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Preliminary Inventory of the Coma at 67P/Churyumov-Gerasimenko and its Time Evolution

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Since the encounter on August 6, 2014 the European Space Agency's Rosetta mission is accompanying comet 67P/Churyumov-Gerasimenko on the way to its perihelion and beyond. On board of the Rosetta spacecraft is the ROSINA (Rosetta Orbiter Spectrometer for Ion and Neutral Analysis) experiment. ROSINA consists of a pressure sensor and two complementary mass spectrometers. One is the Double Focusing Mass Spectrometer (DFMS), which has high dynamic range and a mass resolution $m/\Delta m = 3000$ at 1% peak height (HWHM 9000) at mass 28 u/q. It is therefore well suited to detect minor species in the lower mass/charge range up to mass 140 u/q [1]. Since the encounter ROSINA-DFMS has acquired numerous high-resolution spectra within cometary distances ranging from a few 100 km (Comet Approach Phase) to 10 km in October 2014 (Comet Mapping Phase). A range of latitudes and longitudes of the sub-spacecraft point have been sampled and analysed to derive a complete picture of the coma.

Besides a brief introduction in the functional principle of DFMS we will have a preliminary discussion of the volatile inventory in the coma, its time evolution, and heterogeneity.