

The Ashikuraji pyroclastic flow deposit: a newly found pumice flow deposit erupted during Stage 2 of Tateyama volcano

NOGAMI, Keiko^{1*}, ISHIZAKI, Yasuo¹, Teiichi Terashima²

¹Grad. School Sci. Eng., University of Toyama, ²Toyamaken Hitodukuri Foundation

Tateyama volcano in the Toyama Prefecture, central Japan, is a partly dissected stratovolcano, and its summit area is truncated by a ~5 km wide caldera. The volcanic history of Tateyama volcano has been divided into five stage (1a, 1b, 2, 3, and 4; Harayama et al., 2000). The stage 2 eruption (ca. 130-95 ka) formed voluminous pyroclastic flow deposits that have been collectively named the Shomyodaki pyroclastic flow deposits (SPFD; Nozawa et al., 1960; Yamasaki et al., 1966; Harayama et al., 2000). The juvenile pyroclasts of the SPFD are phenocryst-rich dacitic pumice and phenocryst-poor andesitic scoria with mingling and mixing textures. Our new major and trace element data on 29 juvenile pyroclast show that the juvenile pyroclasts from the distal part (500-1000 m a.s.l. of Ashikuraji area) and those from the proximal part (2200-2350 m a.s.l. of Murododaira area) of the SPFD form distinct dacite-andesite mixing lines. Dacitic pumices collected from the distal and proximal parts are similar in major and trace element composition but varying in phenocryst content and assemblage. The distal dacitic pumices have lower hydrous phenocryst (biotite + amphibole) contents and lack quartz phenocryst. In contrast, the proximal dacitic pumices have higher biotite, amorphibole, and quartz phenocryst contents. Major and trace element compositions of the andesitic scoriae collected from the distal and proximal parts are different from each other. The proximal scoriae can be distinguished from the distal scoriae by their higher FeO*, K₂O, V and lower Al₂O₃, Na₂O, P₂O₅, Zr concentrations. These petrological features suggest that the formerly defined SPFD consists of two distinct pyroclastic flow deposits of different whole-rock and modal compositions and ages, i.e., the Ashikuraji pyroclastic flow deposit (APFD: the lower part of the formerly defined SPFD; mainly pumice flow deposits) and the SPFD (the upper part of the formerly defined SPFD; mainly scoria flow deposits). The former is a newly found pyroclastic flow deposits, and was previously regarded the distal margins of the formerly defined SPFD (Nozawa et al., 1960). Two widespread tephra derived from Tateyama volcano, i.e., the pumice-rich Tateyama D tephra and the overlying scoria-rich Tateyama E tephra (Machida and Arai, 2003), may be correlated to the APFD and SPFD, respectively.

Keywords: Tateyama volcano, pyroclastic flow deposit