Remote Sensing of Tropospheric Chemistry from Space -
the Tropospheric Emission Spectrometer

R. Beer, M. Luo, H. Worden, D. Rider
S. A. Clough, P. D. Brown
C. P. Rinsland,
C. D. Rodgers

The Tropospheric Emission Spectrometer (TES) is one of the four instruments
to be flown on NASA’s EOS Chcm 1 platform at the beginning of the next century.
The TES instrument is designed to measure vertical profiles of key chemical
species (e.g., O3, H2O, CO, CH4, NO, NO2 and HNO3) and temperature from high
spectral resolution thermal emission measurements recorded with an imaging
Fourier transform spectrometer. The TES observations, recorded in nadir and
limb-viewing modes, will provide a global, multi-year, dataset useful for
studying the budgets, transport, and trends of key tropospheric chemical species
and quantifying the effects of human activities on both tropospheric chemistry
and climate. TES will also study regional and local environmentally significant
pollution events. This paper will introduce the TES instrument design and
operation concept. The TES science team is in the process of developing a
community retrieval algorithm. We will present the strategies and some
important decisions in processing TES data, and some preliminary retrieval
simulations and error analyses.