

## The magnetosphere-ionosphere compound system in the extremely weak IMF condition

# Shigeru Fujita[1]; Takashi Tanaka[2]

[1] Meteorological College; [2] Kyushu University

For the space weather forecast, we need to understand the fundamental process for the global magnetosphere-ionosphere system. Therefore, it is essential to comprehend global phenomena in the magnetosphere in terms of the magnetosphere-ionosphere compound system [Tanaka, 2003]. In the compound system, the Maxwell stress invoked by the reconnection between the solar wind magnetic field and the magnetospheric one drives the magnetospheric plasma convection. This magnetospheric convection is connected with the ionospheric convection. Furthermore, the ionospheric convection is related to the ionospheric electric current driven by the magnetospheric FAC. Bearing in mind that the magnetospheric current is driven by energy converted from the thermal energy, the global self-consistency among the magnetospheric convection, the ionospheric convection, the ionospheric current, the magnetospheric current, and the magnetospheric pressure distribution holds in the magnetosphere-ionosphere compound system.

The configuration of the magnetosphere-ionosphere compound system is controlled by the solar wind. It is instructive to investigate systematically how the configuration is controlled by the solar wind condition. In particular, it is interesting to consider the compound system for quite small IMF intensity. In this case, there is no reconnection between the solar wind magnetic field and the magnetospheric one. Thus, no Maxwell stress drives the magnetospheric convection. However, our simulation manifests that the magnetosphere-ionosphere convection appears in a long magnetotail even in this condition. This convection is driven by viscous interaction in the magnetopause region [Axford and Hines, 1961] although the magnetosphere has a long magnetotail. From our simulation, we found that the convection in the magnetosphere-ionosphere system resembles to that for the southward IMF case. In the talk, detailed pictures of the convection in the magnetosphere-ionosphere system will be presented along with the magnetospheric current systems and plasma regimes in terms of the compound magnetosphere-ionosphere system.