



Seasonal comparisons of retrieved temperature and water vapour between ACE-FTS and COSMIC.

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Motivated by the selection of a high-resolution solar occultation Fourier transform spectrometer (FTS) to fly to Mars, we developed new algorithms for retrieving vertical profiles of temperature and pressure from spectra. We present temperature retrieval results from remote sensing spectra collected by the Canadian Space Agency's (CSA) Atmospheric Chemistry Experiment (ACE), which recently celebrated its tenth year in orbit. ACE utilizes a high-resolution (0.02 cm^{-1}) Fourier Transform Spectrometer (FTS) operating between $750\text{--}4400 \text{ cm}^{-1}$ in limb-scanning mode using the sun as a light source (solar occultation). We compare our retrieved profiles to those of the ACE Science Team and the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC). COSMIC is a group of six small satellites that use signals from GPS satellites to measure water vapour pressure and temperature via radio occultation. We have collected five sets of zonal and seasonal coincidences with a tight criteria of 150 km and 1 hour. Retrieved H_2O profiles from both satellites will also be presented for these data sets. Compared to ACE, we can achieve T differences between 1 and 5 K below 50 km, perform less well between 50 and 100 km. Compared to COSMIC, available below 40 km, we perform similarly, while the ACE retrievals are in close agreement.