Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09131, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09131
EGU General Assembly 2008
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Thr Sodium Exosphere of Mercury. Comparison between observations and model

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Abstract. In this study we compare the sodium observations made by Schleicher et al. (2004) with the result of a numerical simulation. The observations, made during the transit of Mercury across the solar disk on 2003 May 7, shown a maximum of sodium emission near the polar region, with a north prevalence, and the presence of a dawn-dusk asymmetry. We interpret this distribution as the resulting effect of two combined process: the s/w proton precipitation causing chemical alteration of the surface, freeing the Na atoms from bounds in the crystalline structure on the surface, and the subsequent photon stimulated desorption of the Na particles. The observed and simulated distributions agree very well, indicating that the proposed process is able to explain the observed features.