



Application of seasonal forecasting for the drought forecasting in Catalonia (Spain)

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Low flows and droughts are a hydro-climatic feature in Spain (Alvarez et al, 2008). The construction of dams as water reservoirs has been a usual tool to manage the water resources for agriculture and livestock, industries and human needs (MIMAM, 2000, 2007). The last drought that has affected Spain has last four years in Catalonia, from 2004 to the spring of 2008, and it has been particularly hard as a consequence of the precipitation deficit in the upper part of the rivers that nourish the main dams. This problem increases when the water scarcity affects very populated areas, like big cities. The Barcelona city, with more than 3.000.000 people concentrated in the downtown and surrounding areas is a clear example. One of the objectives of the SOSTAQUA project is to improve the water resources management in real time, in order to improve the water supply in the cities in the framework of sustainable development. The work presented here deals with the application of seasonal forecasting to improve the water management in Catalonia, particularly in drought conditions. A seasonal prediction index has been created as a linear combination of climatic data and the ECM4 prediction that has been validated too. This information has implemented into a hydrological model and it has been applied to the last drought considering the real water demands of population, as well as to the water storage evolution in the last months. It has been found a considerable advance in the forecasting of water volume into reservoirs. The advantage of this methodology is that it only requires seasonal forecasting free through internet. Due to the fact that the principal rivers that supply water to Barcelona, birth on the Pyrenees and Pre-Pyrenees region, the analysis and precipitation forecasting is focused on this region (Zaragoza, 2008).