

# Update on Regional Modeling Work

*Presented by  
Barbara Kwetz  
Massachusetts DEP  
June 7-8 OTC 2005 Annual Meeting  
Burlington, VT*



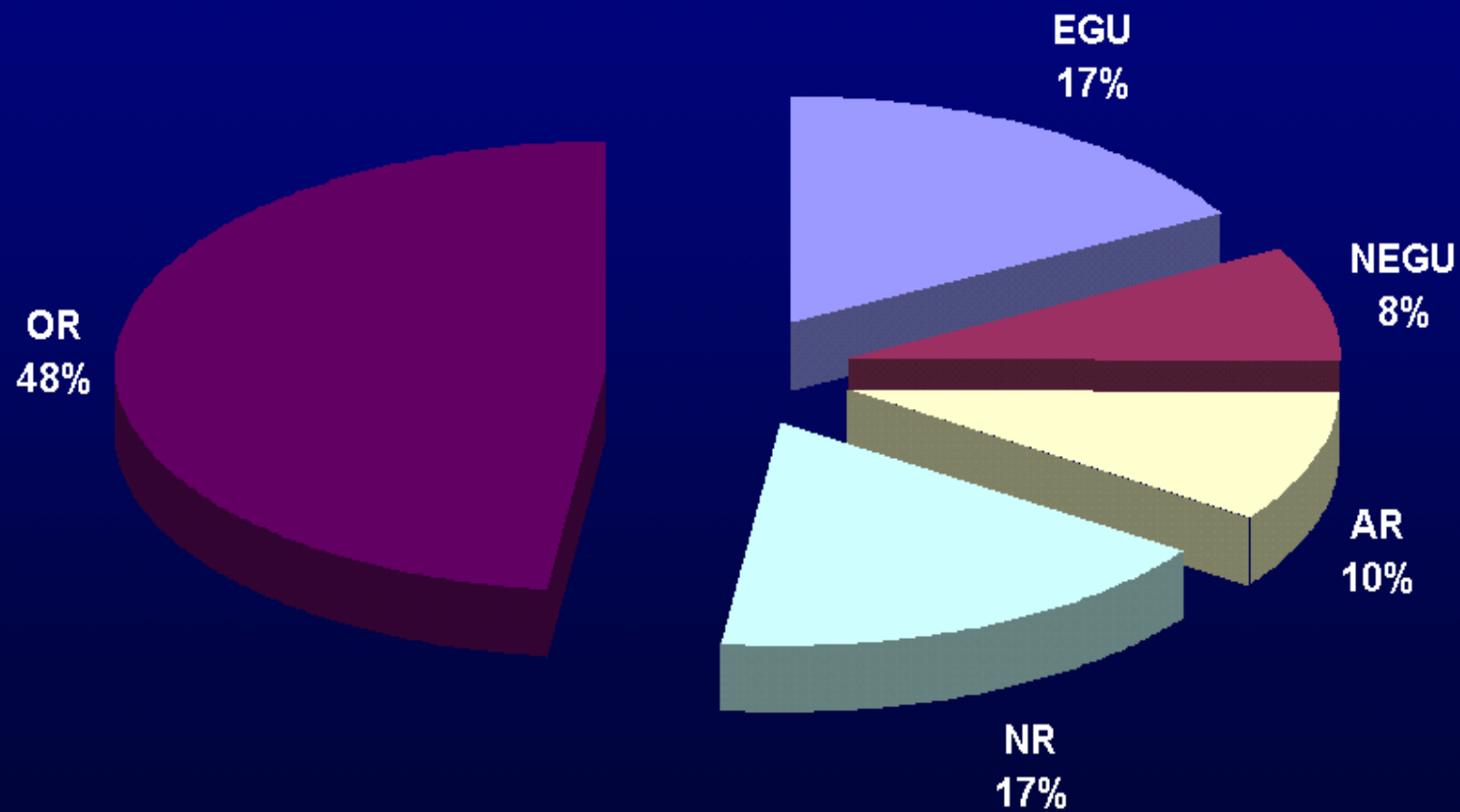
# Deliverables to Date

- 2002 Meteorological Data Assessment
  - 2002 season is representative
  - Electronic report now available
- 2002 Base year Inventory
  - Draft final completed and available electronically
  - Modeling Inventory (frozen March 15, 2005)

