THE ATMOSPHERIC CHEMISTRY EXPERIMENT: OVERVIEW AND ALGORITHMS

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The Atmospheric Chemistry Experiment (ACE) is a satellite mission designed for remote monitoring of the Earth's atmosphere. Developed under the auspices of the Canadian Space Agency, ACE is scheduled for launch in summer 2003. The principal goal of the mission is to investigate the chemical and dynamical processes that govern the distribution of ozone in the stratosphere and upper troposphere. To this end, vertical profiles for trace gases, aerosols, temperature, and pressure will be inferred from the analysis of solar occultation spectra taken from a low Earth orbit (650 km). The spectra will be measured with a high-resolution (0.02 cm^{-1}, unapodized) Fourier Transform Spectrometer (FTS) operating between 2 and 13 microns and a UV/Visible spectrometer operating between 0.285 and 1.03 microns with a resolution of 1 to 2 nm. An overview and status report of the mission will be presented, along with algorithms for the retrieval of altitude profiles for pressure, temperature, and volume mixing ratios from the FTS measurements.