

Small repeating earthquakes occurred in the subducting Philippine Sea plate in and around the Kii-Peninsula, Central Japan

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We investigated small repeating earthquakes in and around the Kii Peninsula, central Japan. In this area, Philippine Sea plate is subducting to the northward and included the source region of the 1944 Tonankai earthquake ($M=7.9$), the 1946 Nankai earthquake ($M=8.0$) and off south-eastern Kii Peninsula earthquake on September 5, 2004 ($M=7.4$). In Japan, repeating earthquakes was found in the subducting Pacific plate in Tohoku district, and the subducting Philippine Sea plate in Kanto district. They suggested that the repeating earthquakes occurred when a small asperity was periodically broken due to stable sliding of the plate boundary surrounding the asperity. If this is the case, the repeating event can be a kind of sensors to detect an aseismic slip in the area. We basically used the same algorithm for detecting repeating earthquakes as Igarashi et al. [2003]. Furthermore, we considered higher frequency and added latest results which made the range of detection only nearby 100 events. In this analysis, we use permanent seismographic network covered in this region and show the results from June 1994 to the present. We found that some repeating earthquakes occurred around the subducting Philippine Sea plate. Extracted repeating earthquakes were classified by their repeating pattern into two groups according to Igarashi et al. [2003]. Most of them were burst type that appears only in a short period. Burst type repeaters were not only seen in subducting plate but also found them in swarms and aftershock activities of large earthquakes including in overriding plate in land and intra-plate. The induced stress may accelerate the aseismic slip on fault and causes repeating of small asperities in a short period. However, this result may be apparent that the period which we analyzed is short as compared with repeating intervals. Many repeaters occurred on the edge of source regions of past large interplate earthquakes. This suggests that the repeating earthquake is related with the degree of the plate coupling. Furthermore, we expect the repeating earthquake to be a clue to understand the location of asperities and also next large earthquake.