

## 3D magnetic structure of Aso volcano

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On Aso volcano, to reveal the subsurface magnetic structure of the volcanic bodies, some aeromagnetic surveys were conducted in previously: on 2002 by Kyoto Univ, 2004 and 2005 by CRIEPI (Central Research Institute of Electric Power Industry), and 2013 by MLIT (Ministry of Land, Infrastructure, Transport and Tourism) and Nippon engineering consultants CO., LTD. On this study, we tried to analyze these previous data, and tried to obtain detailed subsurface 3D magnetic structure of Aso volcano.

To the IGRF residuals of the observed data, terrain effect correction and linear trend surface analysis were applied. Further, block mean of this data over each 50m x 50m x 50m region was calculated, and this result was used as the input data of the 3D magnetic inversion.

Using this data as an input, the magnetization intensity distribution inside the volcanic bodies was determined by L1-L2 norm regularized magnetic inversion. For this process, we divided the summit area of Aso volcano of about 10 x 10 km and the depth up to 2.5 km into 200 x 200 x 50 small blocks (where, the dimension of each block is 50m x 50m x 50m), and we determined the magnetization of each block. At this time, it was assumed that the magnetization was constant in each block, and the direction of magnetization was parallel to the current direction of the earth's magnetic field. In this presentation, detailed results of our magnetic inversion will be introduced.

On this research, we provided the magnetic data from CRIEPI (Central Research Institute of Electric Power Industry), MLIT (Ministry of Land, Infrastructure, Transport and Tourism), and Nippon engineering consultants CO., LTD, and received the permission for data use.

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