

Gas Analysis during fluid injection test of Chelungpu-fault, Taiwan

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Abstract

Composition change in gases from pores of crust is considered as an important precursor before earthquake. It is confirmed that contents of some gases including hydrogen, radon, and carbon dioxide are sensitive to earthquake. They could change before or during earthquake. Fluid injection test is an experiment that was developed in recent years and proved to be able to trigger micro-earthquake and cause deformation of crust. Gas monitoring in fault zone during fluid injection is a fresh attempt especially in earth science study.

In this study, gas monitoring started 2 months before fluid injection test, and continued until now. During the period of monitoring, total amount in each gas gradually decreased after monitoring started. After fluid injection test, a rise in hydrogen content for a short period was detected. This change could indicate that, through fluid injection, micro-earthquakes occurred and some hydrogen was generated in the fault zone during deformation process.