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

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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., 03, H20, CO, CH4, NO, N02 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. Wc will present the strategies and some important decisions in processing TES data, and some preliminary retrieval simulations and error analyses.