Long-term increase in groundwater temperature in the Tokai region - A hypothesis of increasing compressions in the deep crust -

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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. Amang 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 23×10^{-3} degree/year in centigrade. At an artesian well in Shizuoka, almost the same rate is observed, although the data covered only 9 months since March 29, 2006. Temperature data at two points at depths of 30m and 5m have been recorded. The temperature difference had kept nearly constant before September, 2006. After that, it has been decreasing, suggesting the flow rate turned to increase. The recent increasing trend in groundwater temperature and the rise of flow rate in the Tokai region is possibly due to increasing compressional stresses around deep underground, indicating a sign of the preparation process for the impending Tokai or Tonankai earthquake.