

Assessment of Interstate Impacts & Source Contributions

James Boylan
(Georgia EPD – Air Protection Branch)

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Outline

- Background
- Attainment Modeling
- Source Apportionment Modeling
- Addressing Interstate Transport

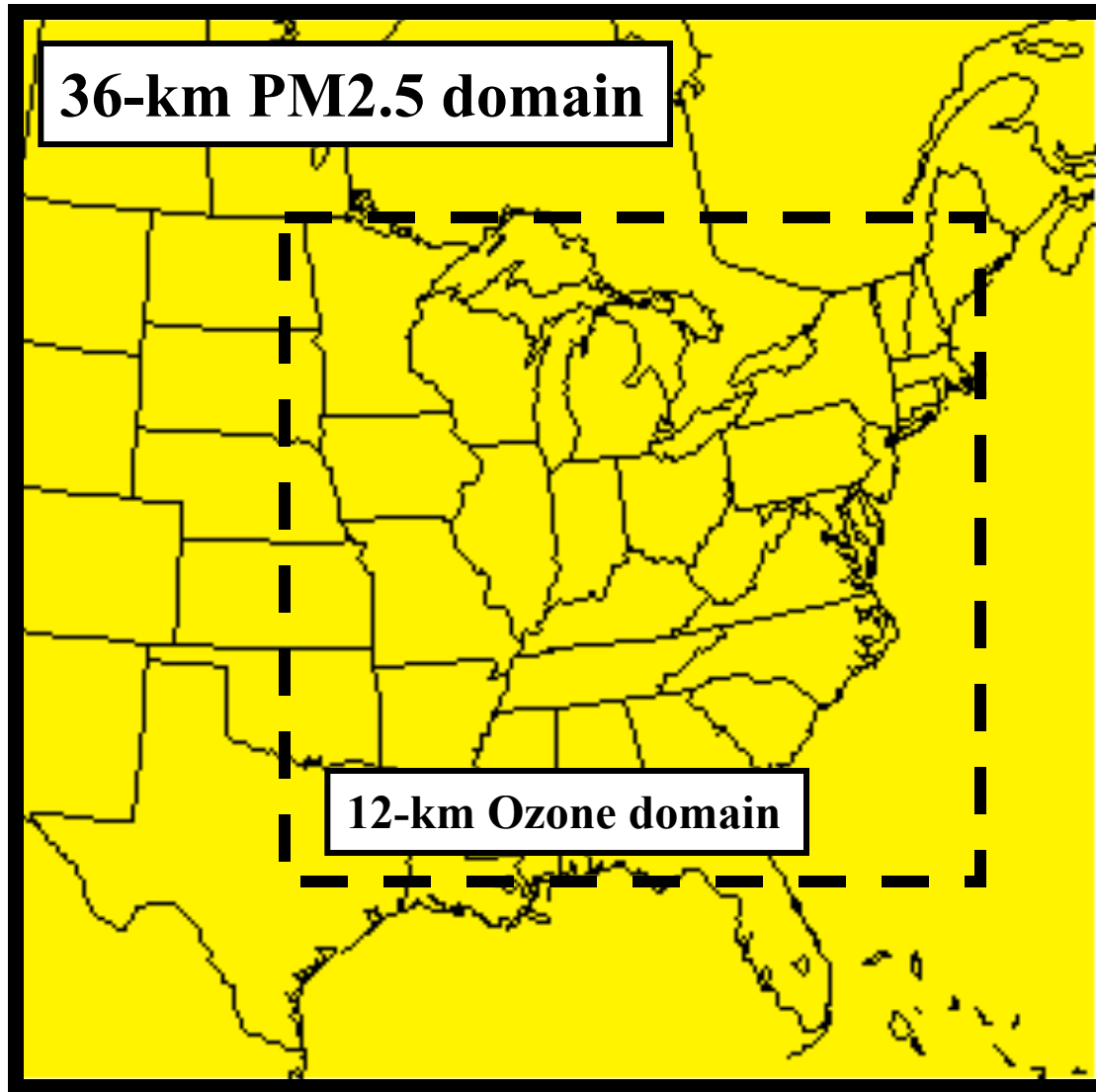
Background

- The SESARM states (AL, GA, FL, MS, NC, SC, TN, KY, WV, VA) are part of a joint study with LADCO (Midwest) and OTC (Northeast) to analyze regional particulate matter (PM) and ozone transport in the Eastern U.S.
- The purpose of the “State Collaborative”:
 - 1.Support states response to the CAIR remand
 - 2.Assess additional controls needed for the new ozone and PM_{2.5} NAAQS
 - 3.Quantify interstate impacts (Section 110(a)(2)(D))

Modeling Overview

- CAMx v4.51 is being used to simulate future year PM2.5 and ozone levels and PSAT & OSAT are being used to perform source apportionment
 - **2009** → Planning year for ozone moderate nonattainment areas and PM2.5 nonattainment areas (attainment date 2010)
 - **2012** → Planning year for ozone moderate nonattainment areas and PM2.5 nonattainment areas, with 3-year extension
 - **2018** → First milestone year for regional haze planning

Modeling Domain



Attainment Modeling

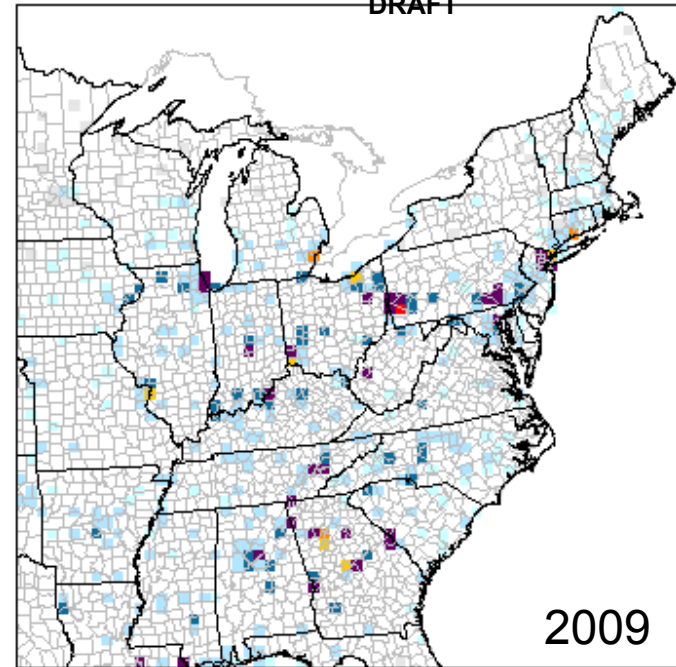
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PM_{2.5} Annual Concentrations

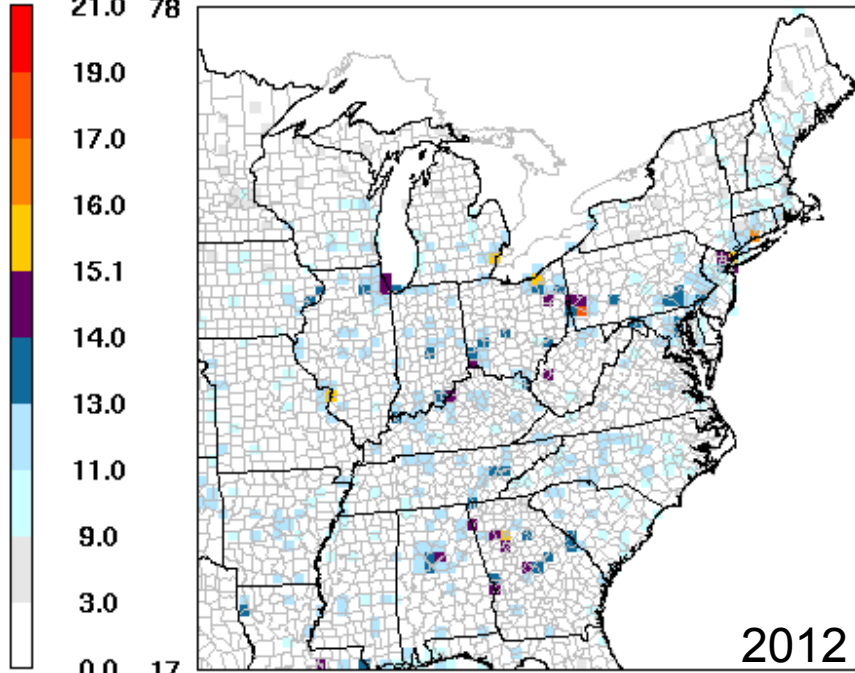
Annual (No. of Counties > NAAQS)				
	Midwest	Southeast	Northeast	Total
2009	4	3	2	9
2012	3	1	2	6
2018	2	0	1	3