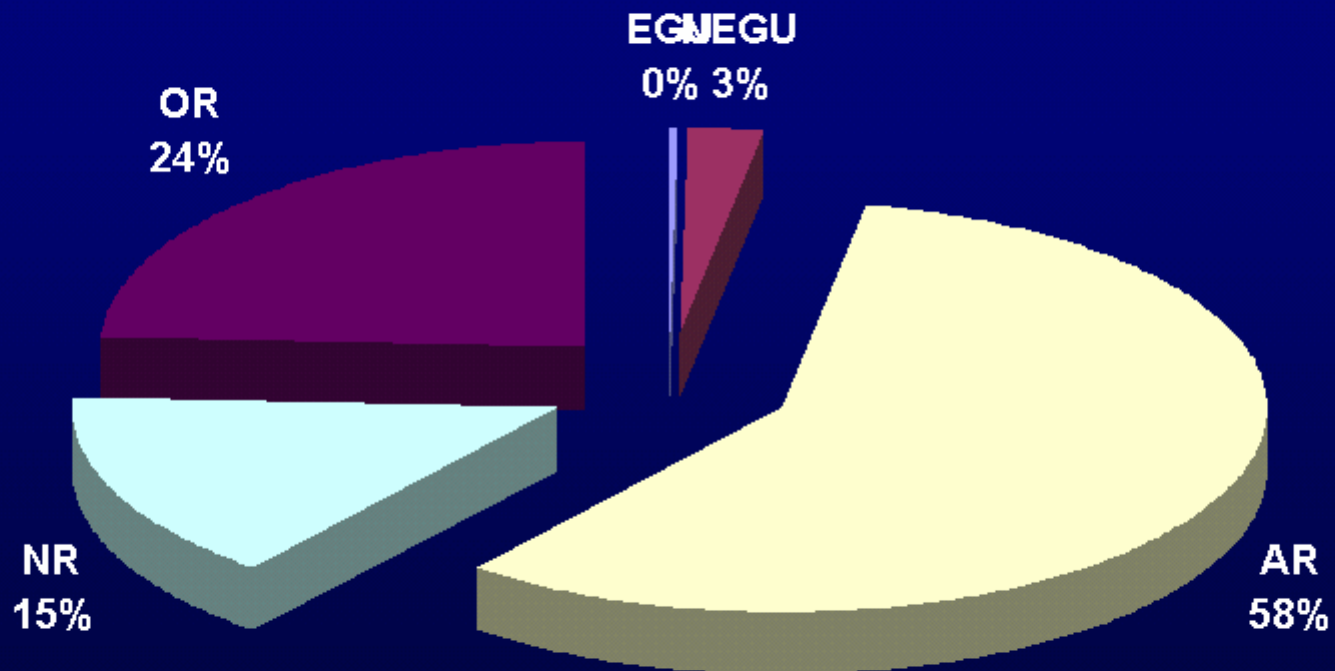
# Future year inventories

- 2009, 2012/13 and 2018
  - Measures “On the Books” (OTB) and
  - Measures “On the Way” (OTW)
- Coordinate development of EGU inventories with other Regional Planning Organizations (RPOs)
- Coordinate IPM modeling with the RGGI process and incorporate the OTC multi-P control strategy in the development of EGU data

## 2002 NOx Emissions (tpy) in the OTR



## 2002 VOC Emissions (tpy) in the OTR



# Control Strategy Work

- Coordinate through various workgroups in OTC, other regional organizations, and individual states
- Preliminary scenarios expected by Fall 2005
- Initiated 'Bench-Mark' work in cooperation with NJDEP, MDE, VADEQ, and NESCAUM
- Apply CALGRID to identify potential scenarios

# Measures that are “On the Books” (OTB)

- **Current State/local regulations to meet Phase I/II of NOx SIP call**
- **Title IV Phase I and II for EGUs**
- **VOC 2-, 4-, 7-, and 10 year MACT Standards**
- **Combustion Turbine MACT**
- **Industrial boiler/process Heater/RICE MACT**
- **Heavy Duty Diesel Engine Standards/Low Sulfur fuel**

## **Measures that are “On the Books” (OTB)**

- **Large Spark Ignition and Recreational Vehicle rule**
- **Nonroad Diesel rule**
- **Tier 2 Tailpipe/ low Sulfur fuel (CA LEV for participating states)**
- **Several state initiatives including OTC Model rules for solvents, auto-refinishing, portable fuel containers, consumer products, architectural coatings, and small combustion sources**



