



## **A climatology of field-aligned currents related to equatorial plasma depletions derived from Swarm measurements**

Juan Rodriguez-Zuluaga (1,2), Claudia Stolle (1,2), and Jorge Chau (3)

(1) GFZ German Research Centre for Geosciences, Germany, (2) University of Potsdam, Germany, (3) IAP Leibniz-Institute for Atmospheric Physics, Germany

The direction of field-aligned currents (FAC) flowing at the edges of equatorial plasma depletions (EPD) is derived using electron density and magnetic field data from the Swarm mission. Contrary to expectations, the FAC turn out to be interhemispheric rather than flowing away from and towards the dip equator as the theoretical consideration suggested. Four years of Swarm measurements have also revealed an apparent seasonal, longitudinal and local time variation in the FAC orientation. These observations are suggested to be due to the hemispherical asymmetry of ionospheric conductivity driven mainly by the seasonal variability of thermospheric neutral winds and the longitudinal variability of the geomagnetic field strength, e.g. the presence of the South Atlantic Anomaly.