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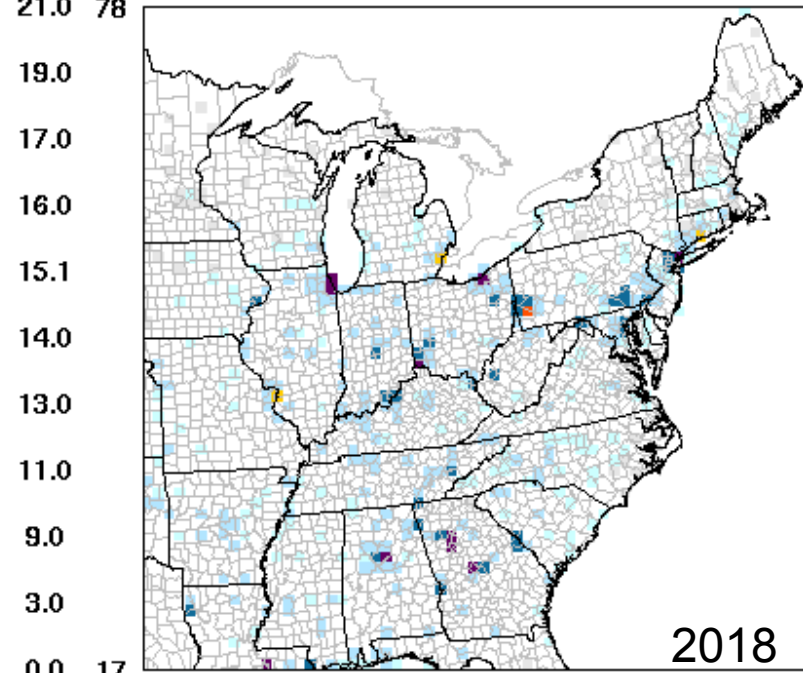
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Based on 2005 meteorology

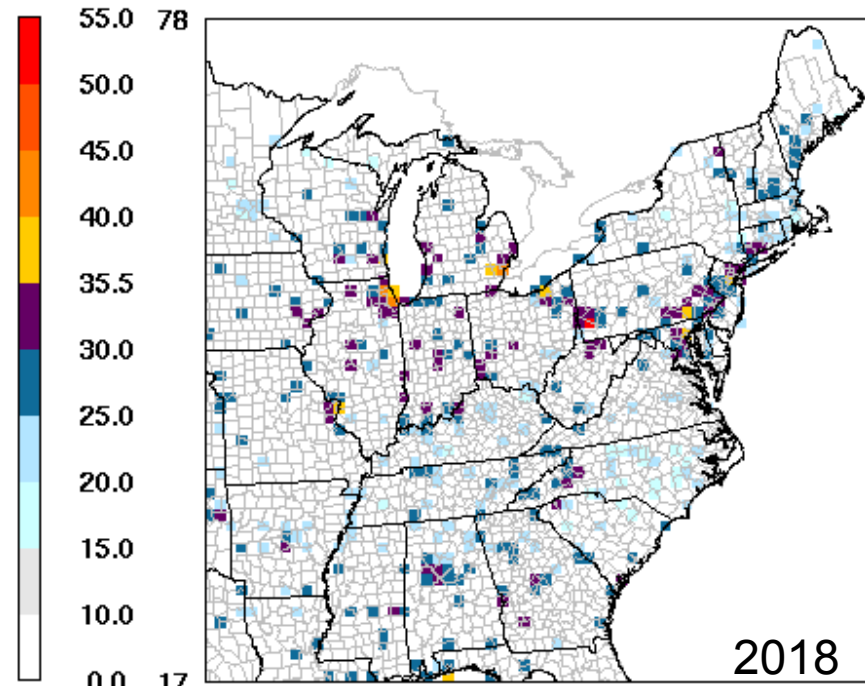
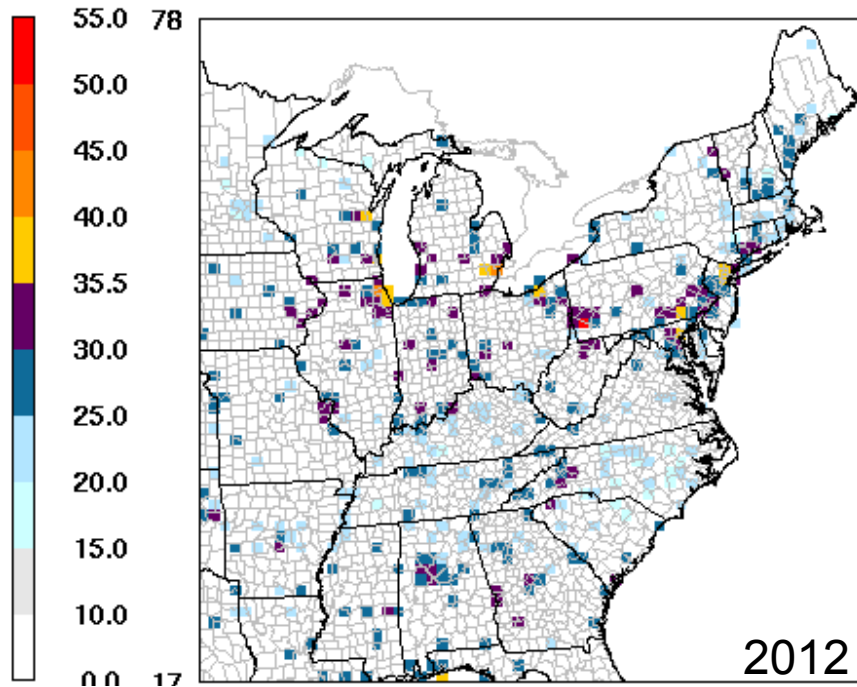
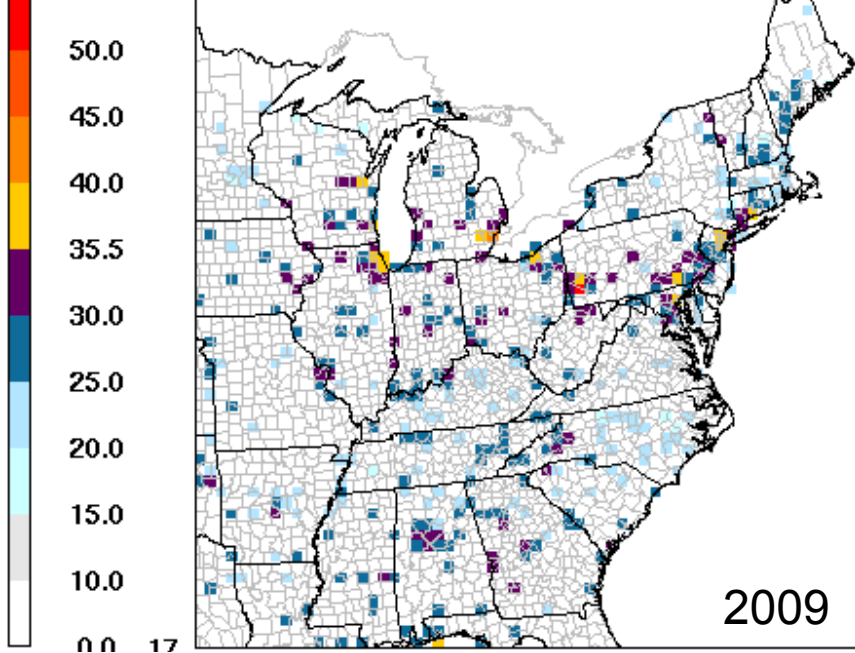
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PM_{2.5} Daily Concentrations

Daily (No. of Counties > NAAQS)				
	Midwest	Southeast	Northeast	Total
2009	6	0	6	12
2012	6	0	5	11
2018	6	0	4	10

