

K-Ar age and distribution of volcanism in Arita-Sasebo-Kawatana district, Northwestern Kyushu, and Mishima, Yamaguchi.

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We have made K-Ar age dating of volcanic rocks in the following districts that are crucial to the understanding of volcano distribution in northwestern Kyushu and Chugoku, Southwestern Japan. We have collected samples from Arita-Sasebo-Kawatana district and Mishima Island, Yamaguchi, and conducted K-Ar and fission track dating.

We were able to distinguish several volcanoes in Arita-Sasebo-Kawatana district, where there were many previously undated volcanic units, many of which belong to basaltic volcano fields. The volcanoes we have clarified are late Miocene Jinrokusan volcano, 6.8-6.6Ma and 5.8-5.2Ma activities at southern Sasebo city-Hariojima, and 3-2.3Ma activities at Arita Rhyolite-Imari Andesite complex. The age of basalt and andesite around Kawatana and Kokuzosan agree within measurement error of 1 sigma at 2.2Ma. We have also measured basement rocks of Quaternary Taradake volcano and found different ages from different units. They were 2.9Ma rhyolite and 1.5Ma basalt at southern Ureshino, 1.0-0.7Ma basalt from Higashi-Sonogi, and 3.5Ma basalt from Hidake, Oomura City.

The volcanism has shifted from northwest to southeast in Northwestern Kyushu region since late Miocene, which was clarified by the compilation of the new age data and those of previous authors. Exceptions are Quaternary volcanoes in Iki and Goto Islands.

Basalt from 5Ma Hariojima volcano has lower Nb concentration at about 10ppm, and also has lower Nb/K, Nb/Zr ratio compared to other volcanoes in this study. Other volcanoes in the district have 15-40ppm of Nb. Such local difference in Nb suggests the existence of local difference of the H₂O content in the upper mantle beneath western Kyushu.

We have also collected basalts and andesites from Mishima, about 45km to the northwest of Hagi, Yamaguchi. The ages of most of the units consisting the island agree within measurement error at 11.5Ma. There are also 8.2Ma dikes at Hizaki in the eastern part of the island.

The results show that Mishima is one of the late Miocene volcano groups in western part of Chugoku. The distribution of volcanoes has largely changed in Chugoku. The volcanoes were aligned in north-south across-arc direction in western Chugoku during late Miocene, which is quite different from east-west along-arc alignment in eastern Chugoku during Pliocene-Quaternary.

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