



## **The Atmospheric Chemistry Experiment (ACE): overview and first results**

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The Atmospheric Chemistry Experiment (ACE), also known as SCISAT-1, is a Canadian scientific satellite mission designed to perform remote sensing measurements of the Earth's atmosphere. It was launched on August 12, 2003 into a 650 km altitude, 74 degree circular orbit. The primary instrument on-board SCISAT-1 is a high-resolution ( $0.02 \text{ cm}^{-1}$ ) Fourier Transform Spectrometer (ACE-FTS) operating between 750 and  $4400 \text{ cm}^{-1}$ . It also contains two filtered imagers to measure atmospheric extinction due to clouds and aerosols 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 the solar occultation technique to obtain profiles of atmospheric trace gas species, temperature and pressure.

The goals of the ACE mission are: (1) to measure and to understand the chemical and dynamical processes that control the distribution of ozone in the upper troposphere and stratosphere, with a particular emphasis on the Arctic region; (2) to explore the relationship between atmospheric chemistry and climate change; (3) to study the effects of biomass burning in the free troposphere; (4) to measure aerosol number density, size distribution and composition in order to reduce the uncertainties in their effects on the global energy balance. The mission status and first science results will be presented in this paper.