COSMIC 2 Observation of Topside Ionosphere and Plasmasphere During A Substorm Event

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The recently launched US-Taiwan joint COSMIC 2 mission offers an opportunity to view the topside the ionosphere at more local times in the equatorial region. Past observations of plasmasphere and topside ionosphere TEC are mostly from sun-synchronous satellites with fixed local times, which limited their coverages. In the early stage of the COSMIC 2 mission, satellites are at 750 km altitude with low inclination orbital angles (~ 24 deg). The mission was able to capture a substorm event and made plasmasphere observations. We observed a decrease of topside TEC, which is likely a result of plasmaspheric density depletion associated with the substorm. We will compare COSMIC 2 observed TEC to plasmapause model simulations. The model can simulate how the plasmaspheric depletion is related to the high Kp index. We will examine how the simulated Kp dependence at different local times compared to the COSMIC 2 observations. At the same time, we will show, how the ionospheric density profiles vary during the substorm

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