



Groundwater level prediction by Artificial Neural Network model in Eastern Jeju Island, Korea

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The size of rainfall in the Jeju Island (Republic of Korea) is largest in whole country. Due to the rapid recharge of deep aquifers through highly permeable volcanic basalt rock, most streams dry up shortly after rainfall events. For this reason, accurate estimation of hydrologic components is challenging even with conventional watershed hydrologic model. People in this island rely greatly upon the groundwater resources by pumping for agricultural water use. However, local government has to control the maximum use of agricultural groundwater especially in drought period to avoid groundwater depletion. To adapt this status the groundwater level prediction model is developed by using artificial neural network algorithm. The model uses rainfall and groundwater level data for training and calibration by back propagation and then predicts the groundwater level with predicted rainfall data sets made based on the various scenarios applying drought conditions. For the 10 groundwater stations in eastern area, we performed 6 months prediction successfully. These results can be used for monthly groundwater level prediction for severe drought period in this island.

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