

Modelling of Mercury's surface composition and its implications for the exosphere

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In view of the planned exospheric and remote geochemical surface studies of various sensors of the SERENA instrument on board of ESA's BepiColombo planetary orbiter MPO, a better understanding of the particle release processes from Mercury's surface is desirable. We present a brief survey of potential surface analogues on laboratory studied Lunar surface regolith and hypothetical analogue materials as derived from experimental studies for Mercury's surface. The formation and composition of the exosphere depends on various parameters, such as regolith porosity, binding energies and elemental fractionation of the surface materials. In the present study we focus on surface release processes due to sputtering and photon-stimulated desorption. The derived surface composition as well as the energy and ejection angle distributions of the emitted particles at the surface serve as input for a numerical 3-D exospheric model. First results of our simulations are presented and discussed in the framework of the mission objectives.