

Hall conjugates current analysis for extraction of Cowling effect from ionospheric current system

Akimasa Yoshikawa[1]; Teiji Uozumi[2]; Masahiro Itonaga[3]; Kiyohumi Yumoto[4]

[1] Earth and Planetary Sci., Kyushu Univ.; [2] SERC; [3] Edu., Yamaguchi Univ.; [4] Space Environ. Res. Center, Kyushu Univ.

A new method for extraction of Cowling effect from the ionospheric current system, so-called 'Hall conjugate current analysis' is developed. The Hall conjugate current is a virtual current system of which Hall effect direction is defined in the opposite for real current system. Once, we construct this virtual current system with same boundary condition for real current system, we can extract the Cowling current by the summation of real and virtual current system and the Cowling-channel current from the subtraction between real and virtual current system. Detailed formulation and their application for realistic current system will be discussed in our presentation.