ACCURATE LABORATORY DETERMINATION OF THE MID AND SHORT WAVE INFRARED WATER VAPOR SELF-CONTINUUM. NEW MEASUREMENTS AND TEST OF THE MT_CKD MODEL

DIDIER MONDELAIN, ALAIN CAMPARGUE, *UMR5588 LIPhy, Université Grenoble Alpes/CNRS, Saint Martin d'Hères, France*; ROBERTO GRILLI, *Institut des Géosciences de l'Environnement, Université Grenoble Alpes, Saint Martin d'Hères, France*; SAMIR KASSI, *UMR5588 LIPhy, Université Grenoble Alpes/CNRS, Saint Martin d'Hères, France*; LOÏC LECHEVALLIER, *Institut des Géosciences de l'Environnement, Université Grenoble Alpes, Saint Martin d'Hères, France*; LUCILE RICHARD, DANIELE ROMANINI, SEMYON VASILCHENKO, IRENE VENTRILLARD, *UMR5588 LIPhy, Université Grenoble Alpes/CNRS, Saint Martin d'Hères, France*.

The semi empirical MT_CKD model of the absorption continuum of water vapor is widely used in atmospheric radiative transfer codes of the atmosphere of Earth and, recently, of exoplanets, but lacks of experimental validation in the atmospheric windows. We report on accurate water vapor absorption continuum measurements by Cavity Ring Down Spectroscopy (CRDS) and Optical-Feedback-Cavity Enhanced Laser Spectroscopy (OF-CEAS) at selected spectral points of the transparency windows centered around 4.0, 2.1, 1.6 and 1.25 μm. Temperature dependence of the absorption continuum is also measured in the 23-50 °C range for a few spectral points. The self-continuum water vapor absorption is derived either from the baseline variation of water vapor spectra recorded for a series of pressure values over a small spectral interval or from baseline monitoring at fixed laser frequency during pressure ramps. After subtraction of the local water monomer lines contribution, self-continuum cross-sections, C_S, are accurately determined from the pressure squared dependence of the continuum absorption measured up to about 15 Torr. The derived water vapor self-continuum provides a unique set of water vapor self-continuum cross-sections for a test of the MT_CKD model in four transparency windows.