Geophysical Research Abstracts
Vol. 12, EGU2010-7261, 2010
EGU General Assembly 2010

A Climatological Data Set from the ACE-FTS instrument for the period of 2004-2009

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The Atmospheric Chemistry Experiment-Fourier Transform Spectrometer (ACE-FTS) aboard the Canadian satellite SCISAT (launched in August 2003) was designed to investigate the composition of the upper troposphere, stratosphere, and mesosphere. ACE-FTS utilises solar occultation to measure temperature and pressure as well as vertical profiles of over thirty different chemical species including; O_3, H_2O, CH_4, N_2O, CO, NO, NO_2, N_2O_5, HNO_3, HCl, $ClONO_2$, CFC-11, CFC-12, and HF. Global coverage for each species is obtained approximately over one year and with a vertical resolution of typically 3-4 km. A quality-controlled climatology has been created for each of these 14 baseline species, where individual profiles are averaged over the period of 2004-2009. Measurements used are from the ACE-FTS version 2.2 data set including updates for O_3 and N_2O_5. The climatological fields are provided on a monthly and seasonal basis (DJF, MAM, JJA, SON) at 5 degree latitude and equivalent latitude spacing and on 33 pressure surfaces (31 of which are defined by the Stratospheric Processes And their Role in Climate (SPARC) Chemistry-Climate Model Validation Activity (CCMVal)). The equivalent latitudes are derived from the GEOS-5 analyses interpolated to the time and location of each ACE occultation. As an example of how the climatology data can be used, we present some preliminary results concerning the behaviour of some key species in the upper troposphere/lower stratosphere and Arctic regions such as water vapour.