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Impact-mass Estimates for the Jovian and Saturnian System by Application of a Lunar-like Impact-chronology Model

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Aim of this work is to apply a lunar-like impact-chronology model for total mass impacts on Jovian and Saturnian satellites, as tested successfully for planetary bodies of the inner solar system (Hartmann et al., this conference). Such estimates are highly dependent on impact physics. The satellites in the outer solar system are mostly made of hyper-frozen ice, and this material reacts differently on impact compared to planetary surface material made of rocky, silica-rich components. Although we know little about the impact physics on ice and the aftermath rheology on long time scales, we use scaling laws applicable for icy satellites suggested by Dones et al., 2009 and estimate the mass of the hypothetical impactors with the assumption of planetocentric impact velocities individually for each satellite in conjunction with a derived lunar-like chronology (as discussed in (Neukum and Ivanov, 1994) from impact-crater counting statistics presented in Wagner et al., 2006, Neukum et al., EPSC 2006, Neukum et al., EGU 2006, derived from Galileo- and recent Cassini-mission imagery (Jovian and Saturnian system, repectively). We compare the total mass estimate on the surfaces of the satellites by application of different *collision efficiencies*, adopted from work of Brunini et al., 2003 and compare the result with our former results of mass estimates for the inner solar system.