

Research about the thermospheric structure and variations by comparing the simultaneous data of GOCE and CHAMP

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We examined zonal wind and thermospheric density by using GOCE and CHAMP. GOCE

flighted about 260km, and CHAMP did about 300km. Therefore, comparing those two data will lead to finding the thermosphere structure and variations.

We analyzed zonal wind and thermospheric density for latitude and longitude distributions in 2010/1,5,6. The result shows that zonal wind and thermospheric density are the same latitude distributions on both GOCE and CHAMP in the case of taking the longitude average. We further examined zonal wind's latitude distributions by taking the longitude average. For GOCE, wind direction is same with all latitude. (For example,

If wind direction in 30° north latitude is eastward, all wind direction is eastward.) On the other hand, for CHAMP, wind direction has changed from eastward wind to westward wind. (For instance, in 2010/5 on dusk side, wind direction is eastward south of 10° north latitude, and north of it wind directed westward.) Moreover, we see the daily variations of zonal wind. The zonal wind has been divided into three categories, which are 30° north latitude, equator, and 30° south latitude. There are large variations on some day. The day is similar to the date of SSW. We are analyzing zonal wind and density, and we are highly motivated to find the thermospheric structure and variations.

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