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Based on 2005 meteorology

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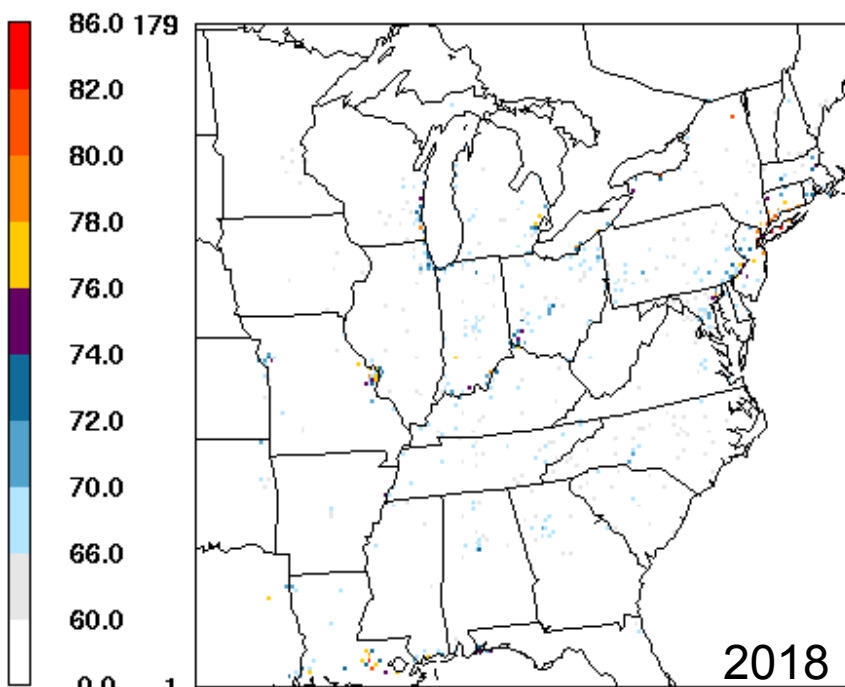
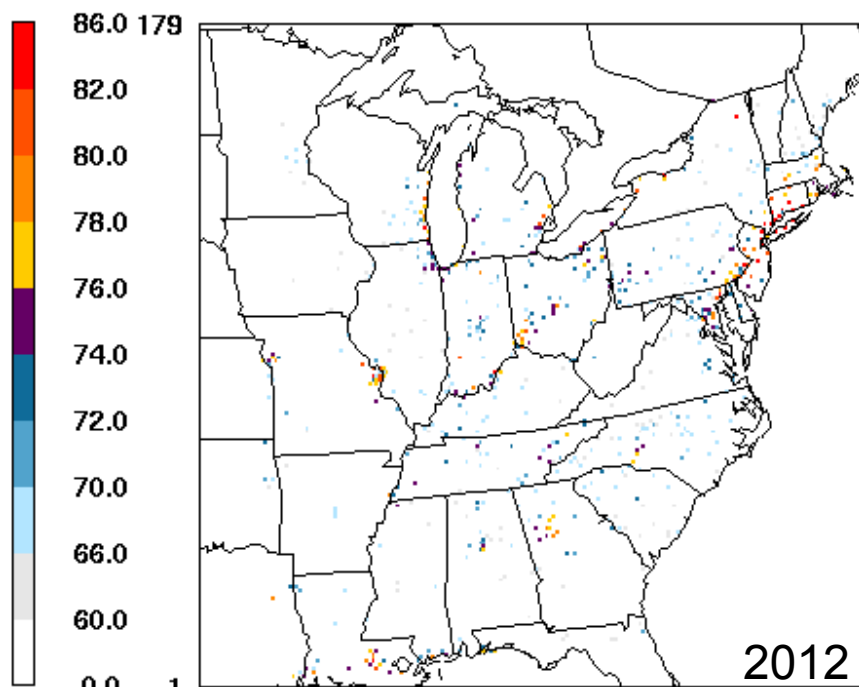
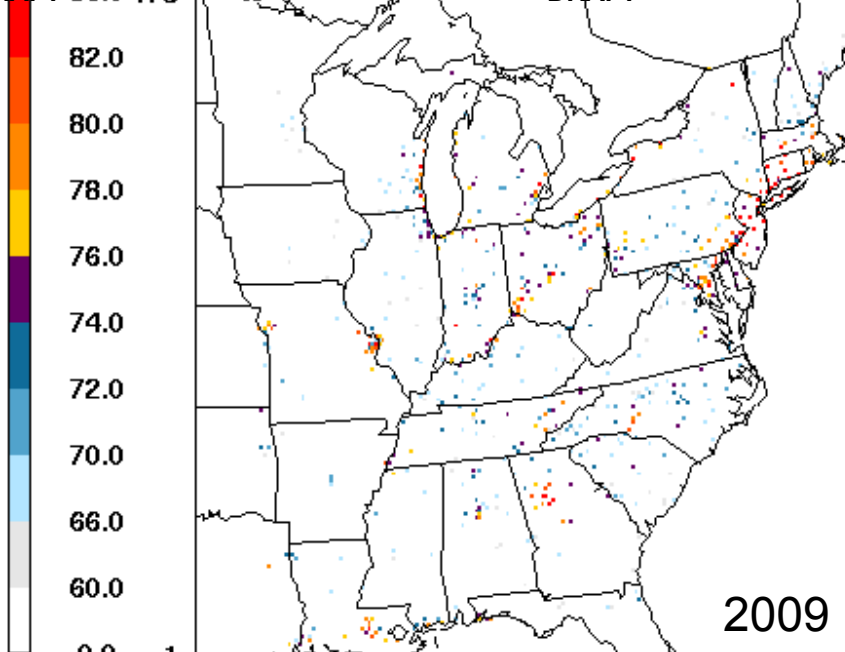
Ozone 8-Hour Concentrations

8-Hour - 0.08 ppm NAAQS (No. of Counties > NAAQS)				
	Midwest	Southeast	Northeast	Total
2009	1	1	8	10
2012	0	0	3	3
2018	0	0	0	0

8-Hour - 0.075 ppm NAAQS (No. of Counties > NAAQS)				
	Midwest	Southeast	Northeast	Total
2009	50	31	66	147
2012	30	14	45	89
2018	8	2	13	23

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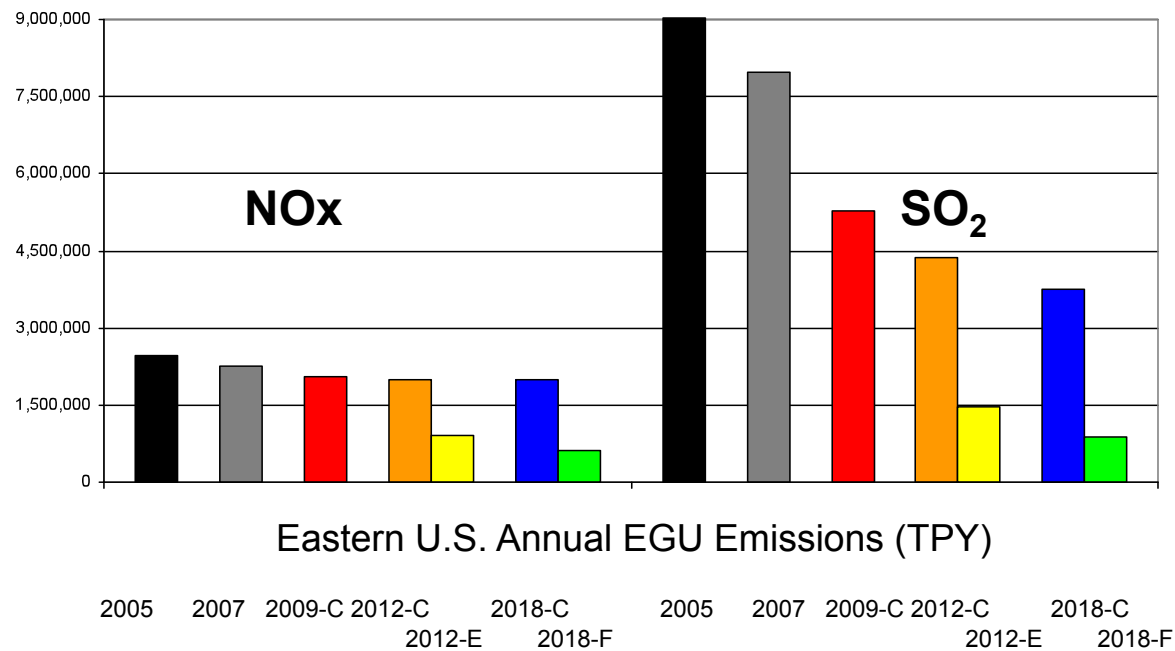
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Based on 2005 meteorology

EGU Control Strategies

	Scenario E (2012)	Scenario F (2018)
NO _x	0.125 lb/MMBTU	0.07 lb/MMBTU
SO ₂	0.250 lb/MMBTU	0.10 lb/MMBTU



Reference: "Options for EGU Controls in the Eastern U.S.: White Paper", October 3, 2008, State Collaborative Technical Workgroup

