



Observations of ionospheric currents at Titan

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Titan presents a dense atmosphere, which is ionised by solar EUV radiation and particle ionisation, e.g. impacting electrons and ions from the co-rotating magnetosphere of Saturn. In addition, ion transport from dayside to nightside is believed to play a role in the formation of the ionosphere. Until now Cassini has performed close to 70 flybys of Titan, showing that the ionosphere of the moon exhibits a highly complex structure that varies with external conditions, such as solar illumination and variations in Saturn's magnetosphere.

In this study we combine Langmuir probe (LP), magnetometer (MAG) and electron spectrometer (ELS) measurements in order to map the cold plasma properties, such as magnetic fields and electron number density, below the induced magnetospheric boundary of Titan. By calculating the curl of the magnetic field we have inferred currents in the deep ionosphere of the moon. Furthermore, we have used conductivities calculated by Rosenqvist et al. (2009), to estimate the direction and magnitude of the currents and the associated electric fields. In this talk, we give a first view of how the currents in the ionosphere of Titan are flowing.