# Measures that are “On the Way” (OTW)

- Strategies that we know are coming, and that we need to account for in our modeling, for example:
  - EPA measures proposed in O<sub>3</sub>/PM<sub>2.5</sub> implementation guidance
  - Implementation of Clean Air Interstate Rule (CAIR)
  - Products of OTC Multi-pollutant Development Strategy
  - Regional Greenhouse Gas Initiative (RGGI)
  - Other Regional State-specific measures

# Preliminary Modeling Work

- CMAQ Simulations for 2002
  - Developed Boundary conditions for 36km
  - Coarse grid modeling at 36km completed
  - Fine grid modeling at 12km completed by July 2005
- Coarse grid model performance acceptable
- Information will be made available on OTC website

# 8-hr Ozone Modeling Domains at 36- and 12 km for OTR



# **Some of the Model Performance Measures Examined between Measured and Predicted Concentrations are:**

**Scatter plots**

**Diurnal plots**

**Standard statistical measures**

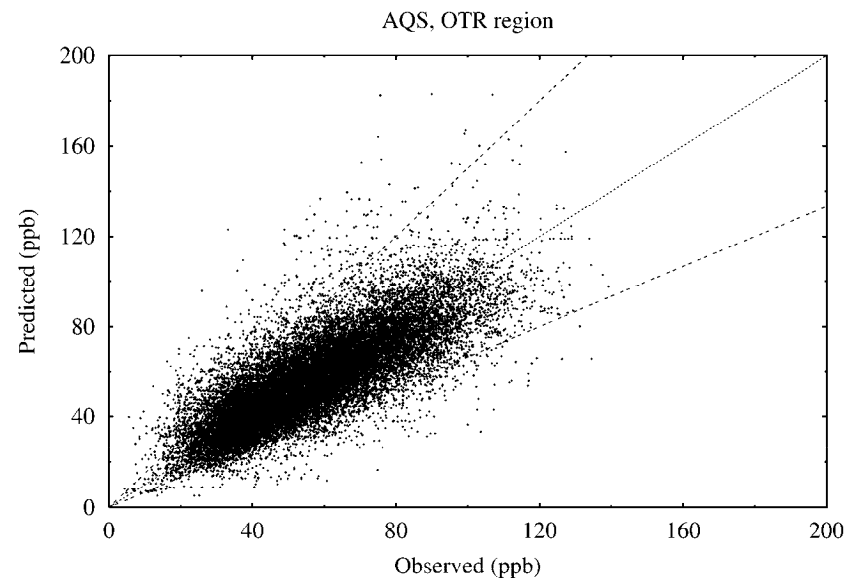
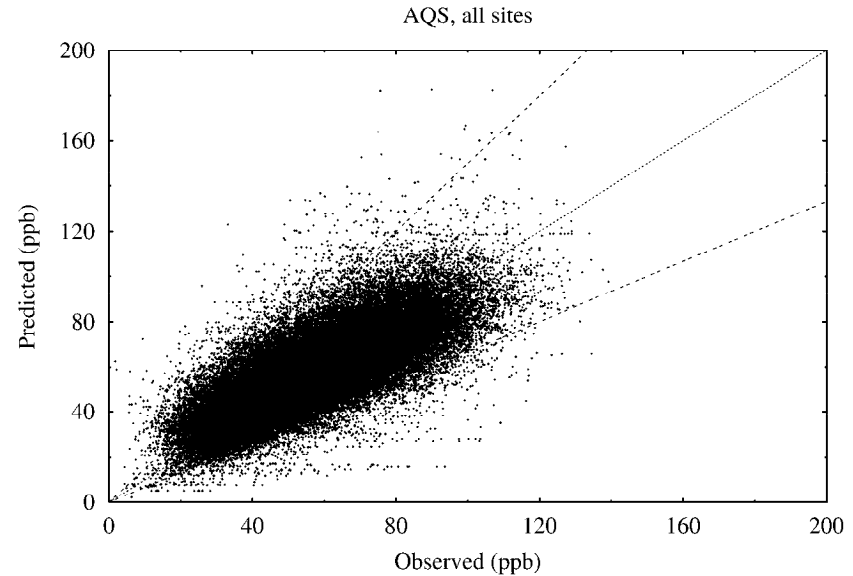
**Spatial distributions**

