MEASUREMENTS OF THE SPECTROSCOPIC PARAMETERS OF H_2O UNDER TERRESTRIAL ATMOSPHERIC CONDITIONS

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High-resolution spectroscopic measurements of water vapor performed with a Bruker IFS-120 HR Fourier-transform spectrometer are presented. A multiple-spectra non-linear least-squares fitting algorithm has been developed to retrieve the parameters from the observed transimission spectra. An instrumental function appropriate to the spectrometer was developed.The line parameters have been obtained for more than 1100 spectral lines of water vapor in the 610 - 2100 cm^{-1} and 3000 - 4050 cm^{-1} regions. The measurements were performed at 252, 273 and 296 K. The line positions, line strengths, self-broadened line widths and self-induced line shifts have been measured for all these lines. Air-broadened line widths and air-induced line shifts have been obtained for some of the lines. The exponent n in the power law for the temperature-dependence of air-broadened line widths has been determined for the strong lines in the spectral regions considered. The vibrational dependence of the self- and air-broadened line widths has been demonstrated. The parameters obtained in this study have been compared with data in the literature.