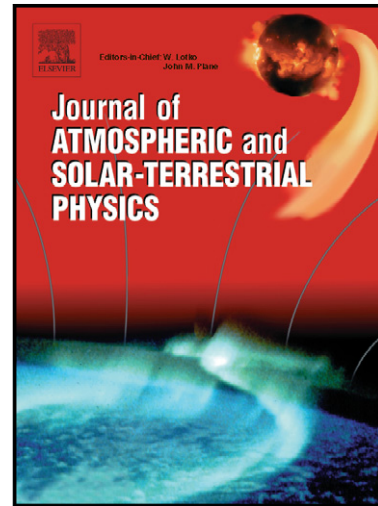


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Height-integrated Pedersen conductivity in both E and F regions from COSMIC observations

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Abstract

Altitudinal distribution of Joule heating is very important to the thermosphere and ionosphere, which is roughly proportional to the Pedersen conductance at high latitudes. Based on the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) satellites observations from 2008 to 2011, the height-integrated Pedersen conductivities in both E (100-150 km) and F (150-600 km) regions and their ratio $\gamma_P (\sum_{PE} / \sum_{PF})$ have been calculated. The result shows that the maximum ratio in the northern summer hemisphere is ~ 5.5 , which is smaller than that from the Thermosphere-Ionosphere-Electrodynamics General Circulation Model (TIE-GCM v1.94) simulation (~ 9). This indicates that the energy inputs into the F region may be underestimated in the model. The seasonal variations of the ratio have been investigated for both hemispheres, and an inter-hemispheric asymmetry has been identified. The variational trend of the ratio is similar in both hemispheres, which reaches minimum at local summer and max-

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