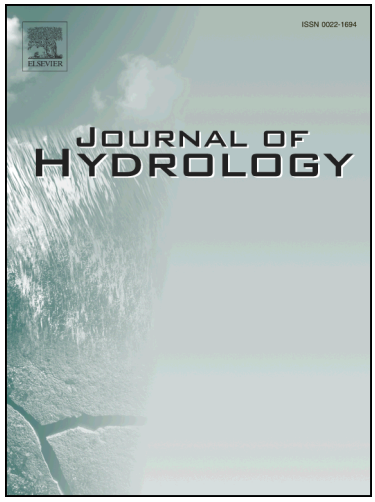
Accepted Manuscript



Research papers

A Hybrid System Dynamics and Optimization Approach for Supporting Sustainable Water Resources Planning in Zhengzhou City, China

Zhi Li, Chunhui Li, Xuan Wang, Cong Peng, Yanpeng Cai, Weichen Huang

PII: S0022-1694(17)30761-8
DOI: https://doi.org/10.1016/j.jhydrol.2017.11.007
Reference: HYDROL 22365

To appear in: *Journal of Hydrology*

Received Date: 27 June 2017
Revised Date: 15 October 2017
Accepted Date: 4 November 2017

Please cite this article as: Li, Z., Li, C., Wang, X., Peng, C., Cai, Y., Huang, W., A Hybrid System Dynamics and Optimization Approach for Supporting Sustainable Water Resources Planning in Zhengzhou City, China, *Journal of Hydrology* (2017), doi: https://doi.org/10.1016/j.jhydrol.2017.11.007

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

A Hybrid System Dynamics and Optimization Approach for Supporting Sustainable Water Resources Planning in Zhengzhou City, China

Zhi Li[1], Chunhui Li[1], Xuan Wang[1,2], Cong Peng[1], Yanpeng Cai[1,2],Weichen Huang[1]

[1]Key Laboratory for Water and Sediment Sciences of the Ministry of Education, School of Environment, Beijing Normal University, Beijing 100875, China; [2] Beijing Engineering Research Center for Watershed Environmental Restoration & Integrated Ecological Regulation, School of Environment, Beijing Normal University, Beijing 100875, China
Correspondence to: Dr. Chunhui Li (Tel: +86(10)-58800830 Email: chunhuili@bnu.edu.cn)

Abstract. Problems with water resources restrict the sustainable development of a city with water shortages. Based on system dynamics (SD) theory, a model of sustainable utilization of water resources using the STELLA software has been established. This model consists of four subsystems: population system, economic system, water supply system and water demand system. The boundaries of the four subsystems are vague, but they are closely related and interdependent. The model is applied to Zhengzhou City, China, which has a serious water shortage. The difference between the water supply and demand is very prominent in Zhengzhou City. The model was verified with data from 2009 to 2013. The results show that water demand of Zhengzhou City will reach 2.57 billion m^3 in 2020. A water resources optimization model is developed based on interval-parameter two-stage stochastic programming. The objective of the model is to allocate water resources to each

Download English Version:

https://daneshyari.com/en/article/8895099

Download Persian Version:

https://daneshyari.com/article/8895099

Daneshyari.com