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Simulation and Analyses of Uncertainty and Sensitivity of the Changes of the Urmia Lake Level to Water Budget Components

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The main aim of this research is an attempt to simulate and analyse monthly water level changes in Urmia lake. For this, different approaches including water budget, multiple regression and artificial neural networks (ANNs) have been investigated using monthly data of effective components of water budget equation such as input discharge, average rainfall and average open-water evaporation. Furthermore, uncertainty and sensitivity analyses were employed to compare the capabilities of the simulation methods. The study results suggest that ANNs model using monthly discharge, rainfall and evaporation as inputs has the highest precision and lowest sensitivity, but greater range of uncertainty. In addition, the impact of reduction of discharges and rainfalls on variations and time to reach to equilibrium level of the lake was analysed under different scenarios. It was concluded that decrease in rainfall has more effect on the lake's variations and time to reach to equilibrium level than decrease in input discharge.

Keywords: Simulation, Artificial Neural Networks (ANNs), Uncertainty, Sensitivity, Equilibrium Level, Scenario