

## Aerosol properties in the Enormous Cloud Cover of Venus as inferred from improved IR2 night-side data

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A very abrupt change of cloud opacity seen in the night-side disk of Venus, which we call Enormous Cloud Cover or ECC for short, was imaged by Akatsuki/IR2 and Venus Express/VIRTIS-M (Peralta et al., 2020). Similar phenomena were repeatedly recorded also by the ground-based instruments since the beginning of the night-side observations (Allen and Crawford, 1984), suggesting this phenomenon is not uncommon in the Venus atmosphere and may include essential dynamical implication.

We reported last year the analysis of six sets of Akatsuki/IR2 observations (cleaned with the RSS method of Satoh et al., 2021) as well as seven of VEx/VIRTIS observations (tabulated in Peralta et al., 2020). Darkening of normal region (just west of ECC, named Background Cloud or BC) to ECC in the two passbands (1.735  $\mu\text{m}$  and 2.26  $\mu\text{m}$ ) was measured to characterize how aerosol size and number density changes from BC to ECC.

To improve the photometric accuracy, needed especially for the extremely-low radiance region (ECC in 2.26- $\mu\text{m}$ ), an alternative method to clean the IR2 1.735- and 2.26- $\mu\text{m}$  data has been developed. The new method uses an over-exposed (12.97 s) 2.02- $\mu\text{m}$  image, recorded between the 2.26- and 2.32- $\mu\text{m}$  images, to cancel the contamination from the dayside. Acquisition of the 2.02- $\mu\text{m}$  image was introduced when the observing program suite was updated in June 2016, therefore one of six IR2 data, 27 March 2016, is excluded from this new analysis.

Once the IR2 images are cleaned, the radiance measurements in BC and ECC regions and characterization in the M3L coordinates (Satoh et al., 2021) are done just the same as before. We will discuss the improvement of the photometric accuracy, compare the obtained characteristics of the ECC for different observing times. Implication to the possible mechanism of this large-scale phenomenon will also be discussed.

Keywords: Venus cloud, Akatsuki/IR2, Night-side observation, Discontinuity