

One year at 67P: evolution of the coma composition measured by ROSINA

K. Altwegg and the ROSINA Team
Institute of Physics, University of Bern, Switzerland, (Altwegg@space.unibe.ch)

Abstract

Since August 2014, when Rosetta arrived in the vicinity of 67P/C-G the Rosetta Orbiter Spectrometer for Ion and Neutral Analysis (ROSINA) instrument [1] is monitoring the volatile composition in the coma. While the coma had already a very rich chemical inventory at 3.5 AU from the Sun, it was also recognized that the coma composition is heterogeneous [2]. In this paper we report on the evolution of the coma composition from 3.5 AU up to perihelion. Up to May 2015 the northern part of the comet was the summer hemisphere getting most of the illumination. Water was by far the dominant species. The southern hemisphere, which was poorly illuminated at that time, showed a lot of very volatile species like e.g. CO, CO₂, and C₂H₆. This changed during May. Since end of May the southern hemisphere is experiencing the highest solar input on the comet. We will discuss compositional differences in the coma attributed to this change.

References

- [1] Balsiger, H., K. Altwegg, P. Bochsler, P. Eberhardt, J. Fischer, S. Graf, A. Jäckel et al. "Rosina–Rosetta orbiter spectrometer for ion and neutral analysis." *Space Science Reviews* 128, no. 1-4 (2007): 745-801.
- [2] Hässig, M., K. Altwegg, H. Balsiger, A. Bar-Nun, J. J. Berthelier, A. Bieler, P. Bochsler et al. "Time variability and heterogeneity in the coma of 67P/Churyumov-Gerasimenko." *Science* 347, no. 6220 (2015): aaa0276.