

**15th Annual International Emissions Inventory Conference**  
**"Reinventing Inventories - New Ideas in New Orleans"**  
**Presentation Submission**

**Title of Presentation:**

Analysis of Power Plant NO<sub>x</sub> Emission Changes and Their Impact on Ozone in the Eastern United States

**Abstract of Presentation:**

US electric power generation plants and other large industrial sources have recently implemented NO<sub>x</sub> emission controls in response to the 1998 NO<sub>x</sub> SIP Call and the NO<sub>x</sub> Budget Trading Program. As a result, eastern US power plant NO<sub>x</sub> emissions decreased between 1999 and 2004 by about 50 percent during the summer ozone season (May – September).

Power plant NO<sub>x</sub> emissions are measured by Continuous Emission Monitoring Systems (CEMS). The EPA Clean Air Markets Query Wizard data base tool has made CEMS data more accessible and easier to analyze than in the past. CEMS data for the 1999 - 2004 period are examined to understand the temporal and spatial extent and variability of the power plant NO<sub>x</sub> emission changes.

CEMS data are used to construct nationwide monthly updates to the power plant portion of the EPA's 1999 National Emission Inventory (NEI99). The NEI99 is the most recent final US emission inventory publicly available for use in research air quality models. The emission processing is carried out with custom-built FORTRAN routines at the NOAA/ESRL Chemical Sciences Division. The monthly updates to the NEI99 are available to any interested researchers.

2004 ozone season O<sub>3</sub> concentrations in the eastern US are simulated by the Weather Research and Forecasting Chemistry model (WRF-Chem). The base model scenario uses the NEI99, while the perturbation scenario uses monthly 2004 updates to the power plant portion of the NEI99. The impact of the power plant NO<sub>x</sub> emission changes on O<sub>3</sub> in the eastern US is discussed.

**Authors:**

Gregory Frost, Si-Wan Kim, Stuart McKeen, Eirh Yu Hsie, and Michael Trainer  
*Chemical Sciences Division, Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, CO*

Steven Peckham and Georg Grell  
*Global Systems Division, Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, CO*

**Corresponding Author Information:**

Gregory Frost

*Mailing address:*

Chemical Sciences Division  
Earth System Research Laboratory  
National Oceanic and Atmospheric Administration

325 Broadway

Mail Stop R/CSD4

Boulder, CO 80305-3328

*Phone:* 303-497-7539

*Fax:* 303-497-5373

*Email:* Gregory.J.Frost@noaa.gov