

Repeated aeromagnetic surveys at Kuchi-erabu-jima volcano by using unmanned helicopter

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Kuchi-erabu-jima island is an active volcanic island in Kyushu, and some volcanic events happened in the last century. Very recently, a phreatic eruption occurred on Aug. 23rd 2014, and a phreatomagmatic explosion followed it on May 29th 2015. At the latter eruption, a pyroclastic flow attacked a village, and all the residents in the island have evacuated out of the island. The eruptive activity never happens after a tiny Vulcanian eruption on 18th June 2015.

We conducted repeated aeromagnetic surveys in April and September 2015 by using unmanned helicopter. The altitude of the flight was kept to about 100 m above the ground and geomagnetic total intensity data at an almost whole area above the volcanoes were obtained. A total measurement length of flight was about 60 km.

The first survey in April 2015 revealed that the average magnetization is so small as about 1.8 A/m, which is typical value for andesite. Also the crater areas show very low magnetization, while surrounding areas of the crater have relatively strong magnetization as much as 3 A/m. The second survey in September detected small changes of the geomagnetic field. It reveals that the demagnetization in the crater and the magnetization around the crater. It may indicate that the magmatic products erupted out of the crater and showed the demagnetized features, while some ashes and pyroclastic flow remain at the volcanic surface around the crater and got some magnetization.

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