



## **Investigation of the possible effects of comet's encke metoeroid stream on the ca-exosphere of mercury**

Christina Plainaki (1), Alessandro Mura (1), Anna Milillo (1), Stefano Orsini (1), Stefano Livi (2), Valeria Mangano (1), Stefano Massetti (1), Rosanna Rispoli (1), and Elisabetta De Angelis (1)

(1) INAF, IFSI, Rome, Italy (alessandro.mura@ifsi-roma.inaf.it), (2) SwRI, San Antonio, TX, USA

The MESSENGER observations of the Ca-exosphere seasonal variability were consistent with the general idea that the Ca-atoms originate from the bombardment of the surface by particles from comet 2P/Encke. The generating process is a chain and combination of different processes including atomic and molecular release of surface particles and photo-dissociation. Including generation and loss mechanisms due to different planet-environment interactions, we perform simulations using a 3D Monte Carlo model based on the exosphere generation model by Mura et al. (2009). We present for the first time the 3D spatial distribution of the CaO and Ca exospheres generated through Micrometeoroid Impact Vaporization (MIV) and we show that the morphology of the latter is consistent with the available MESSENGER/MASCS observations. The results presented in this paper can be of help during the preparation phase of the exosphere observations to be performed with Bepi Colombo in the next years