# NO<sub>2</sub>: New Insights on an Old Pollutant

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### NO<sub>2/x</sub> Emissions and Trends



 Atmospheric concentrations going down similar to mobile source NO<sub>x</sub>:





- Emissions have gone down
  - Mobile
  - Electrical generation
  - Industrial processes
- Reductions in mobile and EGU emissions expected to continue

Sources: Rudokas et al., (2015) ES&T; http://www.epa.gov/airtrends/aqtrnd99/pdfs/tables/a\_4.pdf;; http://www.epa.gov/airtrends/nitrogen.html

## NO<sub>2</sub>: What are the Issues?

- Potential health impacts:
  - A marker and/or an agent?
    - Jennifer Peel
- Controls, trends and other concerns:
  - Evolution and future of controls
    - Sougato Chatterjee
  - Impacts of controls and atmospheric response
    - Robert Harley
    - David Carslaw
- U.S. Near-road monitoring network
  - Wealth of new exposure information coming
- NO<sub>x</sub>-control is motivated by other concerns as well
  O<sub>3</sub> and PM



## $NO_x$ Impacts on $O_3$ and $PM_{2.5}$

#### $\mathsf{O}_3$ sensitivity to Mobile source $\mathsf{NO}_x$

(July 20, 2011, 16:00)



 $NO_x$  emissions contribute to  $O_3$  formation during higher  $O_3$  periods

PM<sub>2.5</sub> sensitivity to mobile source NO<sub>x</sub> (January 1, 2011, 03:00)



#### NO<sub>x</sub> emissions contribute to PM



### $NO_x$ Impacts on $O_3$ : Goes Both Ways



