

The potential of continuum slopes in the near-IR spectrum for the analysis of the surface of Ceres

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American Astronomical Society, DPS meeting #46, id.#500.07

11/2014

Abstract

Carry et al. (2012) recently reported that spectral slopes for Ceres (determined from the J, H, K bands using the HST and Keck) showed no spatial variation and they suggested a globally uniform composition of phyllosilicates and carbonates on the surface. However, recently observed venting from Ceres, albedo variations on the surface, laboratory data for terrestrial phyllosilicates, phyllosilicate/carbonate mixtures, phyllosilicates heated to 500-1100oC, and meteorites (Ostrowski et al., 2011), suggest that the surface should not be uniform but that variations in hydration and thermal alteration should be expected. Dawn's encounter with Ceres offers an opportunity to look for variations at a surface resolution far superior to these remote observations. Of particular interest would be the relationship between composition and surface topography, particularly craters and potential cryptovolcanoes, which are probably associated with dark spots on Ceres from which the venting appears to be coming. Also of interest will be compositional variations that can be related to stratigraphy or levels of alteration as this might be indicative of surface alteration sequence and thus primary, and therefore possibly mantle, compositions. Carry B. et al., 2012. The remarkable surface homogeneity of the Dawn mission target (1) Ceres. *Icarus* 217, 20-26. Ostrowski D.R. et al., 2011. IRTF spectra for 17 asteroids from the C and X complexes: A discussion of continuum slopes and their relationships to C chondrites and phyllosilicates. *Icarus* 212, 682-696.