

Fresh insights into the sources and distribution of peroxyacetyl nitrate (PAN) from new in situ and satellite observations

Emily Fischer,
Department of Atmospheric Science,
Colorado State University

Abstract

PAN (peroxyacetyl nitrate, $\text{CH}_3\text{C}(\text{O})\text{OONO}_2$) is produced when hydrocarbons are oxidized in the presence of nitrogen oxide radicals ($\text{NO}_x = \text{NO} + \text{NO}_2$), and it is thought to be the most important atmospheric NO_x reservoir and a critical pathway by which NO_x reaches the remote troposphere. Thus the formation and transport of PAN is intimately linked to remote oxidant and nitrogen deposition budgets. We present the analysis of new in situ and satellite observations to highlight features of regional-to-global PAN distributions. The latest in situ data were collected as part of the Front Range Air Pollution and Photochemistry Experiment (FRAPPÉ), which took place in the Colorado Front Range during July and August, 2014. In addition, we show new PAN retrievals from the Tropospheric Emission Spectrometer (TES), flying on the NASA Aura satellite. New retrievals of PAN from high latitudes during spring offer unprecedented observations of the inter-annual variability of PAN and the role of biomass burning in the generation of extreme PAN abundances.

Monday, January 12, 2015

3:15 p.m. Refreshments

3:30 p.m. – Seminar

FL2-1022, Large Auditorium