

斑晶鉍物の屈折率に基づく八ヶ岳新期テフラ群 川上テフラの給源火口推定

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Estimation of Source Craters of Kawakami Tephra of Yatsugatake Younger Tephra Beds, Using Refractive Index of Phenocryst Crystals

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Abstract

This study attempts to estimate the source craters of the Yatsugatake-Kawakami Tephra Bed (Yt-Kw), one of the Yatsugatake Younger Tephra Beds (Yt-Kw, Yt-Pm1, Yt-Pm2, Yt-Pm3, and Yt-Pm4, in ascending order), using the refractive indices of orthopyroxene and plagioclase phenocrysts, for the purpose of constructing an eruptive history of the Yatsugatake Volcanic Chain in central Japan. Previous studies have already clarified that the source of the youngest Yt-Pm4 bed is located around the summit of Yokodake, north of the Yatsugatake Volcanic Chain, whereas the craters of the four other tephra beds have not been identified. Therefore, this study tries to find a correlation between distal tephra and proximal deposits, such as welded tuffs, to estimate the sources of the Yatsugatake Younger Tephra Beds. In addition, the lavas distributed in the proximal area are analyzed to examine whether they have any common refractive indices according to the area.

Based on the results, the proximal deposits are classified into four groups: those from around Ioudake (group ①), from around Tengudake (group ②), from craters between Mugikusa Pass and Nakayama Pass (group ③), and others. These results suggest that the Yt-Kw bed erupted from around Ioudake, and the Yt-Pm1, Yt-Pm2, and Yt-Pm3 beds from around Tengudake. Furthermore, the Yt-Kw bed is estimated to correlate with the Ioudake welded tuff because both pyroclastic products contain olivine phenocryst, and the refractive indices of the orthopyroxene and plagioclase phenocrysts are similar. The distribution pattern of the Yt-Kw bed also supports this correlation. Based on the similarity of refractive indices of phenocrysts, Mikaburiyama welded tuff may correlate with one of Yt-Pm1-3. These tephra may erupt in the near ages of Tengudake lower lava, Tengudake middle lava, and Tengudake upper lava.

Key words : Yatsugatake Volcanic Chain, Yatsugatake-Kawakami Tephra Bed, correlation, refractive index, proximal products

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