

Groundwater anomalies around active faults in the source region of the 2004Mid Niigata Prefecture Earthquake

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In this paper, we examine considerable changes in temperature, electric conductivity, and hydrochemistry of groundwaters around the epicentral area in four years (2005-2008) after the Mid Niigata prefecture Earthquake in 2004, using the snow-melting wells and identifying hydrogeological processes and origin of groundwater.

There are considerable differences in temperature, electric conductivity and hydrochemistry of groundwaters between the following two areas: area along the Yukyu-zan active fault and its inferred extension and area along the Muikamachi active fault and its inferred northern extension. The former and latter areas are located on the hanging wall and footwall blocks, respectively, of the seismogenic source fault of the earthquake. The hanging wall and footwall have been under an E-W extensional and compressional conditions, respectively, related to the earthquake. These suggest that hydrogeology and flow system of the groundwaters along active faults in the Chuetsu area are greatly controlled by crustal deformation conditions.