

Possibility of electric discharge in the Venusian atmosphere due to the super-rotation of clouds

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Several evidences of electromagnetic bursts were measured by various landers and orbiters studying Venus atmosphere (Venera landers, Venus Express and the Pioneer Venus Orbiter). The electromagnetic bursts that are taking place in the cloud region in the form of lightning or fluorescence might be a result of momentum transfer, solar convection and charge dispersion in the clouds of Venus. While the lightning in Earth takes place mostly in the equatorial region, in case of Venus it is possible for lightning to occur in the polar regions, considering the kinetic energy transfer and the formation of dipoles in both hemispheres of Venus. The meridional and zonal flows can interact and cause the charge separation which possibly lead to electromagnetic bursts in different spectrum and in different regions in Venus. In labs, it is observed that SO₂ emissions in UV region cause fluorescence which is one of the major phenomena taking place in the cloud tops. Based on the photochemical model published by *Krasnopolsky 2011* (doi:10.1016/j.icarus.2011.11.012) and the principle of refraction, we present the possibility of lightning/fluorescence phenomena being caused by the super-rotation of the clouds in the Venusian atmosphere.

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