Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SCG058-03 Room:302 Time:May 22 11:15-11:30

Deep non-volcanic tremors synchronized with surface waves from teleseismic large earthquakes (2)

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Deep non-volcanic tremors are sometime triggered by surface waves from large teleseismic earthquakes. Occurrences of triggered tremors are usually modulated with a period of about 20 seconds, the same as a period of dominant surface waves. Such phenomena are very important when considering the physical state of tremor source region. Tremor occurrences are also modulated by Earth tides with periods of about 12/24 hours. Using the seismicity rate theory based on the rate- and state-dependent (R/S) friction law, one of fault parameters in the friction law has been determined by inverting observations of tide-modulated tremor occurrences. In this study we tried to explain observations of surface-wave-modulated tremor occurrences using the same method as the tide modulation case. However, it was not possible to explain the observations consistently. This indicates that simple application of the seismicity rate theory based on the R/S friction law cannot explain surface-wave triggering of tremor.

Keywords: non-volcanic tremor, surface wave, dynamic triggering, southwest Japan, slow earthquake