

(1) Coordinated Ground-based/
Akasaki Observations

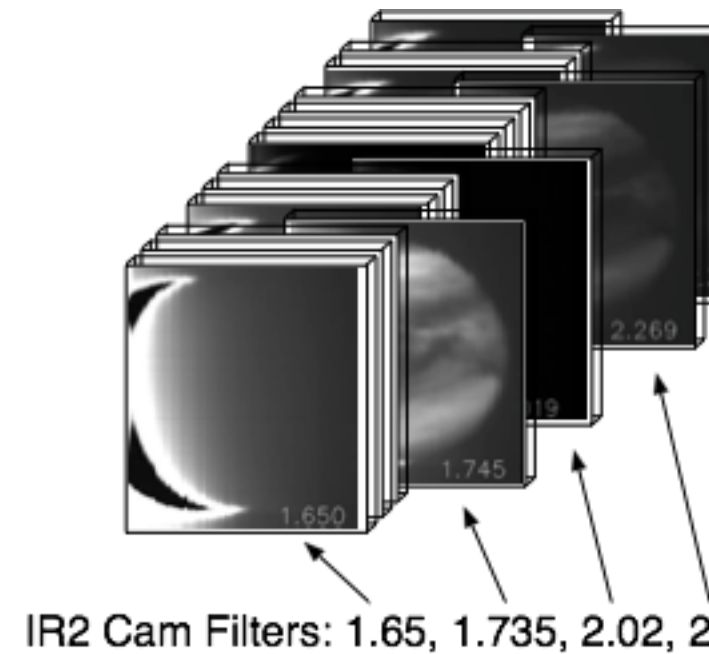
(2) Observing Venus from the Earth's
Stratosphere

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Coordinated Akatsuki/ Ground-based Observation

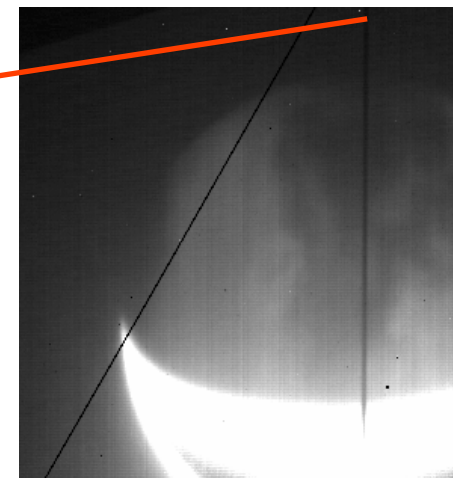
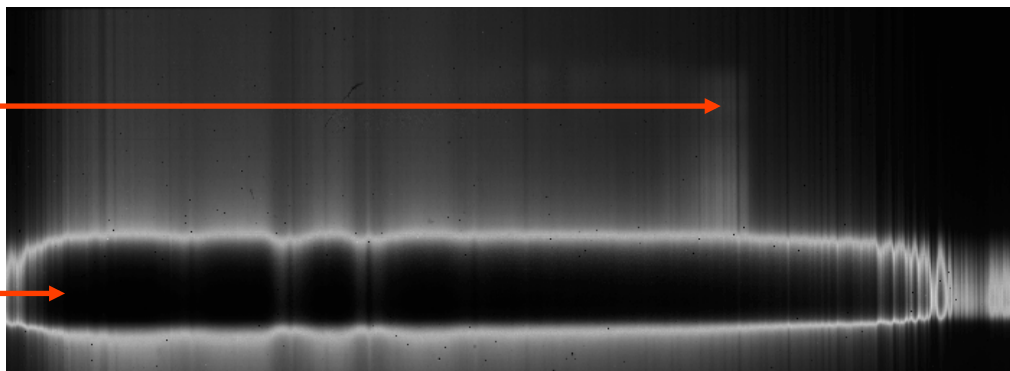
View: This is a NASA-Funded effort to complement the Akatsuki IR1 and IR2 Camera observations with *SPECTROSCOPY* ($0.8 - 2.5 \mu\text{m}$) and imaging in the time domain.

Observation: Ground-based image cubes of the Venus night side provide spectra in the CO_2 bands at 1.74 and $2.25 - 2.5 \mu\text{m}$. Selected wavelengths are diagnostic of trace gases (e.g., CO , OCS , SO , SO_2 , H_2SO_4) and cloud acidity & droplet sizes.



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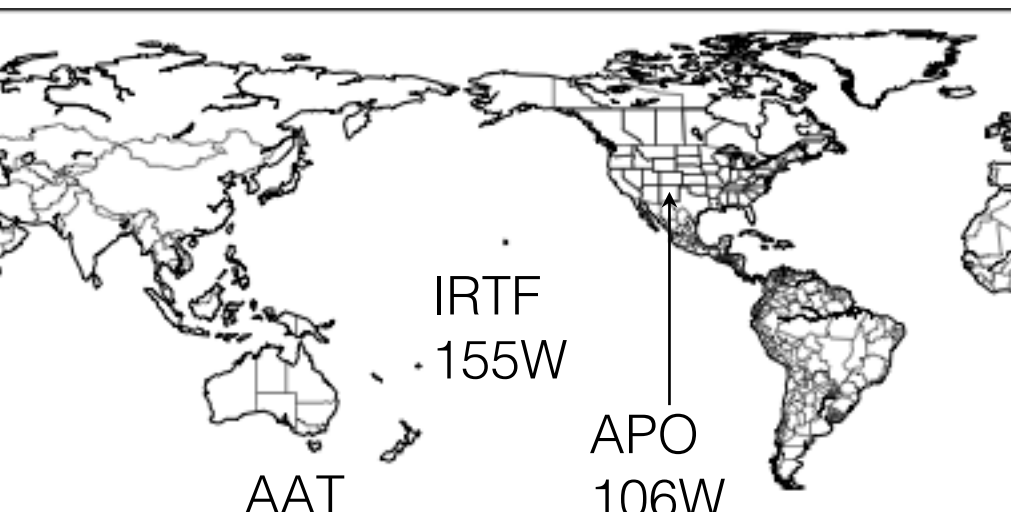
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Coordinated Akatsuki/ Ground-based Observation

Idea: Observe from telescopes spanning the globe to provide baselines. Choose sites with long-slit infrared spectrographs. Observe for 50 + 50 days, Jan - Feb 2017, April - May 2017 (surrounding conjunction in March 2017).

Dry Run: We observed Venus from the AAT (4-m), IRTF (3-m) and TMT (3.5-m) for 5 consecutive mornings, Sept. 25-29 (thanks to Jeremy Kasdin, Alan Tokunaga and Michael Skrutskie).



IRIS2 (AAT), SpeX (IRTF) and TripleS (APO) are all long-slit spectrographs that cover J-H-K bands.

These three sites give us 8 hours on each day, due to their spread in longitude. Other sites are being investigated, including the TMT.

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