



## **Exospheric Na distributions along the Mercury orbit with the THEMIS telescope**

Anna Milillo, Valeria Mangano, Stefano Massetti, Alessandro Mura, Elisabetta De Angelis, Stavro L. Ivanovski, Stefano Orsini, Rosanna Rispoli, Francesco Lazzarotto, Alessandro Aronica, and Adrian Kazakov

National Institute of Astrophysics, Institute for Space Astrophysics and Planetology, Rome, Italy (anna.milillo@iaps.inaf.it)

The Mercury's Na exosphere observations obtained by ground based observations and by space observations seem to lead to different scenarios of the interaction between the environment and the planet. In fact, the ground based observations show often a double peak at mid-high latitudes with time scale variations less than one hour not related to any surface feature nor to season, while the MESSENGER/MASCS observations have a strong seasonal dependence and do not evidence a short time-scale variability. For this reason, it has to be investigated whether the Sun's activity is the major driver of the Na exosphere configuration at Mercury, or the variations are only due to the surface temperatures considered in long time scales or on position along the orbit. In this paper, in order to better investigate this open issue, we have studied the local time and latitudinal distributions of the exospheric Na column density as a function of the True Anomaly Angle (TAA) of Mercury by means of the extended dataset of images, collected from 2009 to 2013, by the THEMIS solar telescope. In particular, THEMIS images, in agreement with the MESSENGER data, registered a strong dawnward emission predominance with respect to duskward and subsolar region between  $90^\circ$  and  $150^\circ$  TAA. Also an unexpected relation between Northward or Southward peak emission and both TAA and local time is evidenced by our analysis, requiring further investigations.