

## Color and grainsize of ash samples collected continuously at Sakurajima volcano, Japan

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Sakurajima volcano, Southwest Japan, is one of the most active volcano, and one of the leading volcano that are characterized by well-established geophysical observation network and enormous amount of data accumulation. Thus, the changes of magma plumbing system and the explosion processes at Sakurajima are now relatively well-understood for the time scale of years and of several hours, respectively (Iguchi et al., 2013). On the other hand, Sakurajima volcano has experienced several giant explosive eruptions every few hundred years, with some plinian eruptions and with erupted volume in the order of  $>10^8$  m<sup>3</sup>. However, we do not understand the mechanism of phase transition from the recent small eruptions to such bigger ones. Even though we now reached a certain level to recognize that our knowledge of “ vulcanian eruption ” was too simple relative to real one, the fundamental processes that lead to such eruption variety are not yet constrained well enough. As the variety of eruption styles occurs in a time scale of months to days, we have been focusing on the sample acquisition in this time range and collected daily ash samples for years.

We have been succeeded in collecting daily samples by automatic sampling system for more than five years at the site ca 2 km south of Showa crater, Sakurajima volcano (Shimano et al., 2013). We also analyzed matrix glass composition to track chemical evolution of the magma system, and found a shift of FeO\*/MgO in fall of 2009 before the waxing activity toward 2010. On the other hand, we have been searching for some real-time technique of petrological data for the comparison with geophysical data. The development of useful colorimeter and some results of heating experiments of ash resulted in understanding relationship between color of ash and condition of magma at depths (e.g., Yamanoi et al., 2008; Miyagi et al., 2013). So we have made time-series color measurements of ash samples for years. We found L\* value, degree of brightness, decreased broadly during waxing stage in 2009-2010 whereas a\* and b\* values increased broadly at first several months but decrease gradually. These changes can be explained by increase of black fresh lava block particles, increase at the first stage and gradual fluctuating changes of old red oxidized particles in ash sample. We also measured color change of some grain size group and compared with the color of bulk samples. The preliminary results show that the color differs with particle size as Miyagi et al. (2010) reported, but a correlation was found between the color values of bulk sample and those calculated from the weight fraction and each color values.

Keywords: volcanic ash, continuous observation, color change, Sakurajima volcano