

Meridional momentum transport and UV albedo feature caused by an equatorial Kelvin wave in the Venus atmosphere

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Various UV features are observed at the cloud top of Venus. Especially the albedo pattern of wavenumber 1 which surrounds the equatorial region is considered to be the signature of an equatorial Kelvin wave, and the dynamical effect of the wave have attracted great attention. Classical Kelvin waves transport momentum only vertically, thus people have investigated the role of the Venusian Kelvin wave only from the viewpoint of vertical momentum transport. In the present study, I show that a meridional oscillation is newly produced under the influence of meridional circulation, and that the correlation between zonal oscillation and meridional oscillation brings about an equatorward transport of momentum. Such a horizontal redistribution of momentum must accumulate angular momentum, which was carried up by the meridional circulation in the equatorial region, in the upper atmosphere, thereby maintaining the high-speed zonal wind system called 'super-rotation'. It is also shown that the perturbation caused by the meridional circulation can account for the basic feature of the UV contrast called 'the dark horizontal Y'.