

A model to study the Venus cloud structure based on several Venus observations, wherein SOIR solar occultations on Venus

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Venus is our nearest neighbor, and has a size very similar to the Earth's; however, previous spacecraft missions discovered an extremely dense (92 bar at the surface) and CO₂-rich atmosphere, with H₂SO₄ clouds located at altitudes between 40 and 70 km. These clouds cover the whole planet.

A cloud model was proposed by Pollack et al. (1993), with a vertical distribution of optical thicknesses of the different cloud particles (modes 1, 2 and 3). However, this model might be improved using new data obtained in the recent past from ground-based observations (IRTF telescope in Hawaii) and in-situ measurements from spacecraft observations (SOIR on Venus Express).

A new cloud model, correcting for some Pollack model's problems, is proposed using data from previous entry probes [Takagi & Iwagami, 2011]. However, this model does not describe the global Venus cloud structure.

The purpose of this work is to construct a more realistic cloud model. Ground-based spectroscopic observations of the Venus low-latitude region and Venus Express/SOIR observations of high-latitude will be used to construct this new cloud model.

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