



Integration of the MODFLOW Lake Package in the FREEWAT GIS hydrogeological modelling environment.

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The FREEWAT GIS environment for hydrogeological modelling incorporates the MODFLOW Lake Package to simulate surface water- groundwater interaction using state of the art techniques. The Lake package allows for the simulation of hydraulic interaction between a lake and groundwater so that the effects of the changes in the water level of one of the two water bodies is calculated on the other. Through this addition, the QGIS plugin allows greater consideration of surface water bodies for water resources management. Groundwater resources can be strongly qualitatively and quantitatively affected by surface water bodies that they interact with. Existing QGIS tools and structures can be used with the lake package tools of FREEWAT to specify spatial and temporal, constant and variable lake properties within MODFLOW capabilities. FREEWAT supports steady state and transient simulations using the lake package, as well as specification of precipitation, evaporating, extraction and surface runoff to lakes.