



## **Uncertainty analysis of groundwater exchange at boundaries in Taipei Basin**

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The uncertainty exists in groundwater modeling, especially in geohydrological parameters, groundwater recharge and boundary conditions. Some of them could be experimented and found out by field test. But the boundary conditions, except for the terrain assumptions, are hardly setup. The purpose of this study is to discuss the uncertainty of the boundary conditions and its effects of groundwater exchange at these boundaries. The uncertainty is evaluated from mean square errors of observed wells in groundwater zone. Several combinations of boundary conditions, including no flow and dynamic boundary conditions of all boundaries, are discussed. A groundwater modeling in Taipei Basin at downstream zone is built. Two sets of boundary conditions are built. One is from the geology; the other is from the relationships from terrain, which are upstream watersheds. The groundwater exchange at the boundaries is considered from three watersheds. The boundary conditions of HsinTain River, TaHan River and Keelung River at upstream are setup from the relationships, which are built between baseflow near these boundaries and observed well. The geological information is also considered in these boundaries. The uncertainty is discussed by simulations and validations. In Results, the higher relationship, in HsinTain River and TaHan River, between baseflow and observed wells at these boundaries are used in simulations. The groundwater exchange is estimated about five million cubic meters, even with several boundary conditions which don't agree with the geological or watershed properties. And the mean square error of observed wells is not the only parameter to evaluate a suitable groundwater model.