water resources within the next 50-100 years.

These developments are accentuated by the fact that in many of the Mediterranean countries, natural renewable water resources are fully exploited or over-exploited already today, mainly due to agricultural irrigation, but also touristic activities. At the same time, the Mediterranean region is a global hot spot of freshwater biodiversity, with a high proportion of endemic and endangered species. While trend projections for water availability and climate change derived from global studies are consistent, regional patterns and heterogeneities, as well as local adaptation measures will largely determine the functioning of societies and the health of ecosystems. However, a lack of environmental data prohibits the development of sustainable adaptation measures to water scarcity on a scientific basis.

Building on the experiences gained in the national TERENO network, a Mediterranean observatory network will be set-up, coordinated by two Helmholtz Centres and jointly operated with local partners across the Mediterranean region. In a number of Mediterranean mesoscale hydrological catchments TERENO-MED will investigate the long-term effects of global change on the quality and the dynamics of water resources in human-influenced environments under water scarcity.

The Helmholtz Centres UFZ (overall coordinator) and FZJ have therefore initiated the set-up of a network of global change observatories in 5-10 Mediterranean river catchments.

The TERENO-MED observatories will:

- investigate societally relevant water problems in the context of 'typical' Mediterranean environments,
- provide long-term and quality-controlled data available to the scientific community,
- be operated and maintained through local research institutes and universities,
- establish common monitoring platforms and foster synergies between research organizations,
- provide solutions to pressing local and regional water problems by building partnerships between scientific partners and regional authorities.