



Sulfuric acid vapor in the atmosphere of Venus as observed by the Venus Express Radio Science experiment VeRa

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The cloud deck within Venus' atmosphere, which covers the entire planet between approx. 50 and 70 km altitude, consists mostly of liquid and gaseous sulfuric acid. The gaseous part increases strongly just below the main clouds and builds an approx. 15 km thick haze layer of H₂SO₄. This region is responsible for a strong absorption of radio waves as seen in VeRa radio science observations. The amount of the absorption, which is used to derive the abundance of gaseous sulfuric acid, depends on the signal frequency. VeRa probed the atmosphere of Venus between 2006 and 2015 with radio signals at 13 cm (S-band) and 3.6 cm (X-band) wavelengths. We present H₂SO₄ profiles derived from S-band and X-band absorption during the first occultation season in 2006. The comparison of the H₂SO₄ profiles derived from both frequency bands provides a reliable picture of the H₂SO₄ abundance. Distinct differences in the S- and X-band profiles may give a clue to increased SO₂ abundances. The derived VeRa results shall be compared with results provided by other experiments onboard Venus Express as well as with previous missions.