**Measures were applied to the modeling domain as a whole, over the OTR for the entire period of simulation**

**Also, the measures were evaluated for selected monitors within the OTR**

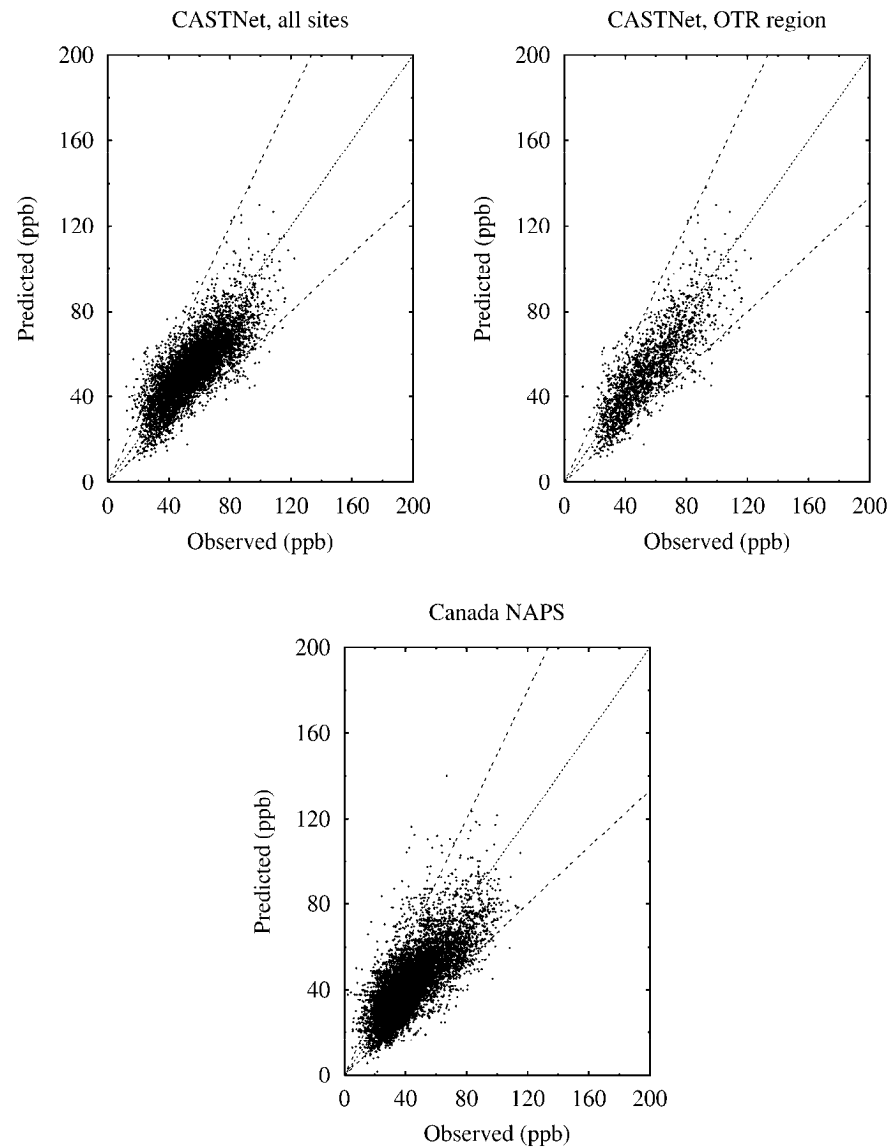
# Predicted vs. Observed daily maximum 8-hour average

- $O_3$  concentrations, May 15 – September 15, 2002 for all AQS sites (639) and AQS sites within the OTR (194)
- Also shown are the 1:1 line and 1:1.5 and 1.5:1 bounds

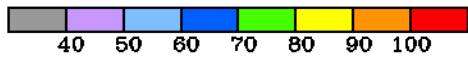
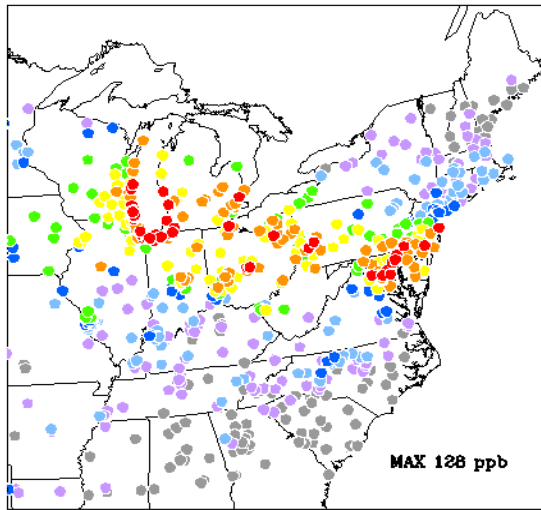


