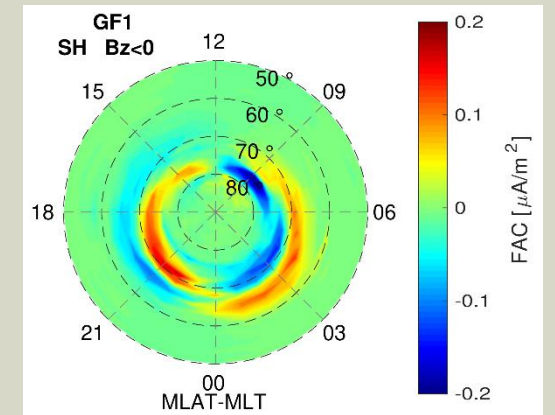


The geomagnetic field builds a shield around Earth that protects our atmosphere from severe intrusion of solar particles. The Earth's magnetic field emerges from sources in the Earth's interior and in near Earth space, the latter resulting from the solar-terrestrial interaction. Global coverage of magnetic observations is provided by low Earth orbiting satellites (LEO), such as by ESA's Swarm mission. With other parameters they provide a comprehensive picture of the ionosphere, the ionized part of the upper atmosphere between 80-1000km. The ionosphere does not only host strong electric currents that rapidly change, it displays atmospheric waves that couple from below, and it is subject to plasma irregularities that give rise to radio wave disturbances. Understanding the near-Earth environment is therefore of increasing importance to our modern society. Results from recent and new magnetic and ionospheric observations from LEO missions like Swarm and GRACE-FO will be discussed.



Auroral field-aligned currents from GRACE-FO

Exploring the ionosphere and the near-Earth magnetic field by multi-satellite missions

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