GOLD 135.6 nm Radiance versus FORMOSAT-7/COSMIC-2 radio occultation N_mF_2

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Abstract

The NASA Global-scale Observations of the Limb and Disk (GOLD) mission is a measurement opportunity to the Earth's thermosphere and ionosphere since October 2018. The instrument scans the far ultraviolet airglow at ~134–162 nm over the American hemisphere. With six low-earth-orbit satellites, the FORMOSAT-7/COSMIC-2 (F7/C2) satellite mission can provide thousands of daily radio occultation (RO) soundings in the low- and mid-latitude regions since July 2019. In the nighttime, OI 135.6 nm emission is mainly through the radiative recombination process, and the intensity of radiance is related to the square of the electron density. In the study, we compare nighttime OI 135.6 nm intensity observed by GOLD with F2 peak electron density (N_mF_2) determined from F7/C2 RO sounding to find their correlation and conversion factor.