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Estimate of neutral atoms contribution to the Mercury exosphere due to a new flux of micrometeoroids

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Meteoroid impacts are an important source of neutral atoms in the exosphere of Mercury. Recent papers attribute to impacting particles smaller than 1 cm most of the contribution to exospheric gases.
In this work we calculate the vapour and neutral atoms production rates on Mercury, as due to the impacts of micrometeoroids in the size range between 5-100 μm according to the new dynamical model of Borin et al. (2009). The calculations have been performed taking into account two different calibration sources for the meteoroid flux provided by Love and Brownlee (1993) (as for Borin et al., 2009) and by Grun et al. (1985). Moreover, we give different values of the vapour production rates assuming both asteroidal and cometary sources of the dust particles (Wiegert, 2009; Dermott et al., 2002). Following the assumption that the surface of the planet is spatially homogeneous and made up of regolith with anorthositic composition (Cremonese et al., 2005) we provide the production rate for different neutral atoms.