



The earthquake surveillance through the groundwater monitoring system

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The groundwater monitoring system for the earthquake surveillance and prediction have been employed in some countries to prepare and reduce the damages by earthquakes. Groundwater changes before, during, and after the earthquakes are often-reported phenomena. The changes are attributed to the volumetric strain changes related to the pressure build-up and release during earthquake development, or ground-shaking by seismic wave propagation, etc. In Korea, the public concerns on the earthquake hazard management and prediction were increased after ML5.8 Gyeongju and ML5.4 Pohang earthquakes occurred in 2016 and 2017, respectively. The epicenters of both earthquakes were located in the Yangsan fault zone, known to be the largest active lineament in the south-eastern part of Korean peninsula, and its vicinity zone. Thus, we have operated a pilot-scale groundwater monitoring system with specially designed monitoring wells for earthquake surveillance. This monitoring system consists of four monitoring wells along and nearby the Yangsan fault zone. One of those wells were installed in 2010, while the others were deployed between 2016 and 2018. Each well has a data-logger to record water level, temperature, and electric conductivity in a minute interval, and the collected data are sent to the server in every hour through the remote transmission unit. In the previous studies, the wells could reflect the changes of the hosting media during the earthquake development and wave propagation. In this study, we present the up-to-date results from the pilot-scale monitoring network including new ones under the construction.