

The preliminary study of the high-sampling coseismic groundwater level changes in M_L 6.4 Tainan earthquake, Feb. 6th 2016

*WENCHI LAI¹, ShihJung Wang², KuoChin Hsu³, Naoji Koizumi⁴

1.Disaster Prevention Research Center, National Chengkung University, Taiwan, 2.Geotechnical Engineering Research Center Sinotech Engineering Consultants, INC., Taiwan, 3.Department of Resources Engineering, National Chengkung University, Taiwan, 4.Department of Ecosystem Studies, School of Environmental Science, The University of Shiga Prefecture

The different response by various natural stimuli and processes (tidal force, barometric loading, ground shaking and crustal strain) were used as the elements of the hydraulic information in the earthquake induced groundwater level changes. Using the natural force to act as naturally recurring stimuli to provide a sufficiently varied distribution of excitations in time and space, and represented the hydro-geological changes responses to the earthquake processes. The purposes of this study are to analyze the recently observation results of the earthquake induced pre-seismic / co-seismic variation of groundwater level ML 6.4 Tainan earthquake, Feb. 6th 2016. The analysis of the high-sampling water level responses be used to estimate the mechanical properties of the aquifer. Comparison the observation high-sampling water level changes in the each event, offers the opportunity to discussion the possible mechanism of the hydrologic response to earthquake. Some of the coseismic groundwater level changes can be explained as the poroelastic responses to the earthquake-induced volumetric strain changes inferred from the fault dislocation models. But the other changes can not be explained by the volumetric strain changes either qualitatively or quantitatively. We regarded the coseismic static volumetric strain change and the ground acceleration as the main factors to cause the coseismic groundwater level changes. The study provides some information for the pre-seismic / co-seismic mechanism but more investigations are required

Keywords: Coseismic Changes, Groundwater, Earthquake

