

Interferometric imaging observations of the Venusian atmosphere with Nobeyama Millimeter Array

HIDEO SAGAWA[1]; Yoshimi Kitamura[2]; George L. Hashimoto[3]; Munetake Momose[4]; Tomohiko Sekiguchi[5]; Sozo Yokogawa[6]; Masato Nakamura[7]

[1] Earth & Planetary Sci., TOKYO UNIV; [2] ISAS; [3] Kobe Univ.; [4] Inst. Astrophysics & Planetary Sciences, Ibaraki Univ.; [5] NAOJ; [6] Astronomical Sci., SOKENDAI; [7] ISAS/JAXA

We carried out the interferometric imaging observations of the Venusian atmosphere at the wavelength of 2.6mm (115GHz) with Nobeyama Millimeter Array in April, 2004. The spatial resolution was about 5 arcsec, which enabled us to obtain the spatial distribution of the Venusian atmosphere (the angular diameter was 24 arcsec). Two spectro-correlators were simultaneously utilized in our observations; a 32MHz bandwidth correlator with a frequency resolution of 32kHz, and a 512MHz bandwidth one which was optimized for multi frequency observations with the upper (115GHz) and the lower (103GHz) side band. The scientific goal is to obtain the temperature structures, and the spatial distribution of H₂SO₄ vapor or SO₂ gas inside the cloud layers of 50-60 km altitude which is a key information in understanding the Venusian cloud formation and extinction, as well as the wind velocity, and the mixing ratio profile of CO at the upper atmosphere of 80-95 km altitude. For this purpose, the absorption line of CO superimposed on the continuum emission of the Venusian atmosphere was observed during 3 days with integrating 8 hours a day. In this study, the preliminary results are presented.