



Surface thermal properties of 67/P inferred by VIRTIS/Rosetta

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Since August 2014, the VIRTIS [1] imaging spectrometer onboard the Rosetta ESA spacecraft has intensively observed both the nucleus and the coma environment of the comet 67P/Churyumov-Gerasimenko, in the 0.25-5 microns wavelength range. Nucleus observations are performed with both channels: VIRTIS-M for spectral mapping and VIRTIS-H for high spectral resolution [2]. Each spectrum contained both reflected solar light and thermal emission of the surface itself. From the long wavelength range (typically 4-5 microns), we can derive the effective surface temperatures on the dayside at a variety of locations (latitude, longitude) on the surface under diverse conditions of illumination, local times and emission angles [3]. This allows us to infer local thermal properties of the first millimeters of the regolith. Interestingly, the very irregular shape of 67P results in unusual patterns in the heating / cooling regime of the object (e.g. sudden transitions from day to night) which can be used to better understand sublimation processes when ice is present.

We will present thermal analyses of observations performed since mid-2014, with a focus on thermo-physical modeling of comet 67P on both regional and local scales. In particular, we will (i) model the diurnal curves in terms of global thermal properties (e.g. diurnal thermal inertia as a function of latitude and temperatures) and we will (ii) investigate possible changes of these properties with heliocentric distance.

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