

## 1.154 Pollution over Megacity Regions from the Tropospheric Emission Spectrometer (TES) .

Presenting Author:

**Karen Cady-Pereira**, AER, [kcadyper@aer.com](mailto:kcadyper@aer.com)

Co-Authors:

**Jessica Neu**, JPL

**Vivienne Payne**, JPL

**Jennifer Hegarty**, AER

**Ming Luo**, JPL

**Kevin Bowman**, JPL

Abstract:

The world's megacities, defined as urban areas with over 10 million people, are growing rapidly in population and increasing in number, as the migration from rural to urban areas continues. This rapid growth brings economic opportunities but also exacts costs, such as traffic congestion, inadequate sanitation and poor air quality. Monitoring air quality has become a priority for many regional governments, as they seek to understand the sources and distribution of the species contributing to the local pollution. Hyperspectral infrared instruments orbiting the Earth can measure many of these species simultaneously, and as they measure averages over their footprints, they are less sensitive to proximity to strong point sources than *in situ* measurements, and thus provide a more regional perspective.

The JPL TES team has selected a number of megacities as Special Observation targets. These observations, or transects, are sets of 20 closely spaced (12 km apart) TES observations carried out every sixteen days. We will present the TES ozone (O<sub>3</sub>), peroxyacetyl nitrate (PAN), ammonia (NH<sub>3</sub>), formic acid (HCOOH) and methanol (CH<sub>3</sub>OH) data collected over Mexico City and Lagos (Nigeria) from 2013 through 2015. If time permits we will also present data over other cities in or near biomass burning regions, such as Delhi. We will combine the TES data with MODIS AOD and AIRS CO, as well as back trajectories, to determine to what degree the seasonality and spatial gradients in the TES measurements are driven by local emissions, biomass burning and regional circulation patterns. Some of the transects demonstrate very nicely the synergy obtained from simultaneous measurements of multiple trace species. We will also discuss how the spatial variability along the transects is related to topography and land use.