Initial validation comparisons for the Atmospheric Chemistry Experiment (ACE)

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The Atmospheric Chemistry Experiment (ACE also known as SCISAT-1) is a Canadian scientific satellite mission designed to make remote sensing measurements of the Earth's atmosphere. The satellite payload was successfully launched into a 650 km altitude, 74 degree inclination orbit on August 12, 2003. The primary instrument is a high-resolution (0.02 cm^{-1}) Fourier Transform Spectrometer (ACE-FTS) operating between 750 and 4400 cm^{-1}. It also contains two filtered imagers to measure atmospheric extinction due to aerosols and clouds at 0.525 and 1.02 microns. The secondary instrument is a dual UV-visible-NIR spectrograph called MAESTRO (Measurement of Aerosol Extinction in the Stratosphere and Troposphere Retrieved by Occultation) which extends the wavelength coverage to the 280-1030 nm spectral region. Both instruments use solar occultation to obtain profiles of atmospheric trace gas species, temperature and pressure.

Throughout the life of the mission there will be ongoing validation comparisons to ground-, balloon-, and aircraft-based experiments as well as satellite data. A group of validation experiment teams from around the world has been assembled to collaborate on the ACE validation program which will start in full in Winter 2005. Some initial validation comparisons been made with profile results from satellite-based instruments including GOMOS, HALOE, OSIRIS, POAM III, and SAGE III. These initial results are promising and will be presented in this paper.