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# Venus' surface and near-surface Atmosphere observed by Galileo NIMS

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We evaluate the spartial variation in the Venus' surface and near-surface atmosphere using multispectral images obtained by the Near-Infrared Mapping Spectrometer (NIMS) on board the Galileo spacecraft. The Galileo made a close flyby to Venus in February 1990, and NIMS observed the nightside of Venus with 17 spectral channels, which includes the well-known spectral windows at 1.18. 1.74, and 2.3 μm. Venus' surface and near-surface atmosphere are sensed at 1.18μm, at which thermal radiation emitted from the planetary surface and near-surface atmosphere are observed. Although scattering by the atmospheric molecules and overlying clouds cannot be neglected in the thermal radiation at 1.18μm, it has been demonstrated that the effect of temporal and spatial variability in cloud trasmittance are correctable from simultaneous observations in the 1.74 and 2.3μm windows (Carlson et. al. 1993, Hashimoto et al. 2004). From the radiation measured in these two windows, we quantitatively correct the influence of clouds. The resulting images are correlated with the topographic map of Magellan. We remove the influence of topography, by calculating the synthetic radiance map that were created from the Magellan data. A spatial variation in the cloud and topography corrected image would be attributed to the spatial variation in the surface emissivity and/or near-surface atmosphere (temperature and/or water vapor abundance).

Keywords: Venus; surface; near-infrared wavelength