Developing Risk-based Groundwater Optimal Control Strategy with Groundwater Model - Using Taipei Basin as an example

Hua-Ting Tseng and Hwa-Lung Yu

National Taiwan University, Bioenvironmental Systems Engineering, Taipei, Taiwan (alex84026066@gmail.com)

Geological disaster are closely relate to groundwater level such as soil liquefaction and land subsidence. As a result, managing groundwater level appropriately can reduce risk of geological disaster and it also can increase the availability of water resources. This study using Taipei basin where land subsidence was recorded frequently but because of high groundwater level, soil liquefaction is a potential concern presently. In order to reduce the probability of geological disaster, management of groundwater level is necessary. This study includes economical loss to assist in quantifying risk of geological disaster. The other constrains are well capacity, non-negative constraint, soil liquefaction groundwater level upper limit and land subsidence water level lower limit. Evaluating the optimal groundwater control strategy by minimizing economical loss through MODFLOW parameterization using Monte-Carlo simulation.