

The seismic reflectors beneath Aira Caldera detected from controlled source seismic waves

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Seismic reflections and its sources in depth of Aira Caldera is presented. There are various later arrivals in the seismograms in the controlled source seismograms which obtained across northern Kagoshima Bay on November 2008. The presentation includes a report on seismic reflectors beneath eastern Aira Caldera and a further report on the reflectors beneath western Aira Caldera in addition to that of previous study presented on JpGU2016.

It is important to know structure in depth beneath Aira caldera in order to constrain present state of magma chamber of the caldera. Aira Caldera is a volcanic depression with size of 20 km in diameter, which locates on the north of Sakurajima Volcano. The caldera had ejected huge volume more than 400 cubic kilometers of pyroclastic deposit on 29 ka (Aramaki, 1984, Okuno 2002). Present Sakurajima Volcano which is still active have different source of magma supply from that of the caldera eruption (Tsukui and Aramaki, 1990). However, ground deformation which is associating with activity of Sakurajima Volcano represent correlation between Aira Caldera and Sakurajima Volcano (Omori, 1920; Eto et al., 1997; Yamamoto et al., 2013).

Interesting results through seismic array analysis was presented while seismic line analysis was presented in JpGU2016. Three arrays are available in Sakurajima and another array in northeast corner of Aira Caldera at the crossings of seismic lines. Numerous PP and PS reflections from depth of Aira Caldera are resolved among later arrivals in the basis of back-azimuth. Their range and depth are constrained through forward modelings. Their extensions are constrained from fan-shooting sections.

It is revealed that reflector structure in the eastern part is more complicated than that in the western part down to 20 km depth. More reflectors are detected in the eastern part of the caldera which locate beneath Wakamiko Caldera and northeastern-off Sakurajima. Prominent PS conversion comes from 14 km depth in the west part of Aira Caldera. The result provides some foundations to consider activity of the caldera.

Keywords: Aira Caldera, Controlled seismology, Seismic reflection, Crustal structure, Volcanic structure