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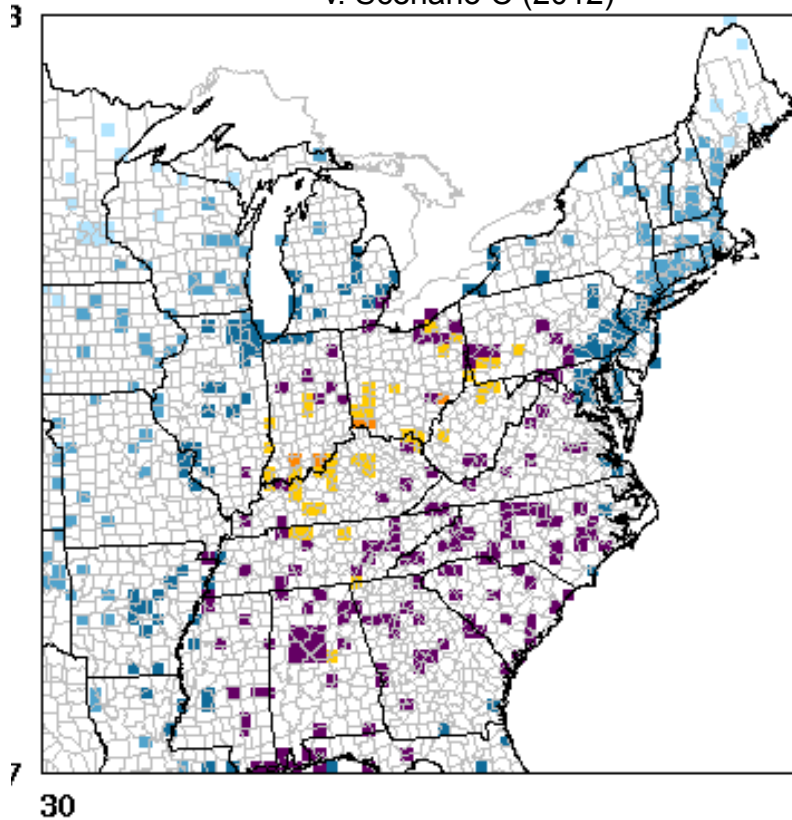
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PM_{2.5} Annual: Air Quality Improvement

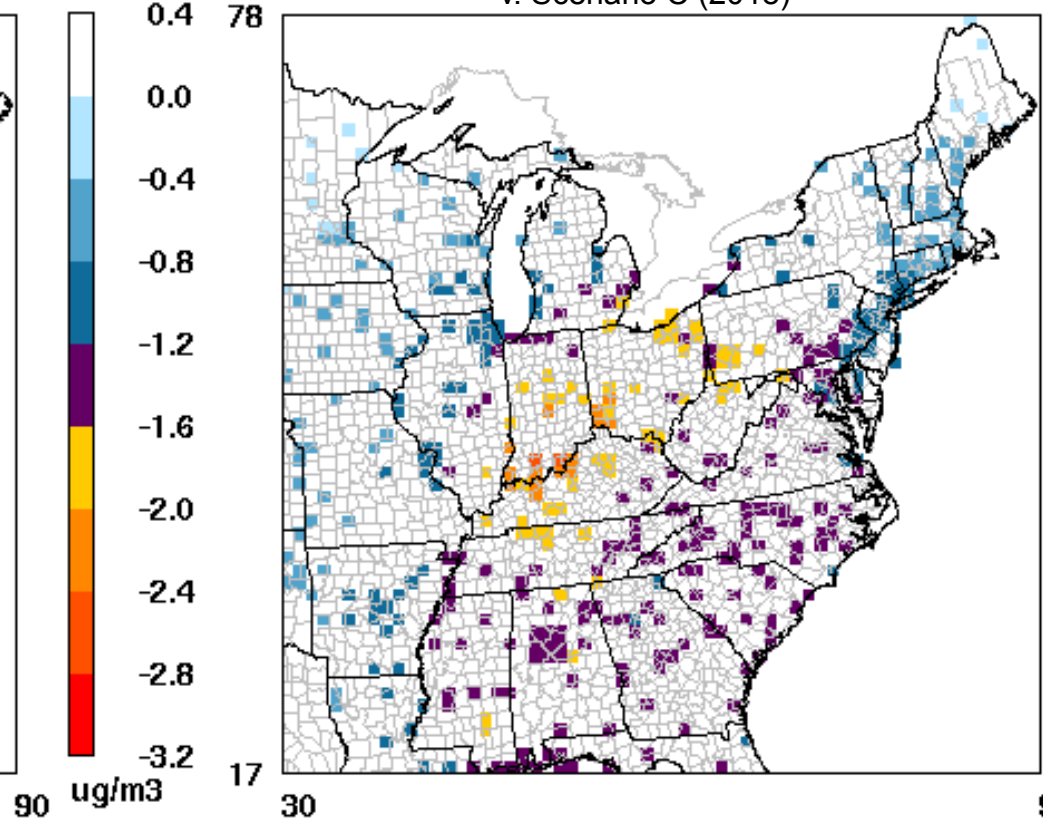
(relative to Scenario C)

Scenario E (2012)
v. Scenario C (2012)



October 1, 2005 0:00:00
Min= -2.2 at (52,42), Max= -0.2 at (86,76)

Scenario F (2018)
v. Scenario C (2018)



October 1, 2005 0:00:00
Min= -2.6 at (52,42), Max= -0.2 at (86,76)

Average Improvement: PM_{2.5} Annual = 1.0 ug/m³ (Scen. E); 1.1 ug/m³ (Scen. F)

Based on 2005
meteorology

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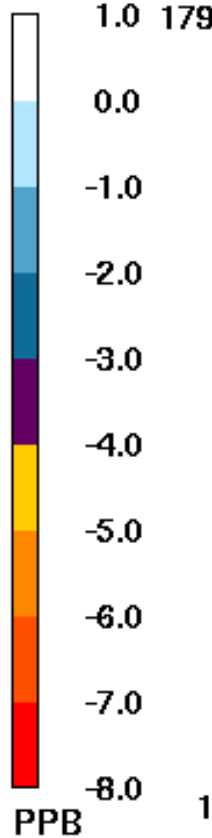
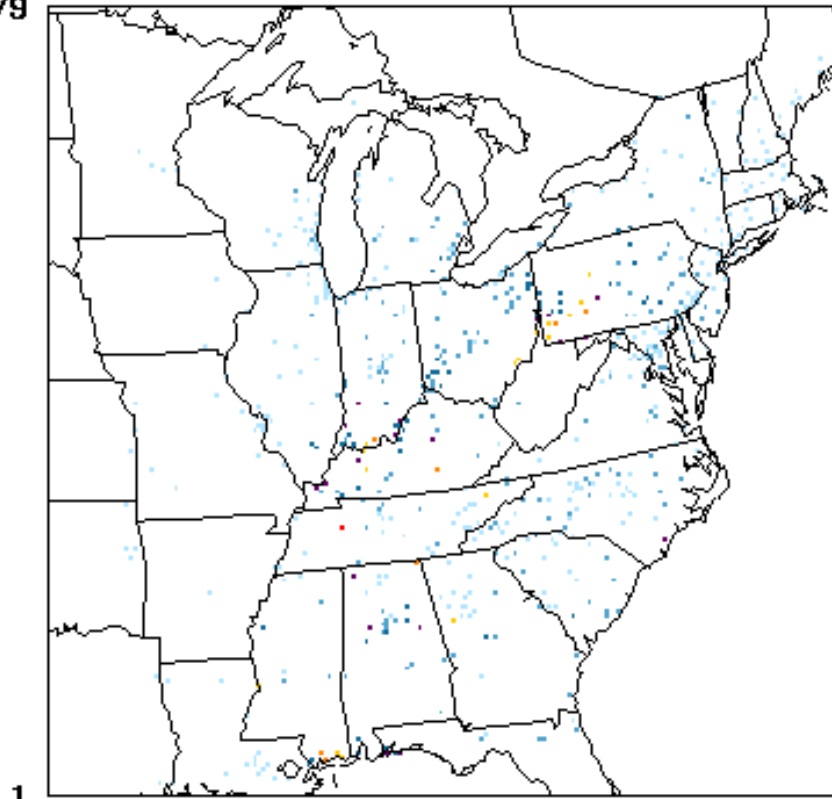
Ozone: Air Quality Improvement

(relative to Scenario C)

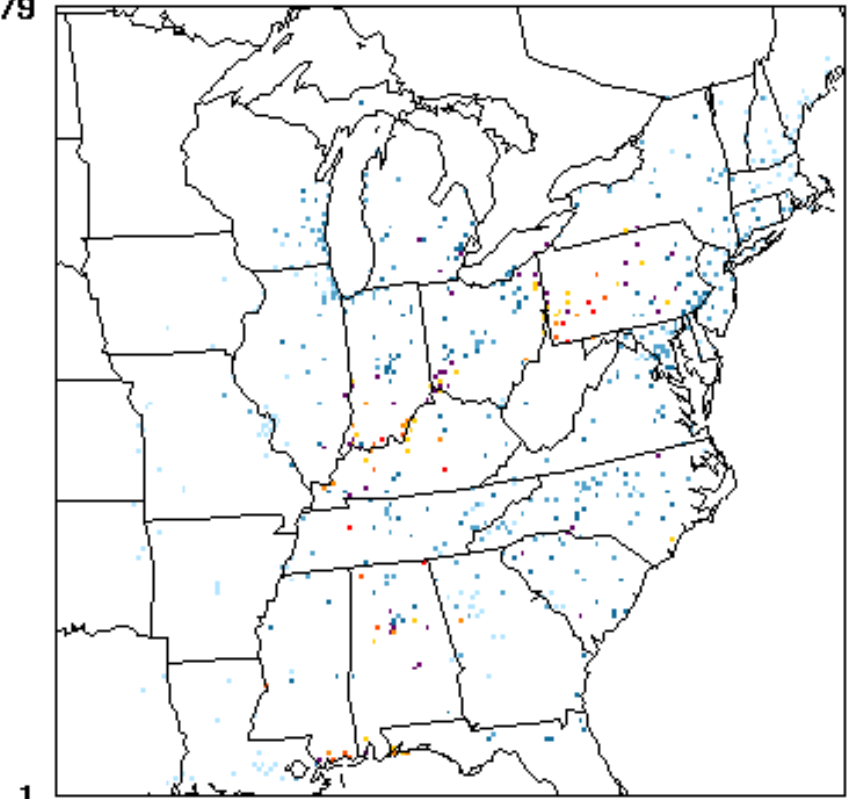
Scenario E (2012)
v. Scenario C (2012)

