

SURFACE WEATHERING IN DIFFERENT RADIATION ENVIRONMENTS. C. Paranicas¹, D. G. Mitchell¹, S. M. Krimigis¹, D. C. Hamilton², E. Roussos³, N. Krupp³, G. H. Jones⁴, R. E. Johnson⁵, J. F. Cooper⁶, and T. P. Armstrong⁷, ¹APL 11100 Johns Hopkins Rd., Laurel, MD 20723, ²University of Maryland, ³Max Planck Institut fuer Sonnensystemforschung, ⁴MSSL University College London, ⁵University of Virginia, ⁶NASA Goddard, ⁷Fundamental Technologies

Charged particle data have now been returned from orbiters of both Jupiter and Saturn. The Galileo and Cassini spacecraft have made many close flybys of planetary satellites. Data have revealed radiation environments vary greatly in both composition and intensity among the various satellites of these two planets. For example, Europa and Ganymede are both in the Jovian radiation belts, but Ganymede's internal magnetic field shields the surface to a large extent from some charged particles. We will present data summarizing the different radiation environments of the Jovian and Saturnian satellites as well as data showing differential weathering of individual satellites. The main goal of this analysis is to continue to connect differential weathering with changes in surface properties. The work of Khurana et al. [1] has left little doubt that differences in charged particle weathering produces observable differences over satellite surfaces. To the extent possible, we will include new laboratory results to support our work and additionally include recommendations for laboratory experiments that can help us advance the research.

Reference:

[1] Khurana, K. K., R. T. Pappalardo, N. Murphy, and T. Denk (2007), *Icarus*, 191, 193-202.