OZONE ABSORPTION AROUND 10 μm

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Among the various techniques used to measure the ozone concentration profile in the atmosphere, optical remote sensing techniques are widely used. They cover large parts of the electromagnetic range (MW,IR,UV) and, as far as the infrared domain is concerned, the 10 μm region is of special interest since it corresponds to an atmospheric window and to the strongest absorption of this molecule. Therefore, this region has been the subject of numerous spectroscopic studies ([a] [b] [c] [d] and refs. herein) in order to generate the best spectral parameters for atmospheric retrievals. In these studies two main methods are used to determine the O_3 concentration in the cell: measurement and monitoring of the pressure or use, as a reference standard, of the UV absorption at 254 nm. The goal of this talk is to present a comparison of the line intensity data recently obtained using either pressure measurements [a] [b] [c] or the UV absorption [d]. Whereas the results obtained in refs [a] [b] [c] agree to within 1.6% , it appears that the results of ref [d] are consistently about 4% higher. However it should be noted that in ref.[b] the two methods (pressure measurements and UV absorption) were used to derive the O_3 concentrations in the cell and that the results are in excellent agreement. A new calculation based on the experimental values of refs. [a] [b] [c] has been performed and compared with the HITRAN values showing that these latter values are also about 4% higher.

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[b] M.R. De Backer-Barilly and A. Barbe, J. Mol. Spectrosc., 205,43-53 (2001)
[c] G. Wagner, M. Birk, F. Schreier and J.-M. Flaud, J. Geophys. Res., submitted
[d] M.A.H. Smith,V. Malathy Devi,D.C. Benner and C.P. Rinsland, J. Geophys. Res.,in press