Low-Latitude Electron Density Profiles Observed by COSMIC Compared with *in situ* Ion Densities Measured by CNOFS

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Knowledge of electron density height profiles (EDPs) is critical for accurately tracing the propagation of RF signals through the topside ionosphere. The Constellation Observing System for Meteorology, Ionosphere and Climate (COSMIC) satellites was designed to provide this information during Global Position Satellites (GPS) radio occultation events. However, due to the reliance of COSMIC data reduction techniques on Abel transformations questions persist about the accuracy of its EDP products. The Communications/Navigation Outage Forecast Satellite (C/NOFS) in low-inclination orbit offers new opportunities for empirical testing of COSMIC EDPs over the altitude range 400 to 800 km. We report here on the results of a feasibility study that covered the two-day period including the moderate magnetic storm of 24-25 October 2011 in which minimum Dst reached -137 nT. We identified universal times when C/NOFS passed within a $6° \times 10°$ rectangle centered on the latitude and longitude of the tangent line of a COSMIC EDP. We also compared COSMIC EDPs with those predicted by a number of well used models. Our analysis shows that during a very large fraction of the available events, ion densities measured by C/NOFS were in close agreement with those found in COSMIC EDPs at the same altitude. We discuss COSMIC/CNOFS discrepancies as well as EDP differences observed under pre-disturbance quiet conditions with those acquired during the storm's main/recovery phases.