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Spatial and temporal variations of earthquake distributions in Hakone volcano

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Hakone volcano locates northern part of Izu collision zone and earthquake swarms occur recurrently in the caldera. Correlations between the swarm activities at Hakone and volcanic or earthquake activities at Izu islands have been recognized after 70's. Therefore, Hakone volcano can be regarded as a window which is reflecting stress change in and around Izu collision zone. In 70's, earthquake swarm activities concentrated around Owakudani which is a geothermal area at the central corn of Hakone volcano but there are less number of earthquakes. After 80's, however, earthquake swarms have occurred widely in the Hakone volcano and many earthquakes occurred in a swarm activity. Did the source region of the swarm activities spread depending on the stress changes around Hakone volcano? We tried to redetermination of the epicenters of earthquakes which occurred in 70's in order to compare with recent earthquake distributions. As a result, it was reasonable to consider that some of the earthquakes in 70's also occurred at same area in which recent earthquakes occurred. This fact imply that the stress field in and around Hakone volcano was not so different from those of recent days.

After the earthquake swarm, which is the largest activity after recent observational network was developed, in 2000, major area of earthquake swarm activities did not overlap each other. Therefore, if we can obtain the earthquake distributions from 80's to recent days, we can assume the recurrent time of major earthquake swarms in Hakone volcano. The assumed recurrent time which is reflecting the stress accumulation around Hakone volcano may be a useful tool to understand the tectonics of Izu collision zone.

Keywords: Izu collision zone, stress change, earthquake distributions