67P/Churyumov-Gerasimenko: the dust environment as seen through OSIRIS onboard Rosetta

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The ESA's Rosetta spacecraft had the unique opportunity to be in the vicinity of comet 67P/Churyumov-Gerasimenko for 2.5 years, observing how the comet evolved while approaching the Sun, passing through perihelion and then moving back into the outer solar system. OSIRIS, the Optical, Spectroscopic, and Infrared Remote Imaging System (Keller et al. 2007), was the scientific camera system onboard Rosetta. Composed of two cameras (the Wide Angle Camera (WAC) and the Narrow Ange Camera (NAC)), it imaged the nucleus and the comet dust environment from March 2014 to September 2016, while 67P/Churuymov-Gerasimenko moved from 4.1 AU inbound to 3.8 AU outbound. WAC images, thanks to the field of view of about $12° \times 12°$are the most suited to study the unresolved dust coma, investigating its diurnal and seasonal variations and providing insights into the dust composition. Comparison with ground based observations will help us to understand whether the dust coma has similar behaviors at the small scales observed by OSIRIS and at the large scales observed from ground. Hundreds of individual particles have been identified in the images dedicated to dust studies. Those particles have been characterized in terms of color, size distribution, distance, light curves and orbits (see e.g. Agarwal et al. 2016; Bertini et al. submitted; Frattin et al. submitted; Fulle et al. 2015,2016; Güttler et al. submitted; Ott, Drolshagen et al. submitted). Understanding these particles helps us to understand the condition at comet formation.