

The study of seismic-induced groundwater level changes in porous sediment and sedimentary rock

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Abstract

Numerous observed coseismic or postseismic well level changes, they are inferred static volumetric strain step or dynamic stress variation induced by propagation of surface waves. But except for the rare cases, the conclusion usually been made based on the scattered and not a sufficiently dense network of observation wells, related phenomena have not been well explain quantitatively.

In this study, we using the observations of the groundwater monitoring network in Taiwan act as the dense observation dataset to the earthquake induced hydrological responses. The comparison of the observed changes in groundwater level and the inferred volumetric strain step and ground acceleration in response to the earthquake events were discuss. These observations been systemic analysis for distinguish the different responses and evaluate the site effects of the responses in the observation wells. Local effects made by strong ground motion could be the mechanism to make the conflict with the theoretical responses. The combination of 16 high resolution observation wells with other 550 usual observation wells gave the detail and abundant information for the earthquake induced hydrological responses in porous sediment and sedimentary rock. Such sites effects of the earthquake induced hydrological responses will be give the supplement of the past observation and previous study.