

Case studies on the piezomagnetic effect of non-uniform magnetic structure using two dimensional Mogi Model

ayako okubo[1], Naoto Oshiman[2]

[1] Earth and Planetary Sci, Kyoto Univ, [2] DPRI, Kyoto Univ.

Piezomagnetic effect is one possible cause of geomagnetic changes accompanied by tectonic activities such as earthquake occurrences and volcanic activities. Tectonomagnetic modeling based on piezomagnetic effect has been developed since Stacey (1964). In this study, in order to evaluate the piezomagnetic effect from non-uniform structure in volcano body, we calculated new models which are different from Oshiman (1990). At presentation we will show considerations for the results of our case studies.

Piezomagnetic effect is one possible cause of geomagnetic changes accompanied by tectonic activities such as earthquake occurrences and volcanic activities. Tectonomagnetic modeling based on piezomagnetic effect has been developed since Stacey (1964). So far, the seismomagnetic effect considering the inhomogeneity of magneto-elastic medium is estimated by Zlotnicki and Cornet (1986), Oshiman (1991), and Utsugi (1998). On the other hand, Oshiman (1990) showed the piezomagnetic effect from non-uniform models in volcanic body.

In this study, in order to evaluate the piezomagnetic effect from non-uniform structure in volcano body, we calculated new models which are different from Oshiman (1990). In results for these models, it turns out that the geomagnetic changes due to non-uniform models are considerably larger than those for a uniform model. This indicates that our interpretation is the same as the results of previous case studies.

At presentation we will show the other considerations for the results of our case studies.