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Title:

Preliminary results on Venusian cloud scattering property observed by the UV imager on board Akatsuki

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Abstract:

Venus is shrouded by a thick cloud layer. The top altitude of the cloud layer is around 70-75 km above the surface, and the cloud aerosols are effectively scattering solar radiation. This scattering process has a phase angle dependency, which provides a clue to estimate scattering particle's properties. In order to understand global mean scattering properties of the cloud aerosols, we analyzed global mean albedo data obtained by the UV Imager (UVI) on board Akatsuki along phase angle. We note that data acquired in May 2016 reveals 'glory' features at phase angles less than 10 degree, and we successfully simulate these observed features using a radiative transfer model with our assumed atmospheric condition. We find that the 1.05-um geometric mean size particle is dominant, consistent with previous studies, the 1.31-sigma log-normal size distribution results in a best-fit model. Also it is necessary to include 'UV absorbers', which are SO₂ and an unknown UV absorber, to explain an observed quick decreasing of albedo at phase angles larger than 10 degree. Absolute amounts and vertical locations of the absorbers will be estimated in our future study.