Feasibility of EUV data assimilation for the modeling of the plasmasphere

Shin'ya Nakano[1]; Mei-Ching Fok[2]; Pontus Brandt[3]; Tomoyuki Higuchi[4]
[1] ISM; [2] NASA GSFC; [3] JHU/APL; [4] Inst. Stat. Math.

The structure of the plasmasphere is strongly controlled by the electric field imposed on the magnetosphere. It is thus important to know the spatial structure of the electric potential in the inner magnetosphere in modeling the plasmasphere. We are now engaged in the development of a data assimilation technique for providing estimates of the spatial structures of the plasmasphere and electric potential simultaneously. The estimation is performed by incorporating remote imaging data of extreme ultra-violet (EUV) from the IMAGE satellite into a simulation model of the plasmasphere. We have conducted data assimilation experiments using artificial EUV data sets to evaluate the EUV data assimilation approach. The experimental result suggests that the data assimilation of the EUV imaging data provides useful information for understanding the temporal and spatial variations of the plasmasphere.