

Major and trace element chemical composition of Daisen-Hiruzen volcano lava group, Southwest Japan

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We examined ages and geochemistry of lavas from Daisen-Hiruzen volcanoes over the entire activity range of about 1 million years. Porphyritic dacite is the major rock suite of the volcanoes with association of aphyric andesites, which occurred at about 1 Ma and 0.5 Ma. Both porphyritic dacite and aphyric andesite are adakitic based on Sr/Y versus Y discrimination plots. Some dacite lavas from Hiruzen volcano are exceptions, which plot on normal island arc dacite (IAD) field. Incompatible elements in the IAD increase with increase in SiO₂, whereas those in adakitic dacite and andesite decrease. The IAD chemical trend fits with normal fractional crystallization trend. In contrast, porphyritic and aphyric adakites have distinct mixing trends, perhaps produced by mixing between adakitic andesite magma and silicic crustal melts. Sr/Y of adakitic lavas changed with time suggesting that the mixing rate changed due to temporal changes in magma feeding systems.