



Aerosol measurements of Saturn and their significance

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Observations from the ground and from the Hubble Space Telescope (papers by West, Sanchez-Lavega, Karkoschka, Pérez-Hoyos and others) during the past Saturnian year reveal secular, seasonal, and short-term variations in Saturn's reflectivity caused by changes in aerosol height, density, and optical properties. Instruments on the Cassini spacecraft are adding to our knowledge. Observations at high phase angles which can only be made by spacecraft in the vicinity of Saturn are needed to measure the scattering phase function of the aerosols which is in turn required to fully interpret the spectroscopy and photometry from the ground and from HST. Images obtained by the Cassini Imaging Science Subsystem (ISS) show a very blue northern hemisphere – a phenomenon which was not expected and is remains a puzzle. Observations by the Cassini Visible and Infrared Mapping Spectrometer (VIMS) reveal a multitude of cumulous-type clouds below the more bland zonal structures seen at shorter wavelengths. Measurements of their motion tell us about the zonal wind at depth. Images and spectra obtained by the Cassini Ultraviolet Imaging Spectrograph (UVIS) at high phase angles provide a better determination of the density of stratospheric aerosols and this knowledge leads to a better understanding of acetylene features seen at UV wavelengths.