Temporal variation of Rn concentrations of deep ground water at Onagawa, Miyagi Prefecture

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In this study, I investigated temporal variation of radon concentrations of deep ground water at Onagawa, Miyagi Prefecture and correlations between radon and atmospheric pressures, rainfalls, tidal variations and crustal volume strains at Onagawa.

The radon measurement was carried out from 16 May 2007 until 25 December 2007. Although radon concentrations fluctuated widely during the period, distinct high anomalies were observed. Radon concentrations increased significantly 4-6 days and 2 days before the Nigata Chuetsu Oki earthquake (Mw6.6) which occurred 270km distant from Onagawa on 16 July 2007.

Other than the earthquake, atmospheric pressures, rainfalls, and tidal variations are possible factors on the anomalies. However, radon concentrations do not correlated with those factors for 30 measurements of the term around the Nigata Chuetsu Oki earthquake. Therefore, the increase in Radon concentrations was possibly related to the Nigata Chuetsu Oki earthquake. A possible account for the radon increase is microcracks formation by the change of stress, which preceded the onset of the earthquake.

Volume strains induced by fault activities of Nigata Chuetsu Oki earthquake were calculated by using MICAP-G. The result can not account for the Radon concentrations around the Nigata Chuetu Oki earthquake directly.