



## **Numerical Simulation of Changes in Groundwater-Level Induced by Earthquakes**

Ching-Yi Liu, Yeeping Chia, and Ding-Qian Zheng

Department of Geosciences, National Taiwan University, Taipei, Taiwan

Changes in groundwater level induced by earthquakes have been recorded worldwide. Sustained groundwater-level changes during earthquakes, primarily induced by the co-seismic strain due to fault displacement, are often observed in the confined aquifer. In the unconfined aquifer, sustained co-seismic changes can hardly be observed due to the rapid recovery of pore pressure change. In this study, field observation of co-seismic groundwater-level changes are showed. Also, the finite element software ABAQUS is used to simulate two-dimensional time-dependent pore pressure change in the aquifer due to fault displacement during earthquakes. Different physical properties are used to represent different types of aquifer. We adopted the 3-step method to simulate how earthquakes affect pore pressure in the 3 models, unconfined aquifer, confined aquifer and over-pressured confined layers. Results from the simulation gives us more details of how co-seismic and post-seismic pore pressure temporal changes are processed in different aquifers.