Source Attribution Using Satellite Products and Models to Inform Air Quality Planning and Health Accountability

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OMI satellite products indicate continued efficacy of ground-level ozone abatement via regional NO\textsubscript{x} emission controls

Column-diagnosed transitional regime values vary in space and time; estimated here with GEOS-Chem
AQM Partners: Kurt Kebschull (CT DEEP), Gail Tonnesen (EPA Region 8)
Evaluating existing and newly derived annual mean PM$_{2.5}$ products for the NE U.S.A. (2011)

- Gauge uncertainties via different approaches
- Determine ‘best estimate’ for NYS health impacts studies; try seasonal/daily exposure maps
- New tool: with Gabriele Curci (University of L'Aquila), adapted GEOS-Chem FlexAOD to calculate CMAQ AOD
Health Impact Analyses

- Quantitative risk assessments for multiple health outcomes in response to modeled/measured changes in (source-specific) PM$_{2.5}$ and O$_3$.
- Determine empirical associations between air pollution and hospital admissions and emergency department visits using time series regression methods.

% Change in Mortality per 10 ppb Change in MD8 Ozone

Objectives of our proposed core activities

- Conduct a multi-pollutant health impact analysis for at least the past decade over NYS

- Attribute background vs. U.S. anthropogenic sources of pollution for linkage to health analyses on inter-annual to daily (where possible) time scales

- Estimate uncertainties in satellite-based and modeling approaches to source attribution and to exposure mapping at multiple time and space scales