Properties of the Venus upper clouds from the phase dependence observed in the VMC images

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Venus Monitoring Camera (VMC) onboard ESA's Venus Express has been imaging Venus in four narrow band filters (UV, Visible, near-IR) for more than four years. This systematic record of Venus brightness is the longest dataset ever collected. VMC returns on average about 200 images per day ranging from global views of the full Venus disc down to high resolution images showing details of the upper cloud deck. We have initiated a statistical analysis of the complete dataset. We have modeled thus obtained phase dependence of brightness to obtain optical depth of the cloud deck and the haze above it as well as the clouds particle size. In spite of the clouds having a large optical thickness (more than 30) the phase dependence is still sensitive to these parameters. Although in most cases the expected 1-micron particles provide best fitting models, in some cases larger particles with radius up to 4 microns are a better fit. We also find that the haze of the submicron particles is thinner in the evening as compared to the morning and it also thickens towards the pole.