

Depth distributions of magma chambers under old calderas revealed by melt inclusions, and their relation with geofluid activities: Examples from Shirasawa caldera, NE Japan

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Arc magma is one of the main sources of the aqueous fluids to the crust, and their distributions and volatile contents are important for understanding the dynamics of arc crust. Especially after 2011 Tohoku-oki earthquake, numerous earthquake swarms were observed under old calderas. Shirasawa caldera (7-8 Ma), is one of such old calderas, and is located ~15 km east from the present volcanic front. Under Shirasawa caldera, presence of geofluid and its activities are suggested by the seismic reflectors, low seismic anomaly, and earthquake swarms. In order to understand the petrological components of such fluid-rich area under old calderas, the depth distribution of the magmatic chamber, the volatile contents of the melt, and their fractionation processes were revealed through the analysis of melt inclusions. In this talk we will discuss the relations between the depth distributions of old magmatic chambers and geophysical observations, and show that the remnants of magmatic chamber act as fluid reservoirs.

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