



Observations of a structured ionospheric outflow plume at Titan

Niklas Edberg (1), Karin Ågren (1), Jan-Erik Wahlund (1), Michiko Morooka (1), David Andrews (2), Stan Cowley (2), Anne Wellbrock (3), Andrew Coates (3), Cesar Bertucci (4), and Michele Dougherty (5)

(1) Swedish Institute of Space Physics - Uppsala, Uppsala, Sweden (ne@irfu.se), (2) Department of Physics & Astronomy, University of Leicester, UK, (3) Mullard Space Science Laboratory, University College London, UK, (4) Institute for Astronomy and Space Physics, Ciudad Universitaria, Buenos-Aires, Argentina, (5) Space and Atmospheric Physics Group, The Blackett Laboratory, Imperial College London, UK

Recent results obtained from measurements by the Cassini Radio and Plasma Wave Science/Langmuir probe (RPWS/LP), magnetometer (MAG) and electron sensor (ELS) instruments are presented. We study the structured outflow of ionospheric plasma from the induced magnetosphere of Titan. During the final three of the five consecutive and similar Cassini Titan flybys T55 - T59 we observe a region characterized by high electron densities (1-10 cm⁻³) in the tail/night side of Titan. This region is observed progressively farther downtail from pass to pass and is interpreted as a plume of ionospheric plasma escaping Titan, which appears steady in both location and time. It extends to 6 Titan radii downstream of the moon. Magnetic field measurements indicate the presence of a current sheet at the inner edge of this region. We discuss the mechanism behind this outflow, and suggest that ambipolar diffusion, magnetic moment pumping or dispersive Alfvén waves could cause it.