Scenario F (2018)
v. Scenario C (2018)

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September 24, 2005 0:00:00
Min= -9.0 at (72,61), Max= 0.0 at (1,1)

1
1

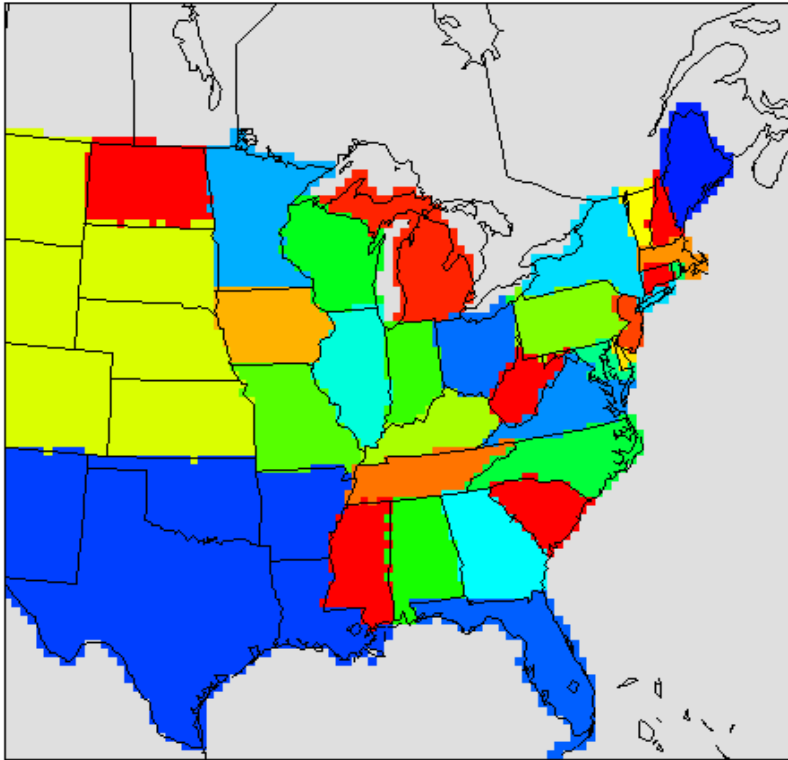
September 24, 2005 0:00:00
Min= -12.0 at (72,61), Max= 0.0 at (1,1)

Average Improvement: Ozone = 1.6 ppb (Scen. E); 2.4 ppb (Scen. F)

Based on 2005
meteorology

Source Apportionment Modeling

PSAT Modeling

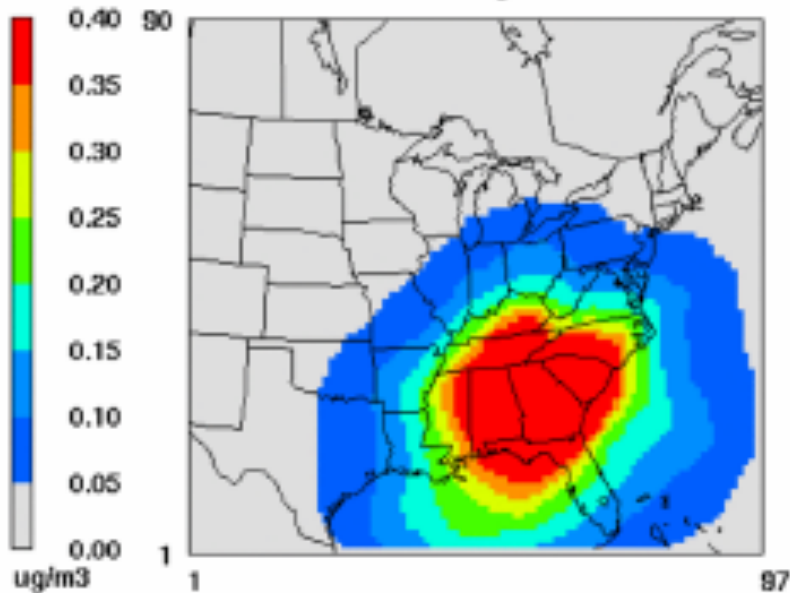


- **32 PSAT Source Regions**
- **6 PSAT Source Categories**
 - EGU Point
 - Non-EGU Point
 - Ammonia + Biogenics
 - Non-Road (w/ Marine)
 - On-Road Mobile
 - Area Sources

PSAT Contribution from GA

Absolute Contribution to Annual PM2.5

2005 Meteorology, 2005 Emissions
Georgia

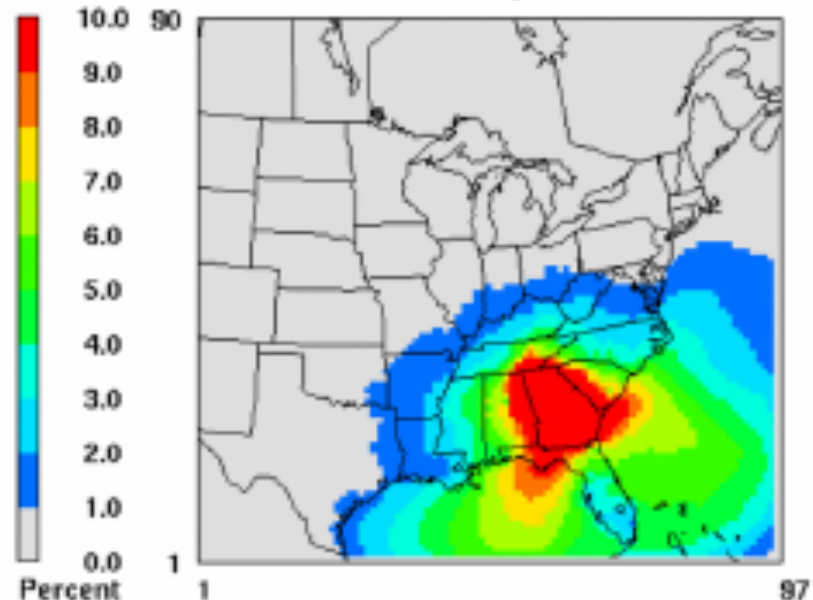


January 1, 2005 5:00:00
Min= 0.00 at (1,1), Max= 7.71 at (58,29)

Absolute, 2005 Emissions, 2005 Meteorology

Percentage Contribution to Annual PM2.5

2005 Meteorology, 2005 Emissions
Georgia



January 1, 2005 5:00:00
Min= 0.0 at (1,1), Max= 51.4 at (58,29)

