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Ion circulation and precipitation at Ganymede

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The largest moon of Jupiter is characterized by a tiny magnetosphere produced by an intrinsic magnetic moment about 3 times larger than the one of Mercury, which is the magnetized body closer in size to Ganymede and can be used as a reference case. In contrast with the hermean magnetosphere that interacts with the IMF and the free solar wind, Ganymede is linked to the Jovian magnetosphere and embedded in its energetic plasma environment. In addition, since the plasma co-rotating with Jupiter impinges on Ganymede trailing side at subsonic speed, there is no bow-shock formation. The diverse merging topologies with local magnetic fields, causes Ganymede and Mercury to have significant differences in the entry, circulation and precipitation of external ions. Here we present preliminary results of Monte Carlo simulations aimed to evaluate the expected ion precipitation onto the polar caps of Ganymede, by means of the magnetic and electric fields derived by a global magnetohydrodynamic (MHD) model that realistically describe Ganymede's magnetospheric environment. We discuss precipitation pattern differences between the simulated ion species (H+, O+ and S+) at different energies in the range 10-100 keV.