



## Projections of water resources availability in Crete for the 21st century under the global change perspective

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A robust signal of a warmer and drier climate over the western Mediterranean region is projected from the majority of climate models. This effect appears more pronounced during warm periods, when the seasonal decrease of precipitation can exceed control climatology by 25–30%. The rapid development of Crete in the last 30 years has exerted strong pressures on the natural resources of the region. Urbanization and growth of agriculture, tourism and industry had strong impact on the water resources of island by substantially increasing water demand. The objective of this study is to analyze and assess the impact of global change on the water resources status for the island of Crete for a range of 24 different scenarios of projected hydro-climatological regime, demand and supply potential. Water resources application issues analyzed and facilitated within this study, focusing on a refinement of the future water demands of the island, and comparing with “state of the art” global climate model (GCM) results and an ensemble of regional climate models (RCMs) under three different emission scenarios, to estimate water resources availability, during the 21st century. A robust signal of water scarcity is projected for all the combinations of emission (A2, A1B and B1), demand and infrastructure scenarios. Despite the uncertainty of the assessments, the quantitative impact of the projected changes on water availability indicates that climate change plays an equally important role to water use and management in controlling future water status in a Mediterranean island like the island of Crete. The outcome of this analysis will assist in short and long-term strategic water resources planning by prioritizing water related infrastructure development.