A Case Study of on a Numerically Simulated Ionospheric Convection with a Global MHD Simulation

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A case study was conducted for simulated processes of magnetosphere-ionosphere (M-I) coupling process using a magnetohydrodynamic (MHD) simulation code developed by Tanaka (2010).
We combined the MHD simulation and solar wind parameters derived from the ACE satellite, and compared the ionospheric **E** x **B** plasma drift obtained from the global MHD simulation and that obtained from the SuperDARN HF Radar Network.
The simulated plasma drift was not always reproducible under a southward interplanetary magnetic field (IMF) condition. We believe that the M-I boundary conditions in the global MHD simulation includes insufficient factors for the M-I coupling process.

References

Tanaka T , A. Nakamizo, A. Yoshikawa, S. Fujita, H. Shinagawa, H. Shimazu, T. Kikuchi, and K. Hashimoto, Substorm convection and current system deduced from the global simulation, J. of Geophys. Res., vol. 115 A05220, 2010.