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Valuing drought information for irrigation farmers: potential development of a hydrological risk insurance in Spain

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Drought events in the Mediterranean impact ecosystems and society. When meteorological drought leads to water scarcity river basin authorities and farmers are likely to be affected. The economic value of drought information and the resulting decisions that are made are of interest to these two stakeholder groups and the information providers. Here we focus on farmers' decision-making process to cope with drought consequences on crop production. The understanding of the dynamics of droughts and water scarcity is being improved continuously and new indicators are used to link science to policy actions. This paper analyses the economic value of information on drought events taking into account the risk aversion of farmers that irrigate. We consider the effects of drought management plans on maize production in the Ebro river basin to compute the willingness to pay of the farmers for an hypothetical hydrological risk insurance. We also compute the value of more accurate information about drought probability that would allow for better decision-making. If runoff is reduced, farmers can consider contracting an hydrological risk insurance in order eliminate the risk of water scarcity. Alternately farmers can take the risk of water reduction maintaining their activities and accept a reduction of water supply reliability. These two alternatives have different risk levels to crop production and farmers' incomes associated with them, which determines the value of the information. The methodology and results presented is relevant to analyse climate change since drought events in the Mediterranean are likely to increase in frequency, duration and intensity. This information is also relevant for the revision of River Basin Management Plans of the Water Framework Directive (WFD) within the context of climate change.