R009-16 **会場: B** **時間: 11 月 27 日 9:30-9:45**

ひさき・あかつき同時観測による金星雲層・熱圏上下結合の研究

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Interaction between the thermosphere and the cloud-level atmosphere of Venus studied with observations by Hisaki and Akatsuki

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Observations of the Venus' upper atmosphere using the Extreme Ultraviolet Spectroscope for Exospheric Dynamics (EXCEED) on the space telescope Hisaki revealed the existence of periodical variations in airglow intensities on the dawn side, suggesting that atmospheric waves propagate from the lower atmosphere up to the thermosphere to cause oxygen density variations (e.g., Masunaga et al., 2017). To confirm such vertical coupling via propagating waves, simultaneous observations of the cloud-level atmosphere (˜50 –70 km altitude) and the thermosphere are required.

Spacecraft Akatsuki has been orbiting Venus since December 2015 and is observing the cloud-level atmosphere. In June 2017, Hisaki and Akatsuki observed Venus upper and middle atmosphere, respectively. We analyzed time series of the EUV OI (130.4 nm and 135.6 nm) dayglow intensity measured by EXCEED and the UV brightness (365 nm) obtained by the Ultraviolet Imager (UVI) on board Akatsuki. The OI intensity reflects the column densities of oxygen atoms and photoelectrons in the thermosphere, and the UVI images present dark and bright contrasts of clouds, allowing wind retrieval from cloud tracking.

In both data, we identified the same periodicity of 3.5 days. As UVI's 3.5-day periodicity seems to be associated with Kelvin waves at the cloud top, we calculated damping time and amplitudes of the Kelvin waves propagating vertically in a simple model. The model calculation shows that Kelvin waves should decay with height through radiative damping and will not reach the thermosphere. Therefore, we propose an indirect process in which the Kelvin waves change the wind field periodically and this oscillating wind influences the vertical propagation of small-scale gravity waves as discussed in Masunaga et al. (2017). The gravity waves that reach the thermosphere would cause the variation of the diffusion coefficient or the large-scale circulation. We discuss the effect of the variation of the diffusion coefficient on the OI column density using a photochemical model.