

***Ground Based Infrared Measurements of the Global
Distribution of Ozone in the Atmosphere of Mars T. Kostiuk***

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The global distribution of ozone in the atmosphere of Mars was determined from Doppler-limited infrared heterodyne spectroscopy measurements at the NASA IRTF during June 3-7, 1988. Mars spectra near two O_3 lines arising from the ν_3 band near 1031.45 cm^{-1} were used. The lines were Doppler-shifted out of the strong terrestrial ozone absorption spectrum and its effect was removed. Ozone measurements were obtained at eight beam positions over a range of latitudes (80° S to 20° N) and local solar zenith angles (-0.5° to $+5.5^\circ$). The beam size on the planet (~ 12 arcsec diameter) was 1.4 arcsec. A Martian CO_2 line appeared in the spectra and was inverted to retrieve local temperature profiles. Using these temperature profiles, the total ozone column abundance at each position was retrieved by fitting the measured line with synthetic spectra generated by a radiative transfer program. The only previous measurement of ozone at this season ($L_s \sim 204$) was made above the South polar cap by Mariner 7 and revealed an abundance of $10\text{ }\mu\text{m-atm}$. However, the retrieved O_3 column abundances from this investigation are less than $2.2\text{ }\mu\text{m-atm}$ at all positions sampled. These results are consistent with mid-spring abundances predicted by photochemical models of Liu and Donahue, and Shimazaki and Shimizu.