

## **Insights into the morphology of comet 67P highlighting evolution and erosion depths**

M.Pajola, H. Sierks, G. Naletto, P. L. Lamy, R. Rodrigo, D. Koschny, B. Davidsson, C. Barbieri, M. A. Barucci, J.-L. Bertaux, I. Bertini, D. Bodewits, G. Cremonese, V. Da Deppo, S. Debei, M. De Cecco, S. Fornasier, M. Fulle, O. Groussin, P. J. Gutierrez, C. Guettler, S. F. Hviid, W.-H. Ip, L. Jorda, H. U. Keller, J. Knollenberg, J. R. Kramm, E. Kuehrt, M. Kueppers, L. M. Lara, M. Lazzarin, J. J. Lopez-Moreno, F. Marzari, H. Michalik, L. Sabau, N. Thomas, C. Tubiana, J.-B. Vincent, P. Wenzel, J. Agarwal, S. Besse, J. M. Castro, J. Deller, M. R. El-Maarry, F. Ferri, F. La Forgia, C. Leyrat, S. Lowry, S. Marchi, M. Massironi, N. Masoumzadeh, R. Moissl, F. Moreno, S. Mottola, N. Oklay, I. Perez Grande, H. Rauer, R. Ragazzoni, X. Shi, I. Toth, N. Attree, I. Buettner, P. Cambianica, P. Deshapriya, E. Drolshagen, C. Feller, S. Ferrari, E. Frattin, L. Giacomini, G. P. Guizzo, P. Gutierrez Marques, P. H. Hasselmann, I. Hall, S. Hoefner, X. Hu, G. Kovacs, I. Lai, Z.-Y. Lin, A. Lucchetti, J. Marin Yaseli de la Parra, R. Marschall, L. Maquet, D. Nebouy, T. Ott, K. Otto, L. Penasa, F. Perez, V. Petropoulou, M. Pertile, A. Pommerol, F. Preusker, K.-U. Reiche, M. I. Schmitt, F. Scholten, E. Simioni, J. Tabero, M. Zaccariotto.

Thanks to the Rosetta/OSIRIS NAC and WAC images, we have had the possibility to study with unprecedented spatial detail and temporal coverage the entire surface of comet 67P/Churyumov-Gerasimenko. Through this imagery dataset, we have discovered how a relatively small cometary nucleus (~4 km) can be morphologically diverse, presenting active pits, strata, dust-covered terrains, fractures, ubiquitous boulders and taluses.

The initial analysis of these surface features provided us with the possibility to first hypothesize how a cometary surface could evolve while approaching the Sun. Along the two years observation around perihelion, we could then definitely observe the surface of 67P evolving. Moreover, on specific regions the high-resolution OSIRIS images permitted us to quantify how deep the cometary activity changed the surface through erosive processes, returning insights on the inner composition of the comet as well.

This talk will therefore present the insights into the morphology of comet 67P, with particular emphasis to its surface evolution.