

## The evolution of magma plumbing systems at Kirishima volcanoes in Ryukyu Arc

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Kirishima volcanoes, located on the Quaternary volcanic front of the Ryukyu Arc, are composed of both tholeiitic and calc-alkaline rocks. In this paper we discuss the relationships between the period of volcanic activity and petrochemical features, especially Sr isotopic compositions. Based on the geological and petrological features, Kirishima volcanoes are divided into two groups, frontal side volcanoes and back-arc side volcanoes. Frontal side volcanoes are composed of tholeiitic rocks from basaltic-andesite to andesite. Back-arc side volcanoes have narrow range of bulk chemical and Sr isotopic compositions. Tholeiitic rocks ( $^{87}\text{Sr}/^{86}\text{Sr}=0.7047\text{-}0.7070$ ) have the wider range Sr isotope compositions than Calc-alkaline andesite ( $^{87}\text{Sr}/^{86}\text{Sr}=0.7044\text{-}0.7054$ ). This implies that each rock is formed by distinct magma generations, and these two volcanic groups probably have the different magma plumbing systems. Back-arc side volcanoes have been continued to erupt since 1.5 Ma. Frontal side volcanoes have been started 10,000 years ago, they are younger volcano groups than Back-arc side volcanoes. So frontal side volcanoes express the initial stage of volcanics, and the process of Back-arc side volcanoes is corresponding to long-terms activity. The Sr isotopic diversity in tholeiitic rocks at frontal side are considered to be derived by assimilation-fractional crystallization (AFC) process in some small magma reservoirs. Assimilant is the wall rocks of the magma chamber. Back-arc side andesite are homogeneous magma forming by magma mixing between two magmas in large magma chamber. These two distinct processes are thought to change from the former to the later process with long volcanic activity. And this transition indicates the magma plumbing systems have been evolved by continuous magma activity under the volcanoes. In the lager magma chamber magma has not react with wall rocks, this process are inferred to derive the narrow isotopic compositions.