

Ammonia meridional distribution of Jovian atmosphere and the radio observation

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We observed Jupiter at radio wavelength of 3 mm (100GHz) by Nobeyama interferometer (NMA) at 2000-2001. At the wavelength Jupiter emits thermal radiation from the atmosphere (troposphere), whose main absorber is ammonia vapor. Thus we can infer the ammonia distribution of the Jovian atmosphere due to compare the observation with calculations of thermal radiation model.

The ammonia distribution in a zone is induced by the chemical equilibrium model (Weidenschling and Lewis, 1969), but it is difficult to induce the distribution in a belt.

Considering the meridional circulation between zones and belts and the condensation of ammonia, we induce the distribution of the belt consistent with the radio observation without unnatural assumptions, for example abundant hydrosulfur (de Pater, 1986) and depressed ammonia in deeper level of the belt.