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Examination of the structure of Venusian clouds by analysis of simulated and measured radiance from the atmosphere of Venus

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Venusian clouds makes the major contribution to attenuating incident solar radiation and to the thermal state of the lower atmosphere. The clouds and haze are mainly composed of sulphuric acid aerosols and some other components but the nature and structure of clouds is not completely clear. Numerical modeling is necessary to better understand the radiative processes and recognize optical characteristics of aerosols in the atmosphere. Simulations are also useful to interpret the remote sensing data. The interpretation of spectroscopic data is not straightforward because observed spectra are the results of a combination of different contributions e.g. radiation transmitted, scattered and emitted in the atmosphere.

Presented work is directly connected with visible and infrared spectroscopic observations by VIRTIS during Venus Express mission. The main purpose of this paper is an interpretation of VIRTIS measurements through their comparison with spectra of the total directional radiance of the atmosphere numerically simulated by means of an radiation transfer model.