

Strain changes before and after deep low frequency tremor activities

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Geological Survey of Japan (GSJ), National Institute of Advanced Industrial Science and Technology (AIST) has been constructing a new borehole observation network composed of 12 stations since 2006. In 2007, we started the observation at 2 stations, named HGM and ICU, in the southern part of the Kii Peninsula. Other 10 stations are located in the Shikoku, Kii Peninsula and Tokai District, and we started the observation from 2008 to 2009. Each station has 3 wells where water temperature, water level (pressure) and ground motion are observed. At 1 of 3 wells, crustal strain is also observed by the multi-component borehole strainmeter. According to Automatic Tremor Monitoring System (ATMOS) of Hiroshima University, 6 major deep low frequency tremor activities occurred in the southern part of the Kii Peninsula since the observation started at these 2 stations. We detected strain changes related these tremors, and these changes can be explained by slow slip events occurring at several segments of the plate boundary whose locations are consistent with the tremor occurrence area. In ICU and MYM (which started observation in 2008), the strain changes associated with movement of tremor activities region are also observed comparatively clearly.

On the other hand, when it observes before and after tremor activities, there are some examples that strain changes precedes from tremor activities about half day, or examples that strain changes unlike the steady state are observed from calmness of tremor activities for a few days. According to Fukuda and Sagiya (2008, ASC-SSJ fall meeting), the observation results which suggest existence of SSE without tremor activities by multi-component borehole strainmeter in Shingu City, Wakayama Prefecture are obtained. In this presentation, we will introduce the observation results before and after the tremor activities in Kii Peninsula and analysis results about the dislocation model.