

A plan to study the Venus' haze based on SOIR/Venus Express and AKATSUKI

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The Venus cloud consists of a main cloud deck at 47 -70 km, with thinner hazes above and below. The upper haze on Venus lies above the main cloud surrounding the planet, ranging from the top of the cloud (70 km) up to as high as 90 km.

The Solar Occultation in the InfraRed (SOIR) instrument onboard Venus Express (ESA) was designed to measure the Venusian atmospheric transmission at high altitudes (65 -165 km) in the infrared (2.2 -4.3 μm) with high spectral resolution. We investigated the optical properties of the Venus's haze above 90 km using the SOIR solar occultation observations. Vertical and latitudinal profiles of extinction, optical thickness, and mixing ratios of haze were retrieved. We find that haze extinction and optical thickness at low latitudes are two times higher than those at high latitudes. One of the noticeable results is that haze mixing ratio increases with altitude above 90 km at high and low latitudes. Therefore we speculate that haze could be produced at such high altitudes.

On December 7, 2015, AKATSUKI (JAXA) arrived at Venus after orbit insertion. Some instruments onboard AKATSUKI will observe characteristics of cloud and haze particles. In this presentation, a plan to elucidate Venus's cloud including haze layer creation and maintain process in using observation data of SOIR/Venus Express and AKATSUKI will be proposed.

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