



Water group neutral cloud distribution model in Saturn's inner magnetosphere

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Water group neutral particles are considered to dominate the dynamics of Saturn's inner magnetosphere since neutral density in Saturn's inner magnetosphere is about ten times greater than plasma density. Therefore, it is important to understand a neutral distribution in Saturn's inner magnetosphere. Cassini observations have revealed that icy moon Enceladus ($L_{3.94}$) is highly active with plume of water from its south polar region (Porco et al., 2006).

Solving the kinetic equations by referring to Ip (1997), we have derived distribution characteristic of water group neutral cloud in Saturn's inner magnetosphere using a Monte-Carlo procedure. We also used plasma parameters such as ion densities and electron temperature, which depend on chemical reactions, based on Cassini observations. We consider sputtering from Enceladus, Tethys, Dione, and Rhea, and plume from the south pole of Enceladus as release processes of water molecule. In this presentation, we will show the calculational results and discuss global neutral distribution, especially longitudinal dependence due to hot electrons.