

## An improved observation system of dissolved gas concentration in groundwater with hydraulic conductivity measurement

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An improved observation system of dissolved gas concentration in groundwater with hydraulic conductivity measurement will be reported. Radon and/or methane concentration in groundwater are known as indicators of earthquake precursor. Even though the mechanism is not clear yet, an idea was proposed to investigate the mechanism (Kuo et al. (2006), Tsunomori and Kuo (2009)). The idea assumes the gas volatilization phenomenon as an important process; in particular, the vacant space is generated in an aquifer by the dilation of crust. If this idea is appropriate, the porosity or the hydraulic conductivity of the aquifer might be observed with anomalous concentration changes of radon and methane concentrations. Thus, a continuous groundwater gas observation system (Tsunomori and Notsu (2008)) has been improved to monitor the hydraulic conductivity variation. Observation systems have been set in the Kashima and Kamakura observatories. Dissolved gas is extracted from sampled groundwater, and gas component and concentration are measured with a quadrupole mass spectrometer. Radon concentration in groundwater is measured by a ZnS(Ag) scintillation counting method. Hydraulic conductivity of aquifers are calculated from groundwater recovery with the Hvorslev equation. One hour sampling was achieved by this improved system.

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