

Spatio-temporal correlations in tremor activity in south-west Japan

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Tremor activity is known to exhibit temporal episodic behaviour (burst-type activity followed by periods of inactivity), as well as spatial migration. Previous studies have investigated the temporal (Idehara et al., 2014) or the spatial clustering (Obara et al., 2010) of tremor activity in south-west Japan. We propose to investigate the correlations in tremors, based on the space-time combined correlation integral (Tosi et al., 2008). Thus, we are considering a simultaneous analysis of the interdistance among events in both space and time coordinates.

In previous studies, three distinct areas of tremor occurrence have been identified, with two seismicity gaps in between. Some explanations have been proposed for the phenomena, but no clear evidence can yet explain the presence of these seismically inactive regions. We aim to get some insight by modelling the spatial distribution and intermittent activation of the Shikoku, Kii and Tokai areas in respect to the Nankai and Tokai locked area. We analyse the local slope of time correlation dimension (d_t) as a function of time interval (σ) and hypocentral distance (r), using two different catalogues, retrieved from the World Tremor Database and a recently improved catalogue, respectively (Mizuno et al, 2019). We compare the obtained results for the two catalogues and discuss the overall implications on statistics of the different methods of detecting the tremor activity.