

Seasonal forecasts to support water management decisions

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Water resources are under stress in many areas of the world, because of a combination of climatic and anthropogenic factors. One of the regions mostly vulnerable to climate change is the Mediterranean area, where alterations in temperature, precipitation and frequency of extreme events have been experienced. In recent years, water shortage has become an increasing concern and water availability is expected to decline in southern Europe. These alterations have direct impacts on the surface water balance and groundwater recharge, and thus changes in the reservoir inputs and the management of water utilities are severe challenges for water resources in the future. Water Utilities (WUs) management routines scarcely consider climate information and are based on the stationarity assumption, working on weekly or daily time scale.

This study aims at providing some insights in using seasonal forecasts to support a decision system for water management based on long term planning. The integration of long term climate information with water balance modeling will produce suitable seasonal hydrological forecasts for understanding the possible shifts in water resource availability. Over Europe, practical applications of seasonal forecasts are still rare, because of the uncertainties of their skills, but the results of more recent studies are promising although the predictability varies depending on seasons and areas of application. In this study we describe the preliminary results of the use of the seasonal forecast products released by the Copernicus Climate Change Service (C3S), mainly air temperature and precipitation, in two study areas, i.e. Italy and Greece. The forecasts are updated every month and cover a time range of 6 months.