

## THE ATMOSPHERIC CHEMISTRY EXPERIMENT (ACE) SATELLITE: NEW PROCESSING RESULTS

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After almost 16 years in low-Earth orbit, the ACE satellite (aka SCISAT) is making near-real time measurements of numerous trace gases, thin clouds, aerosols and temperature by solar occultation. A high inclination orbit gives coverage of tropical, mid-latitude and polar regions. The primary instrument is a high-resolution ( $0.02\text{ cm}^{-1}$ ) infrared Fourier transform spectrometer (FTS) operating in the  $750\text{--}4400\text{ cm}^{-1}$  region, which provides data for the vertical distribution of trace gases, and for temperature and pressure. Aerosols and clouds are monitored by their infrared spectra and through the extinction of solar radiation using two filtered imagers.

Our new version of FTS processing, v.4.0, retrieves 44 molecules including 19 halogen-containing gases, in addition to 24 isotopologues, and features new routine data products  $\text{SO}_2$ , ClO, HFC-134a, HFC-23, acetone, acetonitrile, PAN (peroxyacetyl nitrate) and low altitude  $\text{CO}_2$ . At low altitudes (5.5 to 17.5 km) collision-induced absorption spectra of nitrogen provide the pointing (tangent altitude of the field-of-view). When combined with the Canadian weather service model, the pointing yields our new low altitude  $\text{CO}_2$  data product. ACE monitors the Montreal Protocol substances that deplete the ozone layer, and all of the main greenhouse gases, including  $\text{CO}_2$ , responsible for climate change. See <http://www.ace.uwaterloo.ca> for more information.