

Nonvolcanic Deep Tremors Occured in the Bungo Channel Region, Southwest Japan

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It has recently been shown that non-volcanic tremors occur at the depth of about 30km along the strike of the subducting Philippine Sea plate in southwest Japan (Obara, 2002). Tremor activities sometimes seem to be triggered or terminated by nearby earthquakes, and also they sometimes move with the velocity of about 13 km/day. To investigate directivity of movement and relationship between tremors and nearby earthquakes we analyzed two groups of the tremors occurred in the Bungo channel region in 2002; the one was followed with a relatively large earthquake and the other was not.

JMA reported 16 tremors in the Bungo channel region in Aug. 8-12, 2002. Although epicenters by JMA rather scattered the tremor activity seemed to move toward the northeast. Also JMA reported 31 tremors in almost the same region in Oct. 11-12, 2002. In Oct. 13 19:06, about 21 hours after the last tremor, a relatively large earthquake (M4.7) occurred at the depth of 43 km in the northeast region of the tremors. A map showing the tremor epicenters by JMA, however, showed no directivity. In this study we determined epicenters for these tremors by analyzing Hi-net data.

Our result showed that epicenters of the tremors occurred in Oct. 2002 seemed to move toward the northwest, the epicenter of the M4.7 event, with the velocity of about 20 km/day. This directivity and no tremor activity in this region after the M4.7 event show some relationship between the tremor activity and the M4.7 event.