

Automatic monitoring of volcanic long period event by broadband seismic network: 2003-04 volcanic activity of Mt. Aso

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Volcano excites varieties of seismic waves. Modern instruments observe the long period ground motion excited by volcanic activity. Mt. Aso excites tremor that is dominant of 15 sec seismic wave (Kawakatsu et.al., 2000). In case of Miyake island 2000 activity, very long period ground motions associated with collapse of crater are recorded. Long period seismic wave with volcanic activity will be useful tool to monitor the status of volcano. We applied the broadband seismic network data distributed widely in Japan to monitor volcanic activity.

We target Mt. Aso that is activated from December, 2003 and had small scale eruption on Jan., 2004. Semblance analysis is applied to long-period (10 to 20 sec range) seismograms. The new technique uses the comparison with other frequency range and identifies the occurrence of long-period seismic event. The result shows that many long period seismic waves are excited and this activity initiated from beginning of December and became intermittent. On January, a large number of events occur continuously with larger amplitude. After the eruption, seismicity of long-period event is decreasing. The initiation of this activity is coincident with seismicity of ordinary volcanic earthquakes. The sequence of long period event seismicity is response of physical process in Aso volcano. We concluded that monitoring by long period seismogram is powerful tool to detect the status of volcano. We will apply to other volcanoes by the same technique and design the analysis system in real time.