



## **Is the ionospheric plasma convection causing GOCE's anomalies at the geomagnetic poles?**

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In the gradients  $V_{yy}$  of the GOCE gravity field mission signals were observed in the region of the poles, which do not exhibit gravity field signatures and therefore suggest distinct systematic errors. In this connection also correlations with the cross track common mode are visible, whereby an insufficient calibration of the gradiometer is generally assumed. In the present thesis a correlation between the cross track common mode and  $V_{yy}$  is highlighted in more detail and the effect by natural low frequency signals in the ionosphere is discussed as another possible reason for the accelerometer deflections. Relating to the cross track accelerations thermospheric winds are the only discussed reason.

As a result, it is clear that the distinct signal peaks particularly reveal correlations with the geomagnetic activity, as well as seasonal dependencies. In addition, it can be determined that these signal peaks occur exclusively in the area of polar latitudes and show connections with the areas of polar caps and aurora ovals. The behaviour of the signal peaks further exhibits a distinct influence by the  $B_y$  component of the interplanetary magnetic field.

Distinct correlations of the cross track common mode reveal with the ionospheric plasma convection. Regarding the  $yy$  gradients it is determined that aspects correlate with the common mode, but the common mode can not explain the full signal.