

## **Investigation of ion distributions in the plasma mantle of Titan**

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In this work we present the results of a survey of the Titanian plasma mantle, which is a transition region between the magnetospheric ion populations of Saturn, and the particles of atmospheric/ionospheric origin from Titan.

This plasma region is situated directly above the ionosphere, and is characterised by a jump in density calculated from the data of the Electron Spectrometer sensor of the Cassini Plasma Spectrometer (CAPS) and the measurements from the Langmuir Probe. In the mantle the plasma energy drops below a few tens of eV, and according to the Time-Of-Flight data of CAPS the dominant ions are of the water group range, in the mass range of 24-40 amu. After crossing the mantle boundary, the distribution function of these ions indicate, that the population is gyrating around B and is accelerated parallel to B in the reference frame of Titan. Farther away from the boundary, in the tail region we observed different ion distributions.