EPSC Abstracts,
Vol. 2, EPSC2007-A-00174, 2007
European Planetary Science Congress 2007


# Space weathering in the main asteroid belt: the big picture

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The optical properties of silicate-rich asteroidal surfaces (namely, S-complex asteroids) evolve over time under the influence of several processes, known as ‘‘space weathering” (SW), and are amply analyzed in laboratory experiments. However, in the main belt, the S complex accounts for about 40% of the listed bodies, and even less in terms of mass. Most of the remaining main-belt population is composed of spectrally featureless asteroids (i.e., with nonsilicate-dominated spectra) and can be divided into two main groups: the C complex and the X complex; the three complexes comprise up to more than 90% of the MBAs. The question as to whether SW has general observable consequences for the whole main belt is still open. In this work we show, on the basis of a wide statistical analysis, that the spectral trends due to SW are similar for the three major complexes. We have also been able to identify some underlying relevant physical processes. Our observational findings, and the related clues, are also supported by new experimental results, which are also summarized here. The resulting scenario has several important implications for the formation of evolutionary models of the main asteroid belt as well as for the existing taxonomical classification.