



Analysis of the safe yield of the groundwater in southern Taiwan after typhoon Morakot

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The typhoon Morakot struck Taiwan during August 8-10, 2009, and the government statistics analysis. It claimed 617 casualties, 76 missing persons. 24,950 evacuees are evacuated by the Disaster Prevention and Response Act. The heavy and long period rainfall also triggered many debris flow and landslides. One major landslide in Xiaolin Village, Kaohsiung County claimed 431 deaths and missing persons, the landslide wiped out the entire village. In addition, the southern part of Taiwan caused by heavy rains facing a serious problem of high water turbidity. Because the uneven spatial and temporal distribution of rainfall and the growth of water resources use in southern Taiwan, water shortage in southern Taiwan region is growing serious.

To solve the problem of water shortage in southern Taiwan, a conjunctive scheme to make some artificial lakes and reservoirs will be used to establish the amount of groundwater recharge methods. In this study, we adopted MODFLOW numerical model to simulate different scenarios in this area.

First, we do some pumping test to obtain the hydrogeological parameters of the study area, and applied MODFLOW numerical scheme to do the calibration and validation and sensitivity analysis, simulation of the four artificial lakes with pumping two different regions.

We analyzed a total of eight cases to the experimental area of the water level changes, and applied Hill method to analyzed safe yield of groundwater recharge, and discussed artificial lakes function is better after establishment.

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Keywords: MODFLOW, Groundwater, Safe yield, Sensitivity Analysis, Hill Method, Conjunctive Scheme