

Current Status of Akatsuki and Major Scientific Results

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Since the successful orbit insertion (VOI-R) in December 2015 [1], Akatsuki has been in Venus' orbit for over 650 earth days. The current orbit is highly elongated with the apocenter ~ 0.39 M km from the planet and the orbital period is ~ 10.8 earth days. This orbit will be kept until near the end of 2018 at the time when a slight adjustment will be made to avoid extremely long umbra passages predicted for later years.

The onboard scientific instruments are healthy except IR1 and IR2 as the control electronics (IR-AE) is not working now. Two cameras, UVI and LIR, regularly observe the atmospheric dynamics and temperatures at the cloud-top levels. Another camera, LAC, attempts to detect lightning flashes on night-side disk at all available umbra passages. RS measures the atmospheric profiles (temperature and sulfuric acid vapor) with ground antennas in Japan and in India.

This talk is to report the current mission status and near-future plans (as briefly described in the above), as well as the major scientific results. As the stationary gravity wave features, most prominent in LIR's thermal channel [2], will be presented by Fukuhara et al., other scientific results such as the equatorial jet in the middle to lower atmosphere [3] will be presented in this talk.

[1] Nakamura, M., et al., Earth, Planets and Space 68:75, doi:10.1186/s40623-016-0457-6, 2016.

[2] Fukuhara, T., et al., Nature Geoscience, 10, 85-88, doi:10.1038/ngeo2873, 2017.

[3] Horinouchi, T., et al., Nature Geoscience, doi:10.1038/ngeo3016, 2017.

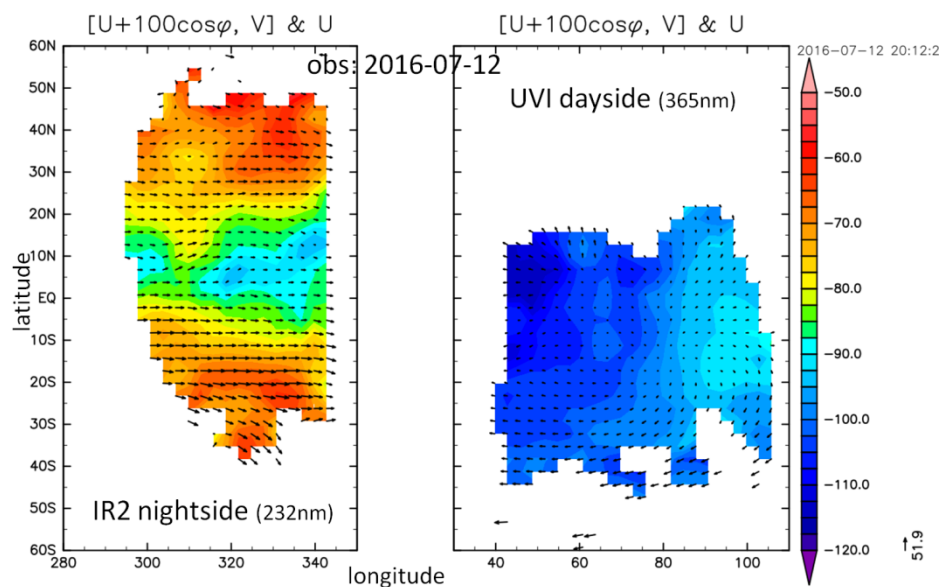


Figure: Wind velocity maps of night-side (left) and day-side (right). The night-side map exhibits strong equatorial jet (reaching 90 m/s westward) while such feature is absent in the day-side.