

The growing attention on the global climate change developed in the last decade reflects on several fields of application in hydro science. In last years particular attention was devoted to the effects on the hydrological cycle with special reference to the extreme events like floods and droughts. Given the different possible scenarios of evolution of the climate a possible tool for investigating such aspect at watershed scale is the distributed hydrological modelling. In this work a long-term simulation was performed on the Tuscany territory (Central Italy) with the hydrological distributed model MOBIDIC (MOdello di Bllancio Distribuito e Continuo) developed by the Department of Civil and Environmental Engineering of the University of Florence. The daily meteorological forcing (rainfall height, air temperature) used in the simulations were obtained by a meteorological simulation at 4-km horizontal resolution based on one the "A2" IPCC scenario of climatological forecast for the 2070-2099 period. The MOBIDIC model was previously calibrated on the 1997-2007 period basing on the observations of the ground network of sensors of Tuscany Region

An analysis and comparison of the results of the hydrological simulations the two periods (current and scenario) were performed in terms of a statistics characterization of the extreme events, including an assessment of the degree of satisfaction of the water demand in the whole territory, by assuming the current withdrawals scenarios for the civil, agricultural and industrial use.



Tuscany, Central Italy. Administrative divisions: Tuscany is divided into ten provinces. The area represents the domain of the LAM simulation at 4 km of horizontal resolution.



## The effects of future climate on the flow regime in Tuscany: a numerical simulation with the distributed hydrological model MOBIDIC Lorenzo Campo (1), Francesca Caparrini (2)

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Water withdrawals in Tuscany. Available data from local administrations databases are often incomplete and fragmentary on large areas. For this reason, the information collected were integrated with synthetic withdrawals generated basing on the observed statistical characteristics (log-normal distribution) and on the percentages of water taken for each use. The estimate was also based on the different use of the water:

- civil

- agricultural

- industrial







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