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Assessing the ability of current climate information to facilitate local climate services for the water sector.

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In the frame of ECLISE EU FP6 project researchers, in close cooperation with local users of the water sector from the area of Crete, Greece, explored the ability of current climate information to develop and support local climate services water resources management and climate adaption policies. A wealth of climate modeling output ranging from event scale to decadal and centennial experiments, at temporal scales ranging from hourly to monthly, and at spatial scales from very high resolution regional climate models (2 km) to typical GCMs, were used in order to practically assess climate change impacts on water resources. Water resources availability issues analysed and facilitated within the project, focusing on estimates of the future water demands of the island, and comparing with seven "state of the art" CMIP5 simulations within COMBINE framework (under RCPs 2.6, 4.5 and 8.5) to estimate water resources availability, during 21st century. The ability of decadal GCM prediction experiments to reproduce basic hydrometeorological variables like precipitation and temperature for local impact studies, was also examined. Water availability for the whole island at basin scale until 2100 is estimated using the SAC-SMA rainfall-runoff model for a range of different scenarios of projected hydro-climatological regime, demand and supply potential. A robust signal of temperature increase and precipitation decrease is projected for all the pathways.
Several messages could be extracted from this provider – user interaction such as the communication of basic concepts and uncertainties, user skepticism and feedback. The main user concern was the coarse spatial scale of climate information and in order to cope with this feedback a special case was framed in collaboration with the project modeling groups for demonstrating a high resolution climate modeling application of an extreme precipitation-flood event over the study area. This effort provided a realistic reproduction of the extreme event, based on non-hydrostatic weather modeling, which is a promising and noteworthy application.
Finally, the frequent personal contact, the communication of the limitations of the climate and impact modeling and the corresponding uncertainties in simple terms, is a key to success.