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Characteristic features seen in a temperature distribution at nightside cloud top of Venus

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The Longwave Infrared Camera (LIR) onboard Akatsuki succeeded to obtain an infrared image of Venus nightside for the first time. LIR visualizes thermal infrared radiation emitted from the upper cloud layer of sulfuric acid, and a temperature distribution at the cloud top altitude is obtained by converting the infrared radiation to brightness temperature.

Characteristic features seen in the temperature distribution are summerised, and the obtained temperature is compared with the past observations. The remarkable features are low temperature regions in the polar regions and the polar collars, limb darkening due to difference in optical path length, zonal structures seen in the middle and low latitudes, and smaller scale structures. An altitude profile of optical depth will be derived from the limb darkening effect. The temperature distribution obtained by LIR will give constraint to theoretical studies of atmospheric dynamics and cloud chemistry in the cloud top altitude region.

Keywords: Akatsuki, venus, LIR