

Accepted Manuscript

Research papers

Economic risk assessment of drought impacts on irrigated agriculture

A. Lopez-Nicolas, M. Pulido-Velazquez, H. Macian-Sorribes

PII: S0022-1694(17)30282-2

DOI: <http://dx.doi.org/10.1016/j.jhydrol.2017.05.004>

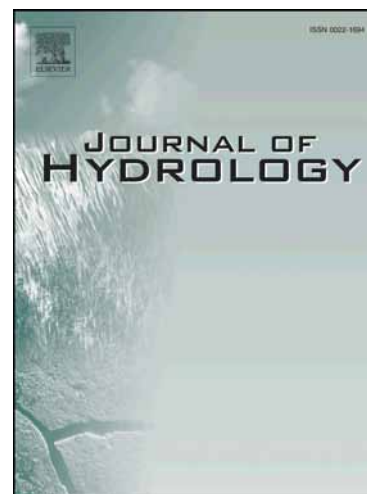
Reference: HYDROL 21993

To appear in: *Journal of Hydrology*

Received Date: 23 January 2017

Revised Date: 4 April 2017

Accepted Date: 3 May 2017



Please cite this article as: Lopez-Nicolas, A., Pulido-Velazquez, M., Macian-Sorribes, H., Economic risk assessment of drought impacts on irrigated agriculture, *Journal of Hydrology* (2017), doi: <http://dx.doi.org/10.1016/j.jhydrol.2017.05.004>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ECONOMIC RISK ASSESSMENT OF DROUGHT IMPACTS ON IRRIGATED AGRICULTURE

Lopez-Nicolas, A^a , Pulido-Velazquez, M.^{a*} and Macian-Sorribes, H^a.

^aResearch Institute of Water and Environmental Engineering (IIAMA), Universitat Politècnica de València, Camí de Vera s/n 46022 Valencia, Spain

Corresponding author: mapuve@hma.upv.es (Pulido-Velazquez, M.), anloni@upv.es (Lopez-Nicolas, A.), hecmasor@upv.es (Macian-Sorribes, H.)

ABSTRACT

In this paper we present an innovative framework for an economic risk analysis of drought impacts on irrigated agriculture. It consists on the integration of three components: stochastic time series modelling for prediction of inflows and future reservoir storages at the beginning of the irrigation season; statistical regression for the evaluation of water deliveries based on projected inflows and storages; and econometric modelling for economic assessment of the production value of agriculture based on irrigation water deliveries and crop prices. Therefore, the effect of the price volatility can be isolated from the losses due to water scarcity in the assessment of the drought impacts. Monte Carlo simulations are applied to generate probability functions of inflows, which are translated into probabilities of storages, deliveries, and finally, production value of agriculture. The framework also allows the assessment of the value of mitigation measures as reduction of economic losses during droughts.

The approach was applied to the Jucar river basin, a complex system affected by multiannual severe droughts, with irrigated agriculture as the main consumptive demand. Probability distributions of deliveries and production value were obtained for each irrigation season. In the majority of the irrigation districts, drought causes a significant economic impact. The increase of crop prices can partially offset the losses

Download English Version:

<https://daneshyari.com/en/article/5770778>

Download Persian Version:

<https://daneshyari.com/article/5770778>

[Daneshyari.com](https://daneshyari.com)