THE ATMOSPHERIC CHEMISTRY EXPERIMENT, ACE: ORGANIC MOLECULES FROM ORBIT

J. J. HARRISON, G. GONZALEZ ABAD, N. ALLEN, P. F. BERNATH, *Department of Chemistry, University of York, Heslington, York, YO10 5DD, UK*; and C. BOONE, *Department of Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Canada*.

Volatile organic compounds (VOCs) are responsible for air pollution. In recent years it has become possible to detect tropospheric VOCs using satellite instruments such as the Atmospheric Chemistry Experiment Fourier transform spectrometer (ACE-FTS). The ACE-FTS is a high resolution (0.02 cm^{-1}) instrument covering the 750-4400 cm^{-1} spectral range in solar occultation mode. ACE was launched by NASA in August 2003 and the FTS continues to operate without any degradation in performance. The primary ACE mission goal is the study of ozone chemistry in the stratosphere although it is making a wide range of other measurements. The partial list of VOCs retrieved from ACE-FTS spectra include methane, methanol, formaldehyde, ethane, ethene and ethyne (see http://www.ace.uwaterloo.ca for a complete list of species and reprints of published papers). In this talk, new global retrievals for formic acid will be presented.
The ACE-FTS records spectra in the 3 micron region, which is particularly suitable for the retrieval of hydrocarbons. Methane and ethane are very strong in the 3 micron region, however the existing line parameters are not satisfactory. New high resolution laboratory spectra of ethane have therefore been recorded for the range of temperatures and pressures needed for atmospheric retrievals. Preliminary ethane retrievals will be presented using the laboratory spectra in the form of cross sections, rather than the existing HITRAN line parameters used previously.