

DETERMINING THE PROFILE OF STRONG WATER LINES AT VISIBLE AND NEAR INFRARED WAVELENGTHS

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Parameters of water vapour line profiles have been measured many times in visible and near infrared region of the spectrum. There are several databases of water line parameters. While the line positions are determined very accurately there is no final agreement about the line intensities. The biggest disagreement in intensities is found between databases HITRAN and ESA-WVR. There are strong indications [1] that HITRAN underestimates water absorption in the visible and near infrared. On the other hand the database ESA-WVR based on laboratory spectra recorded by Schermaul et al [2] apparently overestimates water line intensities. Believing that the correct answer lies somewhere in between we continued reanalysing the spectra [2]. Accurate analysis showed that there must be an additional source of systematic errors in the spectra [2] which makes the lines appear stronger than they actually are. Taking this into account we refitted the experimental data and produced a new set of parameters for strong water lines at visible and near infrared.

[1]. JQSRT 82, 151-163 (2003)

[2]. JMS 208, 32-42 (2001)