

Seismically Active Region and Asperity in the mid-western Shizuoka

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Long-term slow slip events (LSSEs) have been repeatedly observed beneath the Lake Hamana (GSI), whereas the seismicity in the crust of the central western Shizuoka becomes low simultaneously with the LSSEs (JMA, 2014). The authors have pointed out that a temporal correlation exists between LSSE and seismic activity in the same region for the past LSSEs and have showed the effectiveness of monitoring the seismic activity in the region to confirm LSSE activity. Here we have tried to elucidate details of a space-time structure of seismic activation and quiescence in and around the asperity for the anticipated Tokai earthquake found by Matsumura (2007), which may give us important clues about the relationship between LSSEs and seismic activity in the crust of central western Shizuoka. Matsumura used a method to display the occurrence rate of earthquakes for a reference period within a certain area as a spatial quantitative analysis of seismic activity (Matsumura (2002)). On the other hand, the authors have been using the method of showing the statistically significant areas of activation and quiescence based on the Poisson probability less than 1% in all the spheres of the earthquake actually occurred (Aketagawa and Ito, 2008; and Hayashimoto and Aketagawa, 2010). The latter does not require defining the study area for each analysis and make it easier to make three dimensional map of the sources of activation and quiescence using ordinary mapping tools. As a conclusion the activated areas evaluated by the authors is not the same as that corresponding to the asperities found by Matsumura (2007), which may due to the differences in reference- and evaluation- periods, as well as the data sets they have used. In spite of this, it may be certain that there are activation parts in special regions in the crust of the central western Shizuoka and some parts in the boundary regions. It is easy to compare the activation parts and the asperities near the plate boundary. The problem is whether the activation parts act as the asperities, even in the low seismic activity in the period of LSSE.

Keywords: Seismic activity, Asperity, Mid-western region of Shizuoka Prefecture