Equatorial cloud dynamics on Venus

Takeshi Imamura [1]

[1] The Institute of Space and Astronautical Science

Remote observations of Venus atmosphere in near-infrared have revealed the new features of cloud condensation/evaporation and atmospheric motions. At 1.2, 1.7 and 2.3 micrometer wavelengths the Venus atmosphere is relatively transparent, thus the cloud opacity variations can be seen projected against the thermal emission from below. The cloud features at these wavelengths are considered to be mostly those around the 50 km level. In this study, the responses of clouds to vertical winds are studied using a one-dimensional microphysical model. The results suggest that a thick lower cloud layer with trimodal size distribution can be produced by a transient upward wind associated with an atmospheric wave.

Intensive remote observations of Venus atmosphere in near-infrared in 1990's have revealed the new features of cloud condensation/evaporation and atmospheric motions. At 1.2, 1.7 and 2.3 micrometer wavelengths the Venus atmosphere is relatively transparent, thus the cloud opacity variations can be seen projected against the thermal emission from below. The cloud features at these wavelengths are considered to be mostly those around the 50 km level.

In this study, the responses of cloud structure and particle sizes to vertical winds associated with meridioal circulation and atmospheric waves are studied using a one-dimensional microphysical model. The results suggest that a thick lower cloud layer with trimodal size distribution can be produced by a transient upward wind associated with an atmospheric wave.