Gigantic eruption history of the Kikai Caldera inferred from zircon U-Pb dating and elemental analysis

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The Kikai Caldera, situated ~50 km south of the Kyushu Island, experienced a gigantic eruption at ~7300 years ago (or 7.3 ka). In order to understand the next gigantic eruption it is now under an intensive investigation using a research vessel (Tatsumi et al., 2018), receiving a great deal of attention from researchers and the public. Meanwhile, we performed zircon U-Pb dating of three widespread tephras (Anbo, Ksd, K-Tz) from the Yakushima Island, ~30 km south of the Kikai Caldera, and found ~0.7 Ma and ~0.6 Ma zircons in the ~0.1 Ma K-Tz tephra of the Kikai Caldera origin. Therefore we speculated that the Kikai Caldera may have experienced at least 3 gigantic eruptions before the 7.3 ka eruption (Ito et al., 2017). In order to verify this hypothesis, we collected volcanic products from the Tanegashima Island and the Kikai Caldera (Satsuma-Iwojima and Takeshima Islands), and performed zircon U-Pb dating and elemental analysis of zircon and volcanic glass. So far, zircon U-Pb dating ascertained that the Ksd is also distributed in the Tanegashima Island and revealed that the age of the Akazaki lava in the Takeshima Island is ~0.2 Ma. Through these investigations, we propose a new history of gigantic eruptions in the Kikai Caldera.

Reference

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