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The surface of Vesta in colors

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4 Vesta is the largest differentiated asteroid that is considered to be a model for the initial stages of planetary differentiation. NASA's Dawn mission is in orbit around Vesta since July 2011 for a yearlong global characterization phase. The FC cameras onboard Dawn are mapping the surface in one clear and seven narrow band filters (0.4 -1.0 μm).
We identified different color terrains on Vesta and link them to geologic features. Lithology identification is achieved by using color cubes from which basic spectral parameters are extracted and color ratio maps are created. Vesta exhibits global hemispherical scale dichotomies. Photometrically corrected mosaics show that the eastern hemisphere has lower albedo than the western hemisphere and that the southern hemisphere has higher albedo than the northern latitudes. A key explanation for this albedo variation seems to be the excavation of different lithologic units during the formation of the large Rheasilvia basin. The depth of the 0.90-μm pyroxene band, approximated by the color ratio 0.75/0.92 μm, is deeper in the southern hemisphere than further north. A correlation exists between the 0.75/0.92 μm and the 0.98/0.92 μm ratios. The 0.98/0.92 μm color ratio is suited to discriminate between eucrite and diogenite-like terrains since eucrites have higher iron/calcium abundance in their pyroxene than diogenites, leading to a shift of the eucrite 0.90-μm pyroxene band to longer wavelength (i.e. the reflectance at 0.98 μm appears higher for diogenites than for eucrites). The large-scale correlation between 0.75/0.92 μm and 0.98/0.92 μm suggests that areas with deeper 0.90-μm bands are typically diogenite-like and areas of shallower bands are more eucrite-like. Apart from color variations on global scale, we have identified color terrains that are associated with compositional units on local scales.