

## CHAMP衛星による高緯度領域における熱圏大気密度の調査

# 平野 隆 [1]; 渡部 重十 [2]; Liu Huixin[2]; 湯元 清文 [3]  
[1] 九大・理・地球惑星; [2] 北大・理・地球惑星; [3] 九大・宙空環境研究センター

### Investigations of the thermospheric mass density variations in high latitude regions with the CHAMP

# Takashi Hirano[1]; Shigeto Watanabe[2]; Huixin Liu[2]; Kiyohumi Yumoto[3]  
[1] Dept. of Earth and Planetary Sci, Kyushu Univ; [2] Earth and Planetary Sci., Hokkaido Univ; [3] Space Environ. Res. Center, Kyushu Univ.

In the thermosphere at about 400km altitude, the global structure of neutral mass density is dependent on the geomagnetic field. The CHAMP satellite showed the structure of mass density at about 400km altitude [H.Liu et al, 2005]. The structure was likely to be along the magnetic equator.

Though the structure of mass density has been reported by degrees, the formation of mass density structure is not yet clarified sufficiently. A resolution of this problem is very important for understanding the thermosphere-ionosphere coupling.

Up until now, we have constructed new empirical models for the regions from low to middle latitude by using the mass density data from the CHAMP satellite. But a model at high latitude is not yet constructed sufficiently. Reproduction of the mass density in the high latitude region is essential to extend the previous models to global versions.

For reproduction of the mass density in the high latitude region, we need to know more features of the mass density variations. The dependence of the mass density variations in the high latitude region on IMF(interplanetary Magnetic Field), geomagnetic coordinate, magnetic local time, and so on is partly different from that in the regions from low to middle latitude. For example, it is well known that IMF effects the distribution of mass density at high latitude. Moreover, cusp, plasma convection and field-aligned current are believed as controlling factors of the mass density variations.

In the present paper, we will investigate characteristic of the mass density variations at high latitudes, obtained from the CHAMP data.