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R1 電流系と結合した赤道ジェット電流の電流保存について
Current conservation of Equatorial Electrojet coupling to R1 current system

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Possible mechanism for current closure from polar to equatorial ionosphere via global Cowling channel is discussed. In our model, a global (primary) Hall current accompanied by two-cell type ionospheric convection induces polarization chargee at the conductivity gradient region of dawn-dusk conductivity terminator and magnetic dip-equator. The secondary electric field accompanied by this induced charge generates the secondary Hall current flows along the dawn-side terminator line to the magnetic dip-equator. Resultantly, the global Cowling channel from polar to equatorial ionosphere via the terminator-line and magnetic-dip equator could be formed. Our model shows that growing of equatorial electrojet (EEJ) is due to the converging Hall current from polar region to the dawn side dip-equator and decaying of EEJ is due to the diverging Pedersen current from dusk-side dip-equator to the polar region. This mechanism can be applied to the EEJ disturbances accompanied by the solar wind variations such as DP2-type magnetic field disturbances and many phenomena associate the equatorial enhancement and/or depression of the geomagnetic field disturbances.

キーワード: 赤道ジェット電流, 沿磁力線電流, 磁気圏電離圏結合
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