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Repetitive sulfur dioxide flux measurements of Kuchinoerabujima volcano, Japan

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Kuchinoerabujima is a remote volcanic island located about 15 km NWW of Yakushima island, Japan. The volcano erupted from Shindake crater on Aug. 3, 2014, after dormancy of 34 years. Sulfur dioxide flux which was about 60 ton/day two month before the eruption had increased to several hundred ton/day after the eruption (JMA, Aug. 2014). The flux continued to increase and emitted 500 and 700 ton/day in Oct. and Nov. 2014, respectively (JMA, Nov. 2014).We started repetitive sulfur dioxide measurement at Kuchinoerabujima volcano in response to the ongoing rise of the flux.

In this study, we deployed a UV spectrometer system which has been automated for the most of measuring procedures, and carried out measurements onboard a regular liner between Yakushima and Kuchinoerabujima islands. The liner, Ferry Taiyo makes one round trip a day between the islands and navigate off the south coast of Kuchinoerabujima island. Due to predominant northerly wind from autumn to spring, we can expect repetitive sulfur dioxide traverse measurement on board the liner at least for the season above.

The measurements started in the end of Nov. 2014. Although, there have been some missing observations due to unfavorable wind direction, bad weather, liner cancellation and data transferring troubles, we made 26 days of flux measurements out of about 70 days by the beginning of Feb. 2015. The flux kept about 700 ton/day until the end of Nov. 2014, but it went over 1000 ton/day soon after the beginning of Dec. 2014 and has been in the high flux range of 1000 to 2500 ton/day for the most of the measurements at least until the first week of Feb. 2015. This flux range is comparable to that of Sakurajima volcano and of Aso volcano in active period, and implies significant magma degassing beneath Kuchinoerabujima volcano. In our presentation, we will show instrumentations and monitoring methods, and discuss the flux variations of Kuchinoerabujima volcano.

Keywords: Kuchinoerabu Volcano, sulfur dioxide, flux