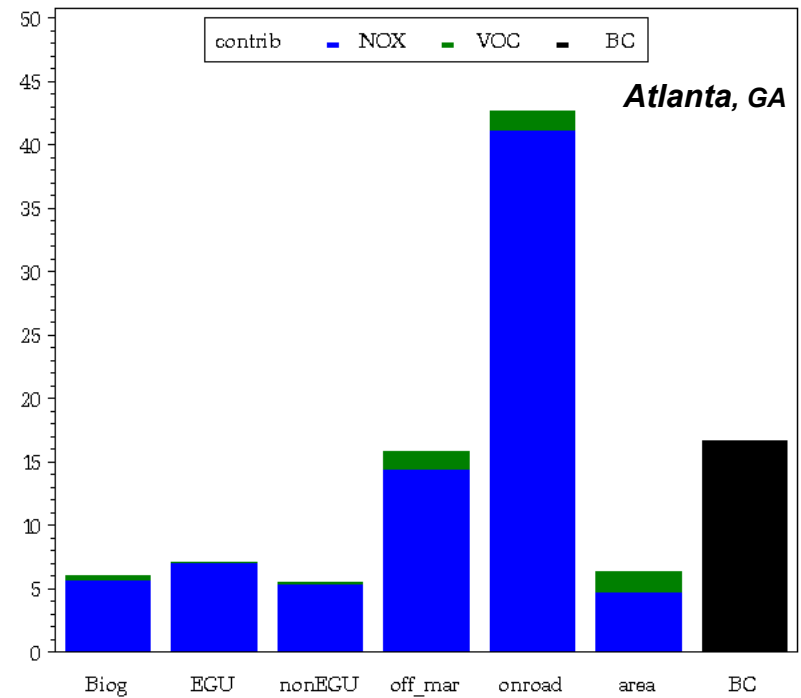
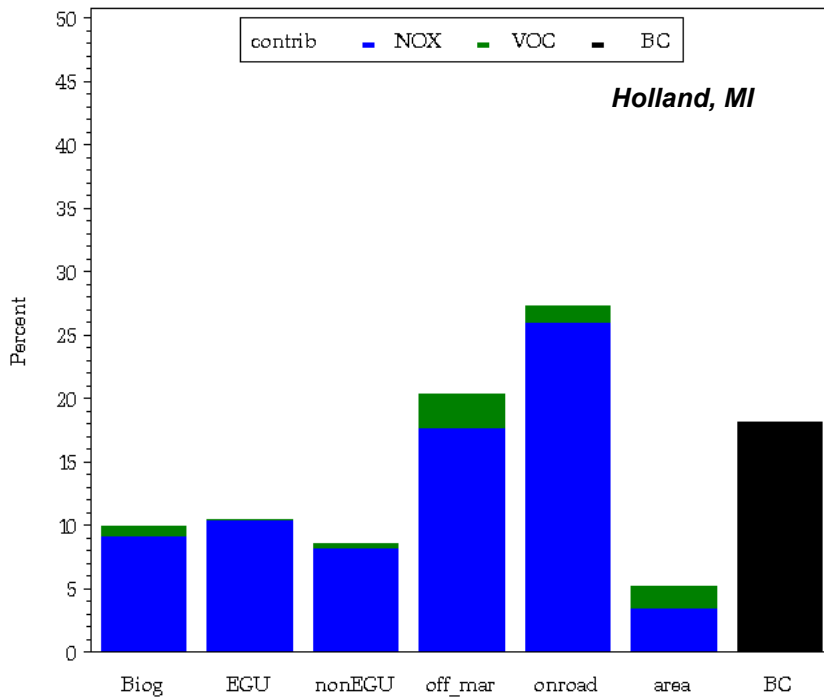
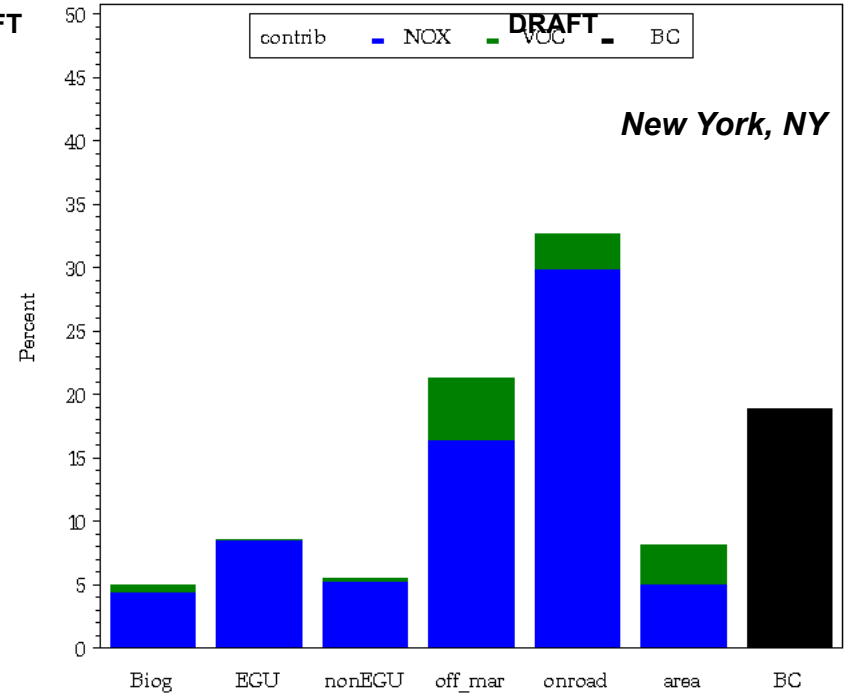
Percent, 2005 Emissions, 2005 Meteorology

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Ozone Source Apportionment Results: Source Sectors (2005 base)

Key Finding: Contributions dominated by mobile sources (at least 60%)



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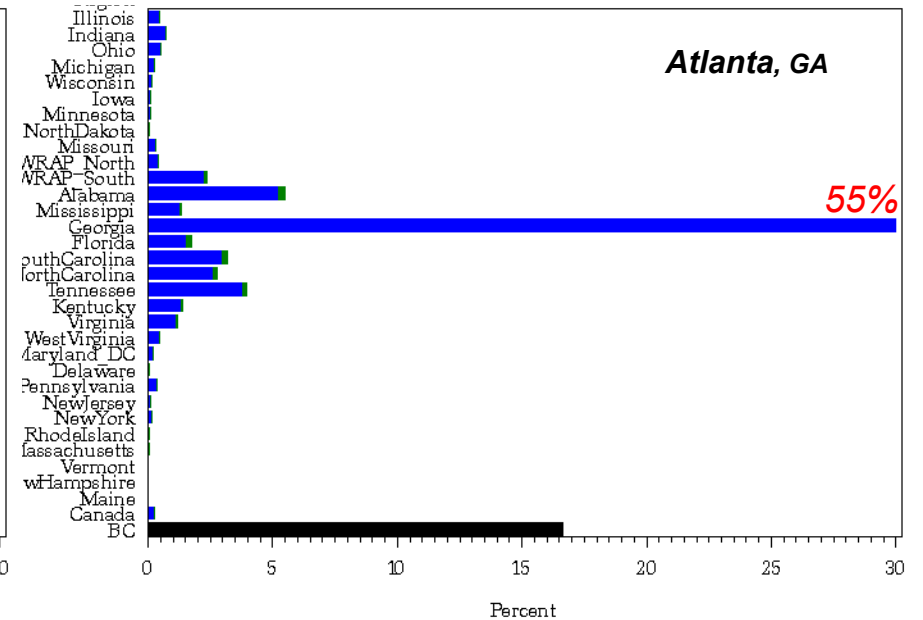
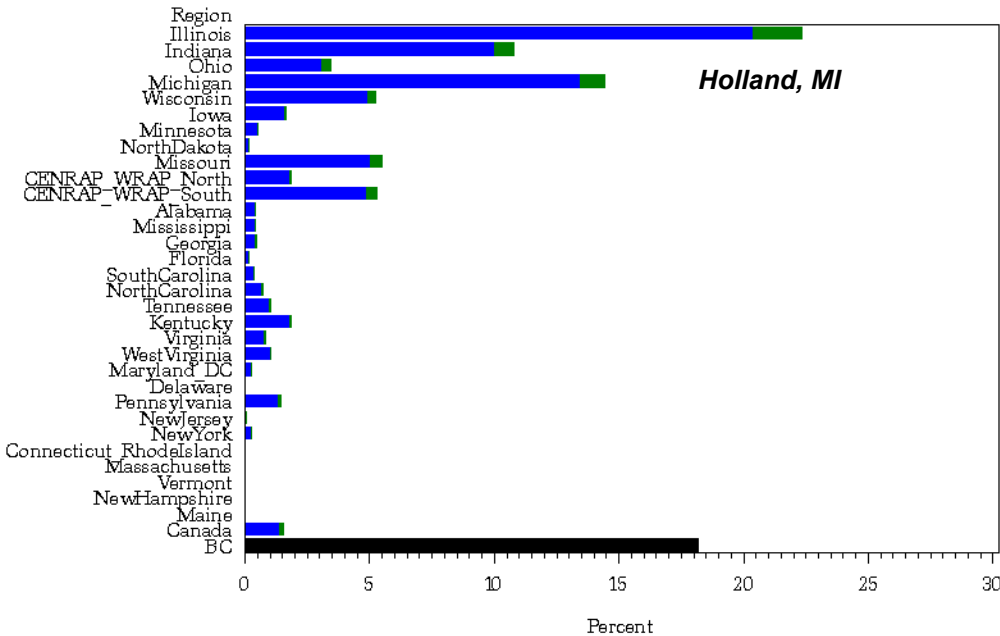
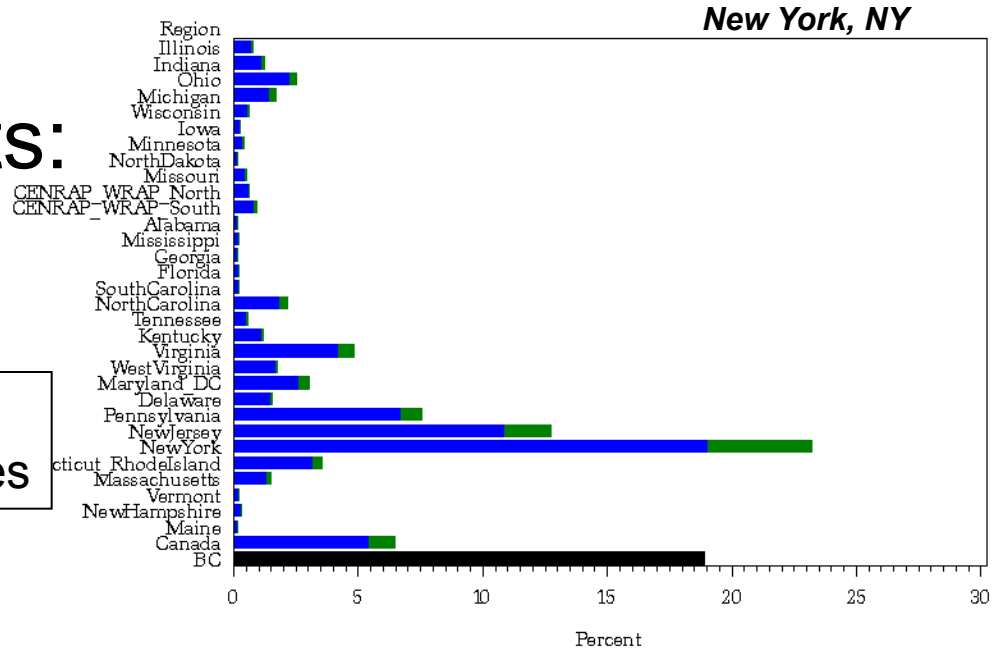
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Ozone Source Apportionment Results: Source Regions

