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Estimation of Venusian cloud height by stereo tracking

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A number of analyses have been done by cloud tracking on ultraviolet images taken by Venus spacecrafts to derive the wind velocity. However, altitudes of individual clouds and meso-scale winds are still unclear because they aimed to derive global wind fields by assuming a constant cloud height using images taken near the apocentre. On the other hand, it has been cleared, by VIRTIS onboard Venus Express (VEX), that the mean cloud top altitude is about 72 km in low latitudes and mid-latitudes and gradually decreases to the pole, but the fine structure of cloud top altitude is still unknown. In this study, we will examine the possibility of stereo matching method using several images as a way to estimate altitudes of individual cloud and fine structures of cloud top. We will verify the result of VEX / VMC analyses by using some test images, and discuss the possibility of stereo observations by Venus Climate Orbiter / Akatsuki.

Keywords: Venus, Atmosphere, Ultraviolet Images, Cloud Tracking, Stereo, Cloud Height