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Socio-hydrological resilience of an arid aquifer system, subject to changing climate and inadequate agricultural management: A case study from the valley of santo domingo, mexico

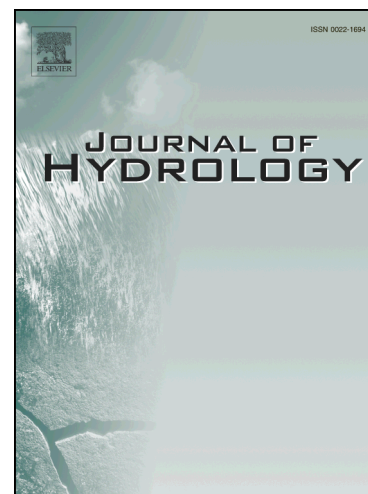
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**SOCIO-HYDROLOGICAL RESILIENCE OF AN ARID AQUIFER SYSTEM,  
SUBJECT TO CHANGING CLIMATE AND INADEQUATE AGRICULTURAL  
MANAGEMENT: A CASE STUDY FROM THE VALLEY OF SANTO DOMINGO,  
MEXICO**

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**ABSTRACT**

Mismanagement has caused the overexploitation of one third of the major aquifers in Mexico, mainly due to excessive water extraction for agricultural irrigation. Santo Domingo (Baja California Sur, in northern Mexico, where agriculture absorbs nearly 80% of water) is the only aquifer in the Mexico where, after a period of overexploitation, equality between extraction and recharge rates was achieved, although this has not meant the securement of long-term water availability. This paper offers an analysis of hydrological resilience of a water-limited arid ecosystem under future extraction scenarios and changing climate conditions. A regional groundwater flow model is proposed using MODFLOW software. Then, different indicators were modeled as outcomes of coupled human-water systems to predict water trajectories under different human impacts. The aim was to recognize water insecurity scenarios and define appropriate actions to a more sustainable use of this scarce resource in the region. Thus, although runoff derived from extreme floods may favor infiltration, the involvement of local stakeholders and decision makers to reverse the adverse

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