

## The distribution of the internal geomagnetic field during a magnetic storm

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We calculated the Gauss coefficients of magnetic potential and estimated the current in the earth during a magnetic storm.

There are two kinds of magnetic storms. One is sudden. The other is synchronized to the sun's rotation period. How does the earth react to such a strong disturbance of external magnetic field?

We quantitatively estimated the induced current in the earth which had reacted to the large change of magnetic field like a strong magnetic storm, using a spherical harmonic expansion and a three dimensional forward calculation code. With a spherical harmonic expansion, we used geomagnetic data of the surface of the earth and calculated the internal and external geomagnetic field. With a three dimensional forward calculation code, we used the time variation of the external Gauss coefficients calculated by the spherical harmonic expansion and visualized and quantified the induced current in the earth during a magnetic storm.

We expect that we estimate the electric conductivity of the earth with the internal Gauss coefficient to the external Gauss coefficients ratio as a development of this study.

Keywords: induced current, magnetic storm