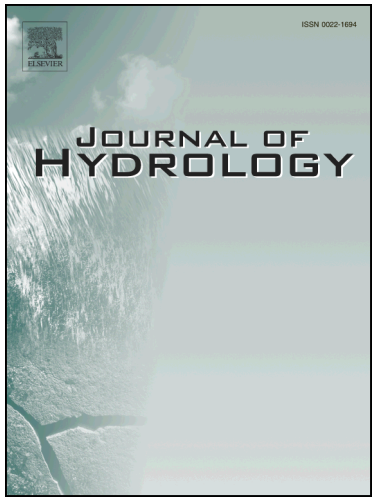
Accepted Manuscript



Research papers

Fuzzy Optimization Model and Fuzzy Inference System for Conjunctive Use of Surface and Groundwater Resources

Sami Ghordoyee Milan, Abbas Roozbahani, Mohammad Ebrahim Banihabib

PII: S0022-1694(18)30681-4
DOI: https://doi.org/10.1016/j.jhydrol.2018.08.078
Reference: HYDROL 23092

To appear in: *Journal of Hydrology*

Received Date: 23 July 2018
Revised Date: 28 August 2018
Accepted Date: 29 August 2018

Please cite this article as: Milan, S.G., Roozbahani, A., Banihabib, M.E., Fuzzy Optimization Model and Fuzzy Inference System for Conjunctive Use of Surface and Groundwater Resources, *Journal of Hydrology* (2018), doi: https://doi.org/10.1016/j.jhydrol.2018.08.078

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.

ACCEPTED MANUSCRIPT

Fuzzy Optimization Model and Fuzzy Inference System for Conjunctive Use of Surface and Groundwater Resources

Sami Ghordoyee Milan

MSc of Water Resources Engineering, Department of Irrigation and Drainage Engineering, College of Aburaihan, University of Tehran, Tehran, Iran

Abbas Roozbahani

Assistant Professor, Department of Irrigation and Drainage Engineering, College of Aburaihan, University of Tehran, Tehran, Iran. roozbahany@ut.ac.ir (Corresponding Author)

Mohammad Ebrahim Banihabib

Associate Professor, Department of Irrigation and Drainage Engineering, College of Aburaihan, University of Tehran, Tehran, Iran

Abstract

Sustainable water resources management in most river basins needs appropriate techniques to implement the conjunctive use of surface and groundwater resources with consideration of uncertainties. In this study, first a linear fuzzy optimization model was used to find the optimal surface and groundwater withdrawal. Then, by using the results of this model, a Fuzzy Inference System (FIS) was developed to determine the groundwater withdrawal, automatically. The capability of this approach is studied in the Astaneh-Kouchesfahan Plain in north of Iran. To do this, the groundwater of this Plain was simulated using MODFLOW code. Then, two fuzzy optimization methods were developed to minimize the water shortage. Results showed that the average water shortage was equal to 215 and 138 MCM according to current water withdrawal and the best solution for the fuzzy optimization model which was 22.0% and 14.6% of the water demand, respectively. The results of the optimization model were used to

Download English Version:

https://daneshyari.com/en/article/10224042

Download Persian Version:

https://daneshyari.com/article/10224042

Daneshyari.com