

Long-term increasing trend with a short-term rise in groundwater temperature in the Tokai region

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Stress concentration due to deformation of the crust may generate highly compressed fluids within cracks in the rocks. Those fluids tend to migrate upwards through crack system in the crust. Among them, the intrusion of water with high temperature into a shallow water layer results in an increase in the temperature of the shallow water. An increasing trend in water temperature is found since the beginning of the observation in December, 2003 at a depth of 30m in an observation well, in Yaizu City. The increasing rate is 23m degree in centi-grade/year. At an artesian well in Shizuoka, where we set thermometers at depths of 5 m and 30m, we found an increasing rate of 34 m degree/year since March 29, 2006. However, the rate changed up to 67m degree/year around February in 2007 and turned to decrease down to 14 m degree /year in September. A short-term impulsive rise of temperature with a hight of 0.17 degree was observed during the period from October 27 to 31, 2007. Similar events were observed at the well and others in Yaizu City. The recent increasing trend with impulsive events in groundwater temperature in the Tokai region is possibly due to increasing compressional stresses deep underground, indicating a sign of the preparation process of the impending Tokai or Tonankai earthquake.