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Mapping Titan's clouds with the VIMS instrument during the two first years of the Cassini mission

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The atmosphere of Saturn's largest moon, Titan, contains 2% of methane, and up to 5% on the surface. Methane on Titan may participate to a meteorological cycle in a way similar to the terrestrial hydrological cycle, including methane clouds, rain, surface or sub-surface liquids and evaporation. Transient cloud activity in Titan's was detected as early as 1995 through ground-based observations (Griffith et al., 1998), and their latitudinal distribution is interpreted as a natural consequence of the atmospheric global circulation (Rannou et al., 2006). The Visual and Infrared Mapping Spectrometer (VIMS) acquires hyperspectral images in 352 contiguous spectral channels between 0.3 and 5.2 μm (Brown et al., 2003). Since its insertion into Saturn orbit in July 2004 and until middle 2006 summer, Cassini orbiter has done 15 close flybys of Titan. At these occasions, VIMS accumulated a large amount of hyperspectral images of Titan from global scale at low to medium resolution (400 to 25 km/pixel) to small scale at high resolution (up to 2 km/pixel). Observations by VIMS already provide crucial information to track the cloud activity and to determine for some clouds their morphologies and basic properties (Griffith et al., 2005, 2006). Here we present the summary of VIMS observations of Titan's clouds for two years, between autumn 2004 and summer 2006, and propose the first high resolution global mapping of Titan's clouds coverage.