



Spectral Properties of Pyroclastic Deposits on Mercury: Physical Extent, Geomorphology and Eruptive History

Océane Barraud (1), Sébastien Besse (2), Alain Doressoundiram (1), Thomas Cornet (2), and Claudio Munoz (2)

(1) CNRS Observatoire de Paris, LESIA, F-92195 Meudon, France (oceane.barraud@obspm.fr), (2) European Space Astronomy Centre, Camino Bajo del Castillo s/n, 28692 Villanueva de la Canada, Madrid, Spain

MERcury Surface, Space ENvironment, GEochemistry and Ranging (MESSENGER) mission made possible to highlight, in part, explosive volcanism on the surface of Mercury. Witnesses of this volcanic activity are irregularly shape depressions surrounded by bright deposits named pyroclastic deposits [1]. Spectrally, deposits appear brighter and redder than Mercury background [2]. Spectral properties, in some deposits on the edges of the Caloris basin, vary across the deposit [3]. We investigate the evolution of several spectral parameters with the distance to the vent for pyroclastic deposits in various locations/regions on the Hermean surface. Because of the importance of this characteristic for understanding the interior volatile abundance of Mercury, we spectrally determine the radius of these deposits which are greater in many cases than the radius estimated previously by visual analyses [4]. Spectral parameters can be used, also, to determine geomorphology of the deposits, and constrain eruptive history. In this study, we focus on two morphologically different deposits: NE Rachmaninoff and RS-03 in Caloris [5] and we deduce two different eruptive histories on Mercury.

References

- [1] Head J.W, et al. (2008), *Science*, 321, 69-72
- [2] Kerber L, et al. (2009), *Earth and Planetary Science Letters*, 285, 263-271
- [3] Besse S, et al. (2015), *Journal of Geophysical Research: Planets*, 120
- [4] Kerber L, et al. (2011), *Planetary and Space Science*, 59, 1895-1909
- [5] Rothery D.A, et al. (2014), *Earth and Planetary Science Letters*, 385,59-67