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# The effects of future climate on the flow regime in Tuscany: a numerical simulation with the distributed hydrological model MOBIDIC

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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 BIlancio 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 of the IPCC scenarios of climatological forecast for the 2070-2099 period. The MOBIDIC model was previously calibrated on the 2001-2010 period basing on the observations of the ground network of sensors of Tuscany Region. Analyses and comparisons of the results of the hydrological simulations between the two periods (current and climatic change scenario) are provided in terms of a statistics characterization of the extreme events and of climatic indexes. Discussion of the results is provided.