EGU2020-12629
https://doi.org/10.5194/egusphere-egu2020-12629
EGU General Assembly 2020

Different responses of groundwater level changes through hydrogeological characteristics due to M5.4 Pohang earthquake

Soo-Hyoung Lee, Jae Min Lee, Heesung Yoon, and Yongje Kim
Korea Institute of Geoscience and Mineral Resources, Korea, Republic of (rbagio@kigam.re.kr)

Earthquake of magnitude M5.4 the second largest recorded earthquake occurred in Pohang, South Korea at 05:29:32 (UTC time) on November 15, 2017. The M5.4 event and hundreds of aftershocks produced extreme impacts across the area to date along with human and property damages. The distance between the epicenter of the M5.4 Pohang earthquake and the groundwater observation well is about 43 km for KJ-well and about 76 km for YS-well. Records from these two monitoring wells showed groundwater level changes occurred in 2017-11-15 05:30 (UTC time), about 30 seconds after the earthquake. In KJ-well, 8.0 cm of groundwater level change was observed, and in YS-well, about 30.0 cm of groundwater level change. The changes in groundwater level appeared to be a spike-like pattern that rises immediately due to the compressive action of the aquifer as the seismic waves pass through and then return to its original state. Interestingly, the groundwater level changes in YS-well was observed to be approximately three times greater than KJ-well although YS-well is approximately twice as far from the epicenter as KJ-well. The factors causing these different changes were compared and analyzed for the geometry, hydraulic properties, and geological characteristics of the well locations