Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

SCG062-P13 Room:Convention Hall Time:May 26 16:15-18:45

Three-dimensional velocity structure around Sakurajima and Aira caldera

Takeshi Tameguri[1*], Masato Iguchi[1], Masahiro Teraishi[1], Takahiro Ohkura[2]

[1]DPRI, Kyoto University, [2]Faculty of Science, Kyoto University

Explosive eruptions of Sakurajima volcano at the summit crater began in 1955 and the eruptions have frequently occurred, producing more than 7800 explosive eruptions as of the end of 2010. And, eruptions at Showa crater on east flank of this volcano started from June 2006 and eruptive activity gradually increased. The Ground deformation and volcanic earthquakes are observed, accompanied with rapid accumulation and release of magma. It is considered that high strain rate around magma chamber is generated by the magma accumulation and release. Ground around Aira caldera started to inflate after 1992. The inflation source is located at 10 km beneath center of the Aira caldera, from observations of GPS and leveling measurements. Generation of A-type earthquakes beneath the Minamidake crater increased from 2003 and volcano-tectonic earthquakes at southwest part of Sakurajima and northeast part of Aira caldera also increased. Strain accumulation may become active because the magma is accumulated beneath the Aira caldera.

Seismic experiment was carried in November 2008 in order to research structure and magma supply system of Sakurajima volcano and Aira caldera. Research depth of tomography analysis of velocity structure was until 3-4 km. The structure around magma chamber beneath the Aira caldera was not clear from the seismic experiment. So, we observe natural earthquakes by temporary seismic stations, in order to clarify three-dimensional seismic velocity structure at deeper part of the Aira caldera. 17 temporary stations were installed at Kagoshima and Miyazaki prefectures. And, 3 ocean bottom seismographs were installed in Kagoshima bay. We analyze the velocity structure around the Aira caldera and hypocenter distribution and source mechanism of the natural earthquakes, from data of the temporary stations including permanent stations equipped by Kyoto University, Kagoshima University and NIED. We estimated three-dimensional seismic velocity structure using data of arrival times of P- and S-waves and seismic experiment data.

Keywords: Sakurajima volcano, Aira caldera, velocity structure