Temporal change of subsurface structure in the vicinity of the Sakurajima volcano, Japan, inferred from seismic interferometry technic.

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Sakurajima volcano is one of the most active volcano in Japan and has been continuously erupting since mid 20th century. Recently, the Showa crater of Sakurajima volcano resumed eruptive activity in 2006 after 58 years dormancy as well.

We applied the seismic interferometry technic to the ambient seismic noise observed in the vicinity of the Sakurajima volcano to reveal the temporal change of the subsurface structure during the active period of the Showa crater.

We used the continuous record of the vertical component seismogram observed in the Sakurajima Island from 2006 to 2015. We applied band pass filter, whose bandwidth is 0.5Hz -1.0 Hz, and one-bit normalization to the seismograms. Then we calculated the cross-correlation function as the Green’s function among the stations. Finally we obtained the temporal change of the travel time between stations day by day.

There seemed three components observed in the obtained temporal change of the travel time among the network. They are short period signal, long term trend, and some periodical behaviors. We applied state space model to evaluate these three components and discussed the correlation of these components with the volcanic activity.

Keywords: Sakurajima volcano, Temporal change of subsurface structure, Seismic interferometry, State space model

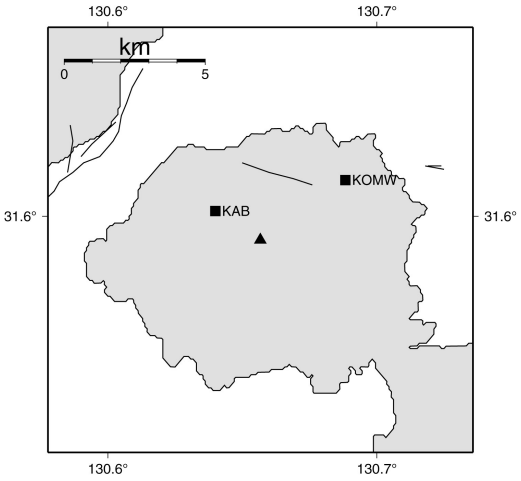

Fig.1

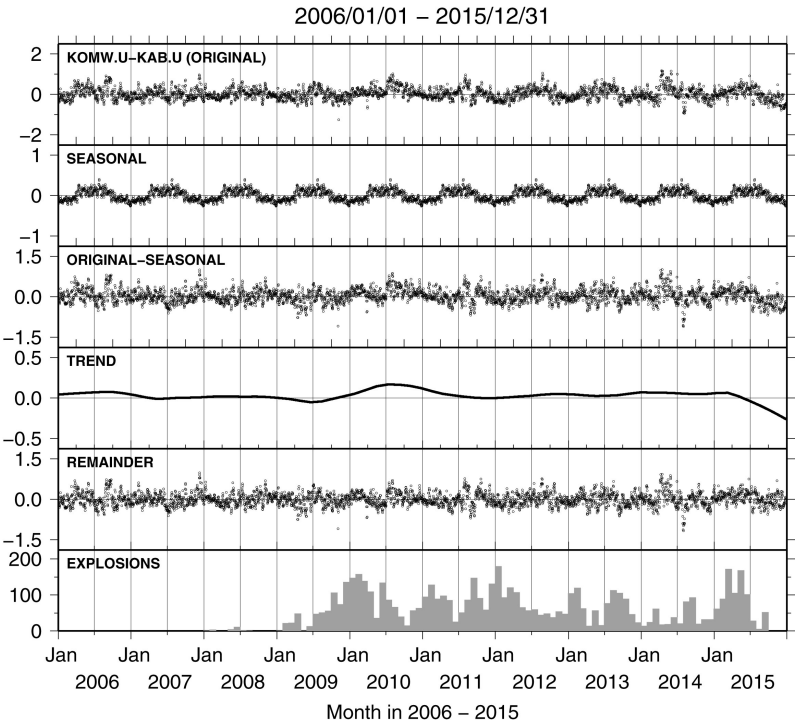

Fig.2

