



Clouds at depth in Saturn: New images of discrete meteorological systems observed by Cassini/VIMS near the 3-bar level

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We present new imagery of discrete cloud systems observed in the deep troposphere of Saturn by the Visual Infrared Mapping Spectrometer onboard the Cassini/Huygens orbiter. These images were taken in Saturn's own indigenous thermally-generated light at a wavelength of 5 micron, enabling the thick clouds at depth to be seen silhouetted against the upwelling radiation. In contrast to the globe-encircling banded appearance of upper-level hazes and clouds typically imaged in reflected light, at depth a large variety of localized cloud formations are observed across the planet, including disk-shaped circular and elliptical systems, systems with central cores surrounded by rings of nearly clear air, and numerous wave features. At depth, the equatorial region is particularly well-populated with large discrete cloud systems lurking under the ubiquitous thick layer of upper-level hazes, suggesting that this region overall has unusual power in vertical transport giving rise to unusually strong aerosol condensation throughout the sensible atmosphere from 3 bars up to ~ 200 mbar. Recent high-resolution images (<200 km IFOV) of the 25-35 degree North latitude region obtained in late December 2005 reveal numerous localized cloud systems. A particularly distinct feature near 29 degrees N. latitude is comprised of a nested set of rings, with a central cloud core ~ 600 km across surrounded by a nearly clear ring of air some 500 km in width which is itself surrounded by a 500-km-wide ring of thick clouds. Numerous other discrete circular and elliptical features some 800-1500 km wide are observed between 28 and 33 degrees latitude. Images of these and other discrete features seen on other close Saturn passes will be shown and discussed.