



Cometary Plasma Probed by Rosetta

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In Fall 2014, comet 67P/Churyumov-Gerasimenko, the main target of the Rosetta mission, was at 3 AU from the Sun. Its outgassing rate was only of the order of $5 \times 10^{25} \text{ s}^{-1}$ based on Rosetta Orbiter Spectrometer for Ion and Neutral Analysis (ROSINA) / Cometary Pressure Sensor (COPS). Despite such a thin coma, a plasma of cometary origin has been detected by Rosetta Plasma Consortium (RPC) sensors and ROSINA/ Double Focusing Mass Spectrometer (DFMS). Close to the comet they have revealed the presence of a cometary ionosphere, with a hot electron population, consistent with the deposition of Extreme UltraViolet (EUV) solar radiation. We will present a comparison between RPC sensors and an energy deposition model in terms of suprathermal electron intensities [RPC/ Ion and Electron Sensor (IES)] and electron temperature and density [RPC/ Langmuir Probe (LAP) and RPC/ Mutual Impedance Probe (MIP)]. We will also compare ion composition among the main species, between our ionospheric model and ROSINA/DFMS. We will discuss effects of the space environment on the cometary plasma. Finally, we will highlight any evolution in the cometary plasma as the comet is getting closer to perihelion.