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Rosetta-VIRTIS sees the nucleus of 67P/Churyumov-Gerasimenko: first results from the rendez-vous and nucleus characterisation phase.

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Abstract

The VIRTIS (Visible, Infrared and Thermal Imaging Spectrometer) spectrometer has observed the nucleus of 67P using its full spectral range extending from 0.25um up to 5um. The spatial sampling has increased from about 500m down to about 15 m, from the second half of July throughout August. Most of the illuminated area has been already mapped, albeit at variable surface resolution, and more than 0.5million spectra have been acquired, in the period mid July – mid August. Extensive coverage of the diurnal temperature cycle, necessary to derive thermophysical properties of the surface, has been achieved for most of the observed regions, and in particular for those selected as potential landing sites. Temperatures as large as 230K have been measured across the nucleus surface which, along with the lack (so far) of detection of absorption features of water ice in the spectral infrared range, indicate a porous, highly insulating surface material and corresponding low thermal inertia. The spectra observed until now do not display clear evidence for absorption features in the VIS or IR ranges, although the work at the highest spatial resolution has only just started. The talk shall describe the major results obtained so far on a global scale and will give some details on the derived properties of the 5 selected landing sites.