

Role of polarization electric field generated by Hall current divergence in the magnetosphere-ionosphere coupled system

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Role of generation mechanism of ionospheric polarization electric field in the magnetosphere-ionosphere coupled system is reconsidered. Polarization electric field generated by the Hall current divergence causes secondary twist of divergent electric field, which may be very important for spatiotemporal development of ionospheric vortex motion such as auroral structure. Solar wind, Region-1 and Equatorial electrojet electromagnetically coupled system through the Cowling current channel is also as a result of secondary polarization electric field generated by the Hall current divergence at the sun-rise and sun-set lines.