

繰り返し空中磁気測量による三宅島雄山周辺の磁場変化の検出 Geomagnetic change detected by repeated aeromagnetic survey in Miyakejima, Japan

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Miyakejima is a volcanic island on the Izu-Bonin arc and the last eruption occurred in 2000 with the summit subsidence. A huge amount of gas emission as about ten thousand tons per day has continued for a few years after the eruption and is decreasing gradually. Now amount of gas emission is as small as about a couple of hundreds tons per day. Although the previous volcanic activity seems ceasing, there are LP events, volcanic tremors and a large amount of gas emission sometime in these days. Recent activity seems to gradually increase again and we need to prepare the next coming eruptive events.

We've carried out the aeromagnetic survey by using an UAV in the end of May 2014 and Nov. 2016 to detect the temporal changes of geomagnetic field. It took flights in the area inside "Hachimaki-rindo" except the crater, in which elevation is 300 m above the sea level and over. The flight height is almost kept as about 100 m above the ground and the measurement line interval is also about 100 m. Total distance of flight is about 130 km. By comparing the measurements of two surveys, they are very consistent as a whole but have some difference/changes.

The most significant change shows a characteristic pattern of which is positive in south and negative in north. It simply indicates that the magnetization occurs in volcanoes. Another explanation may be piezomagnetic effect due to increase of the pressure under the ground. Actually it is difficult to judge which mechanism is correct, but the latter mechanism looks more likely to be, according to other evidences of increase of recent volcanic activities.

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