

CHAMP 衛星による低緯度、赤道域の中性大気密度とプラズマ密度の相互関連

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Interrelation of thermospheric and plasma density in low-latitude and equatorial regions obtained from CHAMP

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The CHAMP satellite observes thermospheric density, ion density, geomagnetic field and so on around 400km altitude. In previous research, we constructed an empirical model for reproducing global thermospheric density by using the CHAMP data.

In this paper, we focus on the relations of distribution of the thermospheric density with plasma density at fixed-local-time on dayside.

From the comparisons of thermospheric density obtained from our model and the ion density from the CHAMP data, we found that both neutral and plasma density have similar longitudinal dependence and that both are close [in phase] especially in geomagnetic equator region.

On the other hand, England(2006) showed longitudinal dependence of equatorial electrojet four wave number on dayside. The relation of the geographical longitudinal structure between our result in the F region density and intensity of EEJ is nearly reverse that of England. That suggests the possibility of relation between neutral wind in the E region and density in the F region.

Moreover we confirm both density have some characteristics similar in seasonal variations.