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Assessing the water resources vulnerability of Ouergha catchment under climate change projection

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Climate change scenarios predict water scarcity in Mediterranean region, particularly in areas that are exposed to weather related disasters (drought, flood…) (IPCC, 2014). These changes will most likely impact food security by altering the hydrological cycle and water availability. Considering that water is the economic engine of the Mediterranean countries that rely especially on agricultural production, several studies have been focused on understanding and quantifying the climate change effects on hydrological regime. In addition, the complexity of these impacts can be due also to a bad resources management that can hinder the countries' development (Marin M., 2020). To study the hydrological function of the Ouergha watershed, the SWAT model was used to simulate daily runoff response for the period 1997-2017, including three years (1993-1997) for the warming-up of the model. Calibration and validation of the model were applied for the period 1997-2017 using the SUFI-2 algorithm, and the simulation estimates the water flows of the Ouergha basin in a monthly time step. The water balance indicates a predominance of evaporation losses accounting for 41% of total rainfall. Runoff represents 8% of precipitation while lateral flow is 7%. The remainder is distributed between the 5% deep aquifer recharge and percolation, in addition to the flow to the river which represents about 39%. The Swat model is considered as suitable tool for the management of water resources even though under changing climatic conditions, it's prone to errors and uncertainties that needs to be assessed to make full benefits from this model challenging (Sellami H., 2014).To analyze these uncertainties a modelling approach based on the combination of hydrological model and a set of high resolution CORDEX climate models has been developed. The results are considered as a decision-making tool for local and regional actors.

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