(2005 base)

Key Finding: Contributions dominated by "home" state and neighboring states



Based on 2005 meteorology

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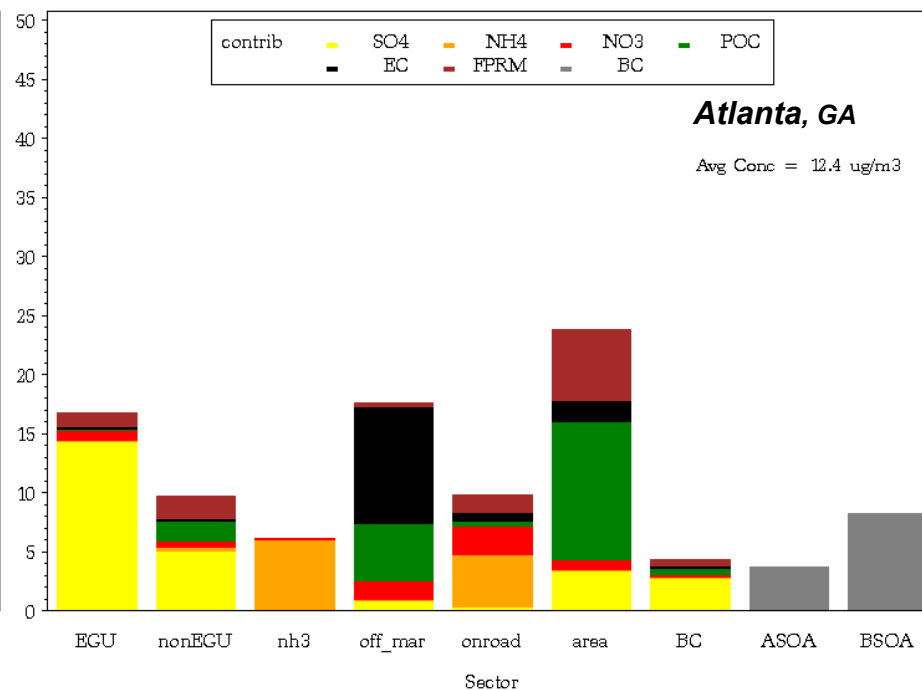
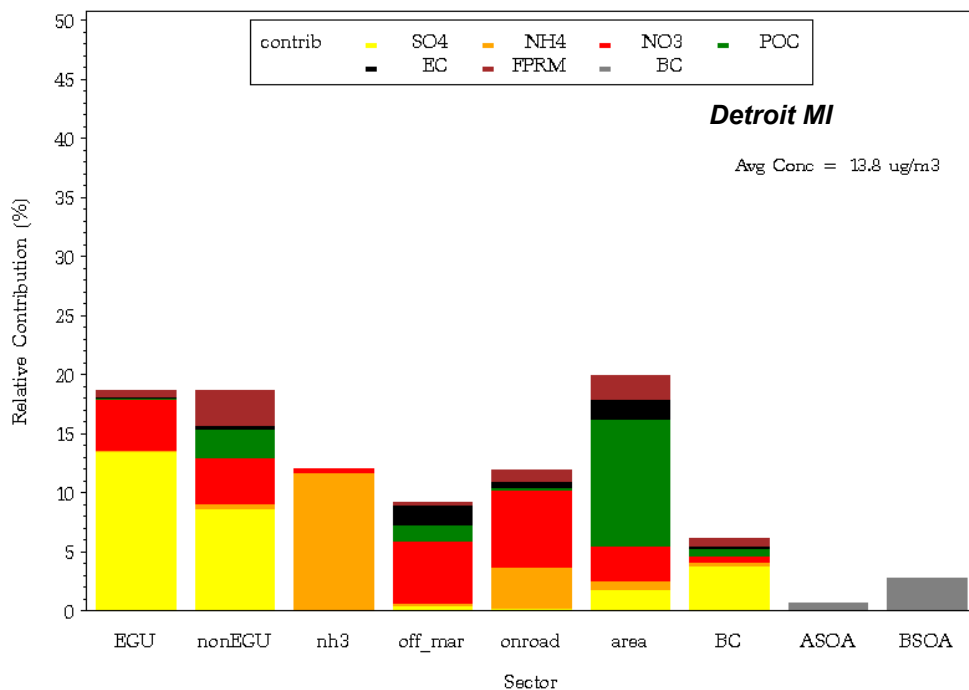
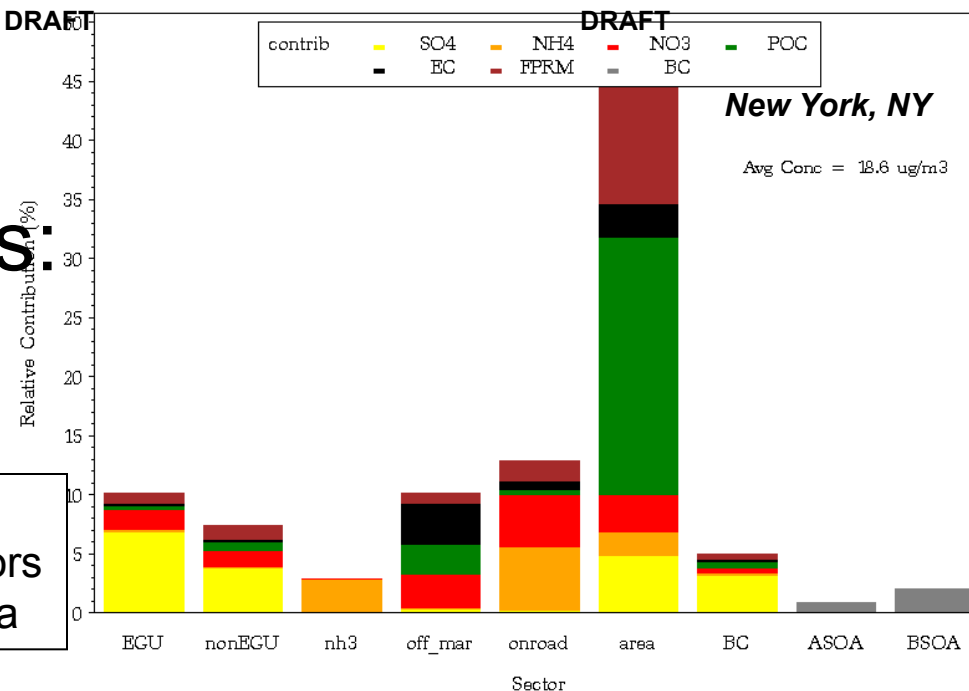
PM_{2.5} Annual Source Apportionment Results: Source Sectors

(2012 Scenario C)

Key Findings:

- All source categories are important contributors
- Relative amount of contribution varies by area

