Variations of Venus night clouds as observed by Akatsuki/IR2

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The near-IR Venus night-side data were analyzed to study the spatio-temporal variations of clouds. The data were acquired by Akatsuki/IR2 during the Orbits 24 (Aug. 16-20, 2016) and 25 (Aug. 26-30, 2016) at 3 wavelengths (1.735, 2.26, and 2.32 um). From a 2.26-um image, contamination from the day-side is cancelled by subtracting the near-simultaneous 2.32-um image (scaled by an appropriate factor, ~1.10). Then, this "cleaned night (**CLN**)" is subtracted from the original 2.26-um image, leaving only "net contamination (**NTC**)" from the day-side. To restore a 1.735-um image to 1.735**CLN**, the 2.26**NTC** is scaled by another factor (~2.7), and subtracted from the 1.735-um image.

The radiance of night-side emission in 2.26**CLN** and 1.735**CLN** can be converted to a scaling factor to describe the total aerosol content in the clouds. We use the cloud model (vertical profiles and mixing ratios of multi-modal particles) from Haus et al. (2015) and use this "cloud multiplication" factor, MF_{cloud}, to increase or decrease the opacity. The differences of two **MFC** maps actually indicate deviations of aerosol composition from that in the model. We have found interesting features in the (2.26**MFC** –1.735 **MFC**) maps: one example is the mid-latitude bright streaks in Orbit 25. The southern streak is less opaque in 2.26 um than in 1.735 um, indicative of concentration of smaller aerosol particles. This is consistent with the numerical simulation by Kashimura et al. (2019) which attributed these streaks as narrow and strong downwelling regions.

Keywords: Venus cloud, Akatsuki IR2, aerosol composition

