

## Evaluation of groundwater flow system in Kumamoto area from dissolved trace element concentration and isotopes including Kumamoto Earthquake

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In these last few decades, isotopic traces have been used to understand the origin and flow of groundwater. In this study, we analyzed various isotopes from groundwater samples in Kumamoto area, Japan. Groundwater in this area is supplied from Mt, Aso, and utilized as a main source of water supply in Kumamoto City. Its recharge by meteoric water is the main source as indicated by conventional delta-<sup>18</sup>O and delta-D isotopes of water, but additional inputs from different sources are suggested. In this study we tried to detect the presence of additional sources using delta-<sup>11</sup>B and delta-<sup>7</sup>Li isotope ratios dissolved in water as well as concentrations of B, Li, and major dissolved ions, and D/H-<sup>18</sup>O/<sup>16</sup>O values of H<sub>2</sub>O. B and Li are conservative trace elements in typical groundwater system (pH, Eh, EC), and these isotopes have very wide variations(0-30 permil) in nature owing to its relative large mass differences. Stagnant groundwater and thermal fluids tend to have low delta-values and seawater has high values, so the isotope systematics are useful to estimate origin of groundwater.

Keywords: groundwater, isotope