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Based on 2005 meteorology

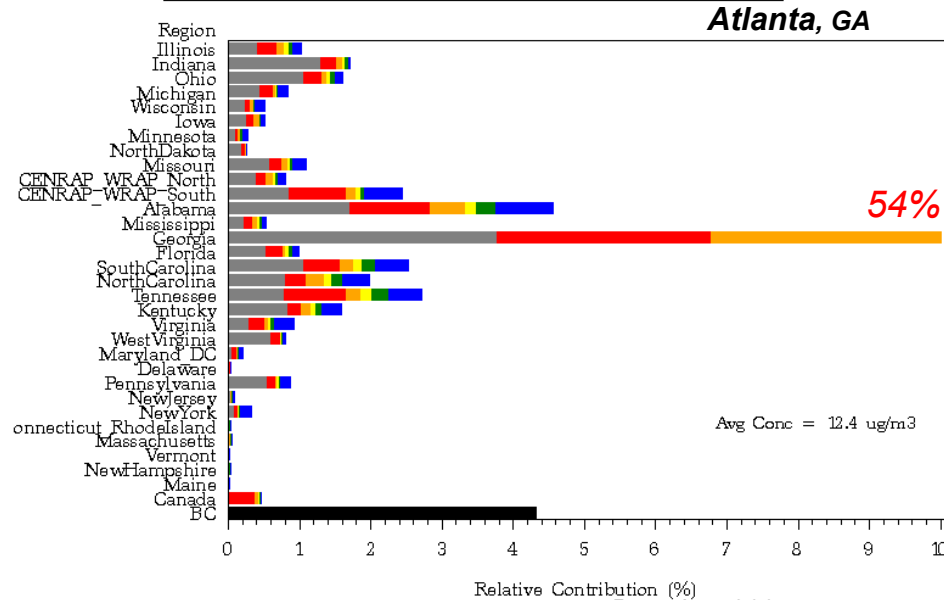
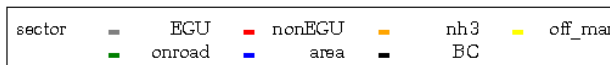
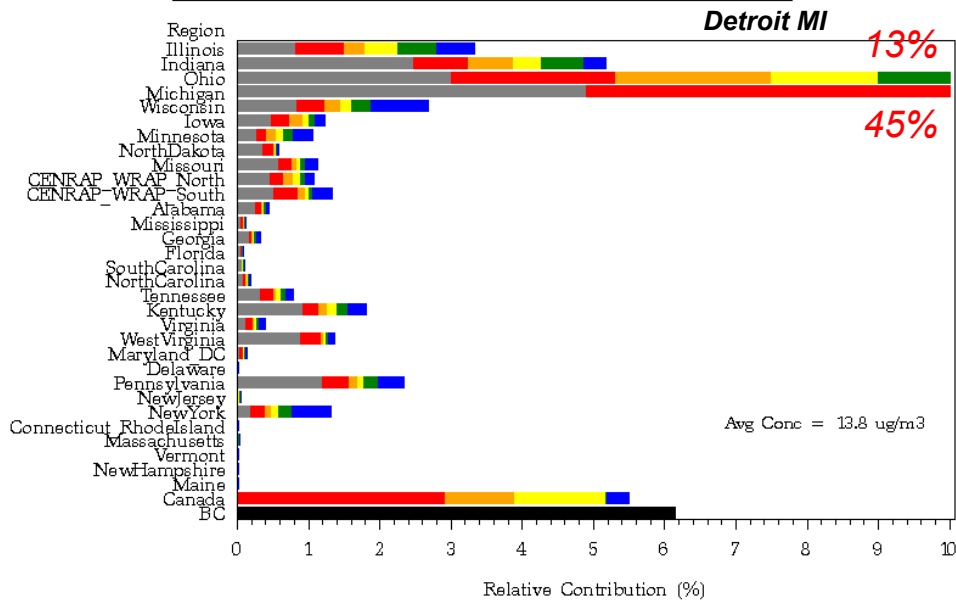
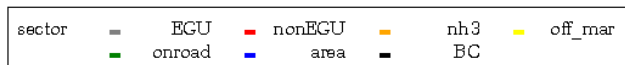
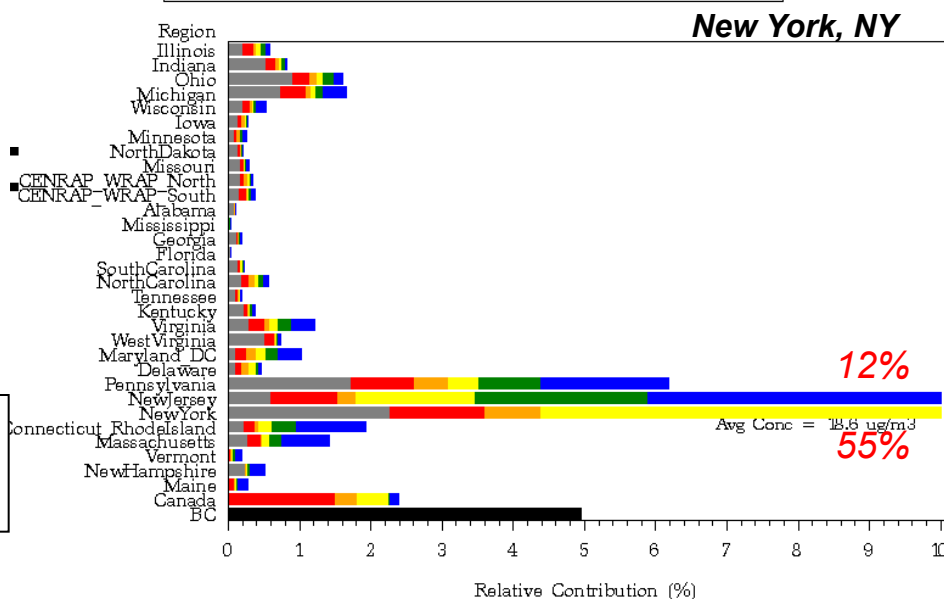
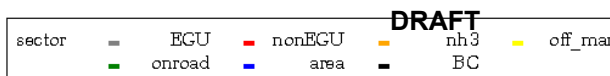
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PM_{2.5} Annual Source Apportionment Results: Source Regions (2012 Scenario C)

Key Finding: Contributions dominated by "home" state and neighboring states



Based on 2005 meteorology

Addressing
Interstate Transport
Section 110(a)(2)(D)

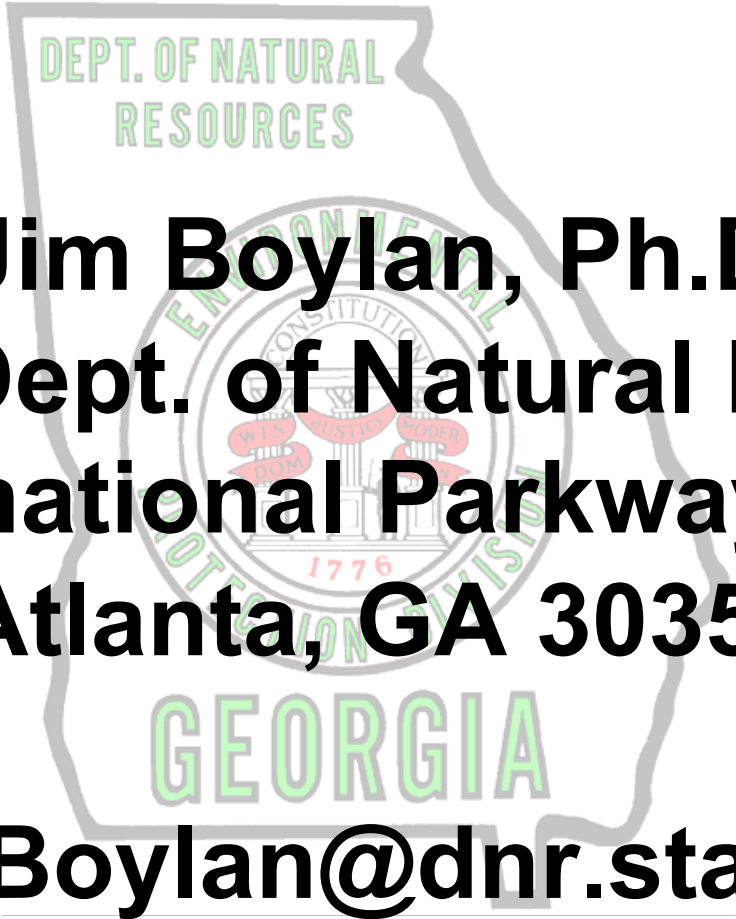
Proposed 3-Step Approach

1. Identify areas of interest
 - Areas not meeting the standards and those struggling to maintain the standards
2. Identify upwind states which contribute to nonattainment or interfere with maintenance in these areas
 - Based on specific criteria
3. Implement a multi-sector approach, as necessary, to provide an appropriate remedy to meet Clean Air Act requirements.

Summary

- **Attainment Modeling**
 - Only a few areas not meeting annual/daily PM2.5 and 85 ppb ozone standards
 - Lots of areas not meeting for 75 ppb ozone standard
 - Additional EGU emission reductions effective in lowering PM2.5 and ozone
- **Source Apportionment**
 - Source Regions
 - Home state generally has the largest impact
 - Neighbor states generally have next largest impact
 - Source Sectors
 - Mobile sources dominate for ozone
 - Point/mobile/area all important for PM2.5
- **Options for addressing 110(a)(2)(D)**
 - Waiting for EPA's proposal in May 2010

Contact Information



Jim Boylan, Ph.D.
Georgia Dept. of Natural Resources
4244 International Parkway, Suite 120
Atlanta, GA 30354

James.Boylan@dnr.state.ga.us
404-362-4851