太陽風動圧による magnetopause の大きさの変化と電離圏対流

村田 洋三 [1]; 田口 聡 [2]; 細川 敬祐 [2]; 西沢 諒 [2]; Collier Michael R.[3]; Moore Thomas E.[3]; 佐藤 夏雄 [4]; 山岸 久雄 [4]; 行松 彰 [5]
[1] 電通大, 菅平宇宙電波観測所; [2] 電通大・情報通信; [3] NASA ゴダードスペースフライトセンター; [4] 極地研; [5] 極地研宙空圏（併 総研大極域科学）

Dynamic pressure driven change of the magnetopause size and its effect to the ionospheric convection

Yozo Murata[1]; Satoshi Taguchi[2]; Keisuke Hosokawa[2]; Ryo Nishizawa[2]; Michael R. Collier[3]; Thomas E. Moore[3]; Natsuo Sato[4]; Hisao Yamagishi[4]; Akira Sessai Yukimatu[5]
[1] Sugadaira Space Radio Observatory
Univ. of Electro-Communications; [2] Univ. of Electro-Communications; [3] NASA GSFC; [4] NIPR; [5] NIPR (SOKENDAI, Polar Science)

Compression of the dayside magnetopause is well known to be a source of transient convection in the high-latitude ionosphere, such as traveling convection vortices, and SC-related vortices. In addition to these transient effects, the enhancement of the solar wind dynamic pressure has been also suggested to be an important source of the increase of the cross-polar-cap potential, which has a much longer time scale than the transient convection. Although the reduction of the magnetopause appears to be related to the increase of the cross-polar-cap potential, there has been little evidence. Recent remote sensing studies with the low energy neutral atom (LENA) imager on the IMAGE spacecraft have shown that the motion of the subsolar magnetopause can be estimated. We use LENA data to understand the effect of the motion of the magnetopause to the convection in the high-latitude ionosphere. Among LENA sheath emission events, we found one event (March 31, 2001) during which negative IMF Bz is very steady (-40 nT), and clear enhancements of the dynamic pressure (from 10 nPa up to 15 nPa) happen. During this interval the LENA emission shows significant change of the subsolar distance. Coincidentally, SuperDARN radar measured strong backscattered signals from the prenoon ionosphere, showing that an anti-clockwised vortex exists. The variation of the estimated subsolar distance will be shown, and from the comparison between this variation and the temporal variation of the convection in the ionosphere, the effect of the pressure-driven magnetopause change to the convection in the ionosphere will be presented.