

**SSEC/CIMSS
Seminar**

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**Thunderstorm Related Clouds of
Saturn Observed by Cassini/VIMS**

This seminar will present the visible-to-near-IR analysis of two distinct types of bright and dark clouds in Saturn's thunderstorm region near 35 degrees S. latitude (planetocentric) between 290 and 330 degrees W. longitude as observed by the Visual-Infrared Mapping Spectrometer (VIMS) onboard the Cassini-Huygens orbiter on February 9, 2008. This analysis indicates that the spectroscopic character of these spectrally bright clouds are consistent with the presence of ammonia ice absorption, supporting the possibility of ammonia ice particles in Saturnian clouds suggested previously by high-resolution spectroscopic ground-based observations (Kim et al., 2006, Icarus 185, 476-486). Specifically, these clouds are depleted in 2.73-micron reflectivity, similar to Jupiter's spectroscopically-identifiable clouds (Baines et al, 2002, Icarus 159, 74-94). The much darker clouds located downstream of the lightning site have unusually low albedo at all near-continuum wavelengths. The location of the dark clouds downstream in the zonal winds indicates that these are older features, suggesting that they are delayed convective upwellings of thermo-chemically generated material from deeper depths. This seminar will present the characteristics of the brighter and darker clouds - single scattering albedos, cloud top pressures, mean particle sizes, and constraints on the composition of both cloud types. I also present the effective pressure (depth) of sunlight penetration into the atmosphere of Saturn as a function of wavelength from 0.3 microns to 4.5 microns, calculated with the recent low-temperature methane absorption coefficients. These show that most of the hazes and clouds of Saturn probed by reflected sunlight in the visible and near IR are limited to above the 1-bar level.

Tuesday, 1 September 2009

11:00 a.m.

Room AOSS 351