

## Study about the structure of Venusian lower atmosphere

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Venus is enveloped by a thick cloud, which is composed of sulfuric acid and located at the altitude of 50-70 km. The atmospheric structure above the cloud layer has been observed by optical measurements in Pioneer Venus and Venus Express missions. However, the thick cloud prevents us investigating the atmosphere below the cloud layer. There are few observations to examine the temperature and wind speed by probes, but probe measurements can observe only the specific place. One of the most useful methods to investigate the atmospheric structure below the cloud layer is radio occultation measurement, which can retrieve the vertical temperature profile with high precision (vertical resolution  $\sim 1$  km and temperature measurement error  $\sim 1$  K). In this study we analyzed the radio occultation data obtained in Venus Express mission and retrieved vertical temperature profile globally.

The analysis period of data is 2006 to 2010, and the number of temperature profiles is 280. All the temperature profiles are classified at each latitude bin, which is divided every  $10^\circ$  degree, and averaged in the vertical direction with the width of 1 km. In this study the hemispheric and localtime dependences are not considered. As a result, there is a clear difference of the atmospheric structure between low and middle altitudes and high latitudes. In low and middle latitudes the neutral stable layer is located in the altitude of 50-60 km, and the atmosphere is weakly stable under 50 km altitude. In the high latitudes the neutral stable layer is consecutively located in the altitude of 40-60 km. In this presentation we will discuss what generates the difference of the atmospheric structure below the cloud layer by comparing with the numerical result obtained in a general circulation model named AFES.

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