

Formation of Cowling channel in the global ionosphere and their description method

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Formation of Cowling current system is a fundamental response of Earth's ionosphere, where there existence of Hall current divergence.

In this study we will show that Cowling effect is not a special effect in the auroral and equatorial electrojet regions, but universal mechanism not only qualitative but also quantitatively important, which is involving in the Sq-current system, connection current system between polar and equatorial ionosphere, thermospheric wind-driven flywheel effect and ionospheric induction effect. Description method of such universal Cowling current system will be also discussed.