The impact of FORMOSAT-7/COSMIC-2 in-situ plasma drift observations on the space weather forecasting system

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FORMOSAT-7/COSMIC-2 mission provides the in-situ ionospheric observations, such as the plasma density and the plasma drift velocity around 550 km altitude, which are very important for the accuracy of ionospheric forecasting. The model boundary condition is a bit issue for the current ionospheric data assimilation model. Although the model forecast results can be well modified by assimilating the ionospheric observations, the accuracy of forecasting get worse at the higher altitude region due to the fixed boundary condition in the model. In this study, we use the DART/TIEGCM model which is an ionospheric forecasting system. We try to modify the upper boundary of TIEGCM and further getting the better forecasting results by assimilating the in-situ FORMOSAT-7/COSMIC-2 ionospheric observations and further evaluate its improvement by employing the method of Observation System Simulation Experiment (OSSE).

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