

Radio occultation observation of Venus atmosphere in Akatsuki mission

*Takeshi Imamura¹, Hiroki Ando¹

1. Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency

The Radio Science experiment (RS) in the Akatsuki mission of JAXA aims to determine the vertical structure of the Venus atmosphere, thereby complementing the imaging observations by onboard instruments. The physical quantities to be retrieved are the vertical distributions of the atmospheric temperature, the electron density, the H₂SO₄ vapor density, and small-scale density fluctuations. The uniqueness of Akatsuki RS is quasi-simultaneous observations with multi-band cameras dedicated to meteorological study; the locations probed by RS are observed by the cameras a short time before or after the occultations. An ultra-stable oscillator (USO) provides a stable reference frequency, which is needed to generate the X-band downlink signal used for RS. The USO was switched on and tested successfully in February 2016.

Keywords: Venus, Akatsuki, radio occultation