



Vortex, ULF wave and aurora observation induced by Solar Wind Dynamic Pressure Change

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Here we will summarize our recent study and show some new results on the Magnetosphere and Ionosphere Response to Dynamic Pressure Change/disturbances in the Solar Wind and foreshock regions. We study the step function type solar wind dynamic pressure change (increase/decrease) interaction with the magnetosphere using THEMIS satellites at both dayside and nightside in different geocentric distances. Vortices generated by the dynamic pressure change passing along the magnetopause are found and compared with model predictions. ULF waves and vortices are excited in the dayside and nightside plasma sheet when dynamic pressure change hit the magnetotail. The related ionospheric responses, such as aurora and TCVs, are also investigated. We compare Global MHD simulations with the observations. We will also show some new results that dayside magnetospheric FLRs might be caused by foreshock structures.