

PEM027-P09

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## Eigenfrequency of geomagnetic field line in a global MHD simulation

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Shear Alfvén waves propagating along the geomagnetic field line form standing waves along field line. The magnetic field intensity and the plasma mass density affect the velocity of shear Alfvén waves. Thus temporal and latitudinal variations in the field-line eigenfrequency are potentially caused by variations in the field-line length, the magnetic field intensity, and the mass density along the field line.

We estimated the eigenfrequency by numerically solving the standing Alfvén wave equation along the geomagnetic field in a global MHD simulation. The magnitude of diurnal variation in the eigenfrequency becomes larger according as the latitude increases. In low latitudes, the eigenfrequency agrees with that estimated with empirical magnetospheric model (TS04). However, in high latitudes, the rate of variability estimated in a global MHD simulation is larger than the empirically-based assessment.

In this study, we compared the diurnal variations in the eigenfrequencies observed at the vicinity of Syowa Station, Antarctica, and Dunedin, New Zealand with the estimated eigenfrequencies. We found that the global MHD simulation is adequate to reproduce variations in the eigenfrequency at dawn and dusk. The geomagnetic field lines started are extend toward the night sector.

These distorted field lines are not adequately reproduced by the empirical models.