

[초SS-05] Near-IR Spectral Features of Haze Particles in the Atmosphere of Titan

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The Cassini/Visual Infrared Mapping Spectrometer (VIMS) observed the sun through the atmosphere of Titan, and provided vertically-resolved 63 spectra from 49 km to 987 km for the 1 - 5 micron range (Bellucci, 2008). Bellucci et al. (2009) analyzed selected spectral ranges where the band absorptions of CH₄ and CO are strong by constructing synthetic spectra including CH₄ and CO lines, but without including haze absorptions in their synthetic spectra. Kim et al. (2011) and Sim et al. (2013) were able to extract detailed spectral features of fundamental ($D_v = 1$) and overtone ($D_v = 2$) bands of the haze from the VIMS spectra by excluding the adjacent influences of strong CH₄ absorptions using a radiative transfer program, which includes effects of absorption and emission of lines of these molecules, and absorption and scattering of haze particles. In this presentation, we extend our detailed analyses to other remaining wavelengths in order to provide the spectral characteristics of the Titanian haze for the entire 1 - 5 micron range and to identify any additional haze spectral features and an unidentified feature near 4.3 microns reported by Bellucci et al. (2009).

[구SS-06] Search for dormant comets in AcuA

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It is considered that comets near the ecliptic plane have been injected into inner solar system from Kuiper-belt. Some of them are still active while others are dormant with no detectable tails and comae. These dormant comets have eccentric and/or inclined orbits, which are parameterized by Tisserand parameter $TJ < 3$. In addition, dormant comets can be differentiated from asteroids based on the albedo, because they have low albedo (the geometrical albedos $p_v < 0.1$). The conditions of $TJ < 3$ and $p_v < 0.1$ have been used as a criteria to discriminate dormant comets from asteroids. However, we must be more careful because there are 'contaminations' from the outer region, i.e. Jovian Trojans ($5.05 < a < 5.35$ AU), Hildas ($3.7 < a < 4.2$ AU, $e < 0.3$), and Cybeles ($3.27 < a < 3.7$ AU, $e < 0.3$). Whereas significant fraction of outer asteroids meet the cometary criteria $TJ < 3$ & $p_v < 0.1$, little is known about the origin of these groups.

Here we present the fraction of comet-like objects in each dynamical group: (1)Near-Earth asteroids, (2)Main-belt asteroids, (3)Cybeles, (4)Hildas, (5)Jovian Trojans, and (6)Others. We utilize Tisserand parameter, albedo, and spectral taxonomic types to determine the fraction of comet-like objects. Albedos of asteroids are archived in Asteroid Catalog Using AKARI (AcuA), which were obtained based on the observation by AKARI infrared space mission (Usui et al. 2011).