

Comparison of NmF2 and hmF2 retrieved from FORMOSA-3/COSMIC data and observed from ground-based Ionosondes

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Abstract

We develop a data analysis algorithm for the purpose of screening good ionospheric data from raw data set. After processing the data quality screening procedure, we compare the FORMOSAT-3/COSMIC-retrieved maximum electron density (NmF2) and its height (hmF2) obtained from the height variation of the electron density profile with the ionosonde-measured NmF2 and hmF2 for the period from 1st July 2006 to 31st December 2006. We find that, in average, the monthly mean values of hmF2 and NmF2 for COSMIC data are both lower than those for ionosonde data by 5-20% and 0-5%, respectively. In addition, the differences of NmF2 and hmF2 between COSMIC and ionosonde data are more salient during summer season and nighttime than those in winter season and daytime. The fluctuation behavior of the electron density profiles is also analyzed. It appears that the degree of the fluctuations in COSMIC-retrieved electron density profile is larger in high latitude region than that in low and equatorial region. A plausible explanation is proposed in this report.