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Recent transitions of seismicity in and around the Ontake volcano

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The swarm activity in the southeastern foot of the Ontake volcano since February of 1976 succeeds until now for long period. At the time of the volcanic eruption of the Ontake volcano in 1979 and the succeeding small eruption in 1991 and 2007, no swarm seismicity change occurred and it seems that there is no relation between the swarm and the volcanic activities in this area. But, it is certain that these seismic and volcanic activities are the same proceedings of a crustal activity in the geological time scale that suggests the magmatic and/or the certain fluid activity caused the swarm and the volcanic activities. In this report, we show recent characteristic seismic events in and around the Ontake volcano.

We established the dense online seismic stations in and around the Ontake volcano. In the seasons of summer and autumn in 2009 and in 2010, we deployed temporal seismic network with 11 stations surrounding the summit of the Ontake volcano to investigate the seismic activity of the shallow volcanic events just beneath the summit. These volcanic events occurred within the depth of 0-3 km. The activity and also uppermost depth of these shallow earthquakes ups and downs and it indicates the volcanic activity of the Ontake volcano. It is found that the hypocenter area of these shallow volcanic events is restricted within the very narrow column. On the other hand, the extent of the seismic swarm activity expands towards east and north, but no earthquakes occurred in the surrounding area of the summit with 7-9 km in diameter.

Keywords: Ontake volcano, earthquake swarm, volcanic earthquake, seismicity