Aura Tropospheric Emission Spectrometer (TES) Measurements Related to the Carbon, Nitrogen and Water Cycles and Their Impact on Air Quality and Climate

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The Aura satellite, launched in 2004 provides a comprehensive set of measurements of stratospheric and tropospheric composition. In particular, the TES instrument provides measurements of many species important for understanding the carbon, nitrogen, and water cycles and the relationships between them. This poster provides an overview of TES measurements of ozone, water vapor and its isotopes, CO, CO_2, ammonia, methane, and N_2O and shows examples of how these measurements are used to constrain budgets related to these natural cycles, the linkages between them, and their impact on air quality and climate. These measurements, mostly in the free troposphere, point towards the need for co-measurements of multiple species, with the capability to estimate concentrations in the planetary boundary layer in order to provide improved constraints on surface fluxes and emissions, sinks, and transport of carbon, nitrogen, and water and how their corresponding cycles interact. Next generation satellite concepts with these capabilities are presented

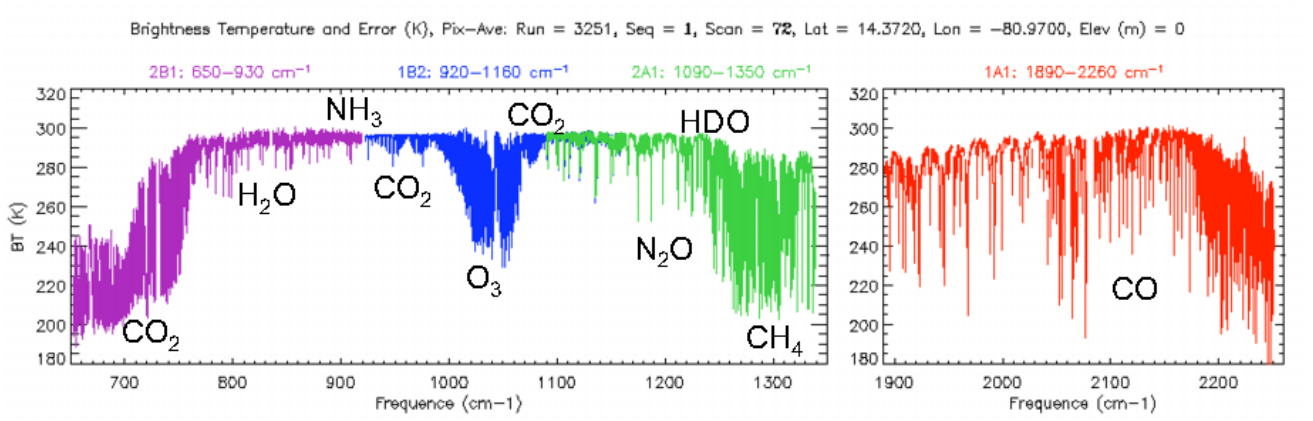

Figure 1. TES observes co-located CO_2, CH_4, N_2O, CO, O_3, H_2O, HDO, NH_3, temperature and optical cloud properties.