



A methodology to assess water availability for food production under climate change

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In many countries around the world, water demand for agricultural production already exceeds water availability. Such situation imposes a challenge for food production under future climate change conditions and indicates the need for a policy assessment in order to identify adaptation strategies in the water sector. This contribution provides a methodology to compute water availability for irrigation using a GIS-based model, called "Water Availability and Adaptation Policy Assessment" (WAAPA). The model computes the net water availability for consumptive use for a river basin taking into account the regulation capacity of its water supply system and a set of management standards defined through water policy. The model was applied in 567 basins that cover the entire continental territory of Spain to estimate water availability under different climate change projections. The outputs of the PRUDENCE European project provide the information of the climate change scenarios. Two alternatives of management are proposed based on: reducing water allocation for agriculture, in order to obtain satisfactory water supply reliability or maintaining current water allocation for agriculture, but with the probability of reducing supply reliability. The results show equilibrium between water availability and agricultural demand in current conditions in the great majority of the River Basin Districts of Spain, nonetheless under climate change scenarios, the capability to satisfy the water requirements for agricultural production is significantly reduced, so as the management needs are necessary to mitigate the expected impacts to long term.