R009-18
B 会場 ：11/24　PM2 （15:30-18:15）
18:00〜18:15

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Growth and decline of enormous cloud cover observed by Akatsuki/IR2 in Venus' night-side hemisphere

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Akatsuki/IR2 observed the enormous cloud cover (or the cloud discontinuity) in the night-side of Venus several times (Peralta et al., 2020) with the best continuous coverage from 09 August to 06 September 2016 (every 9 days). The data recorded evolution of this remarkable phenomenon but what changes of the aerosol properties caused this remained unclear because IR2 night-side data were severely affected by the light spread from the intense day crescent. Satoh et al. (2021) introduced the Restoration by Simple Subtraction (RSS) method to overcome this issue and enabled photometric studies using IR2 night-side data for the first time. In addition to the original RSS, we have developed an alternative RSS using the 2.02-um data which has a potential of producing better quality "cleaned" night-side data. Utilizing these tools, we have performed two-color (2.26 um and 1.735 um) analysis of the enormous cloud cover for four occasions (0809, 0818, 0827, and 0906).

After RSS processing, the data were corrected for limb darkening and then projected on the longitude-latitude grid map. Rectangular measurement areas were placed both west (normal region) and east (enormous cloud covered region) of the discontinuity. Measured radiance in two filters (2.26 um and 1.735 um) is plotted in a shear-transformed two-color coordinates (M3L introduced by Satoh et al., 2021). In the first and the last data (0809 and 0906), the changes from the normal region to the cloud covered region can be explained mostly by the increase of Mode 2' particles with slight addition of Mode 3 particles. On the other hand, the third data (0827) can be explained mostly by the increase of Mode 3 particles with varying amount of Mode 2' particles. The 0818 data appear completely different, requiring significant increase of Mode 3 particles and simultaneous decrease of Mode 2' particles. We interpret these four occasions as the growth phase (from 0809 to 0818) and the decline phase (from 0827 to 0906) of the phenomenon. Quantitative estimates of the amount of sulfuric acid vapor required to explain these changes will be discussed.