# Predicted vs. Observed daily maximum 8-hour average (continued)

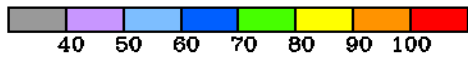
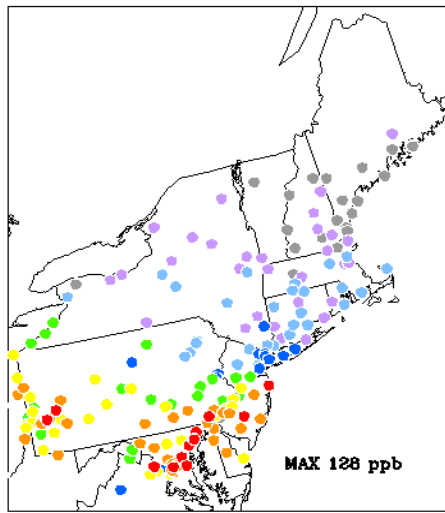
- $O_3$  concentrations, May 15 – September 15, 2002 for all CASTNet sites (53) and CASTNet sites within the OTR (17), and Canadian NAPS sites (80)
- Also shown are the 1:1 line and 1:1.5 and 1.5:1 bounds



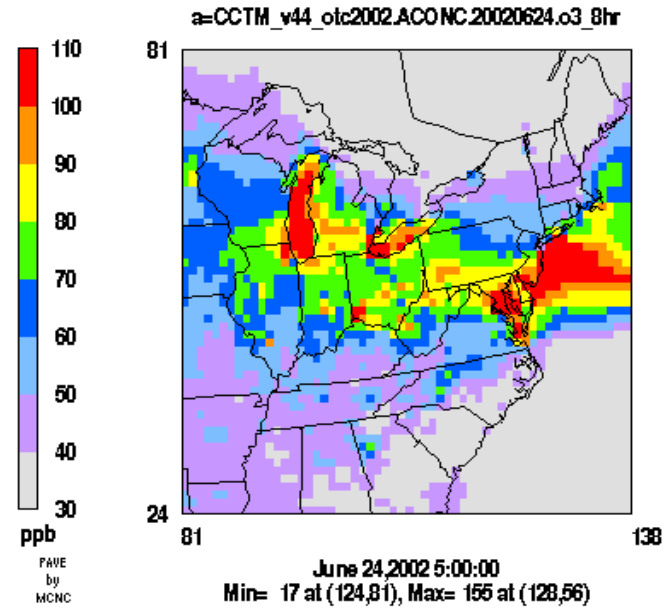
June 24, 2002



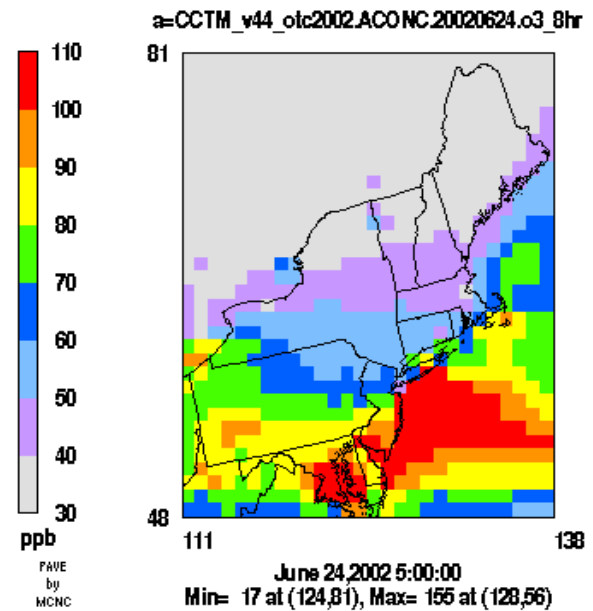
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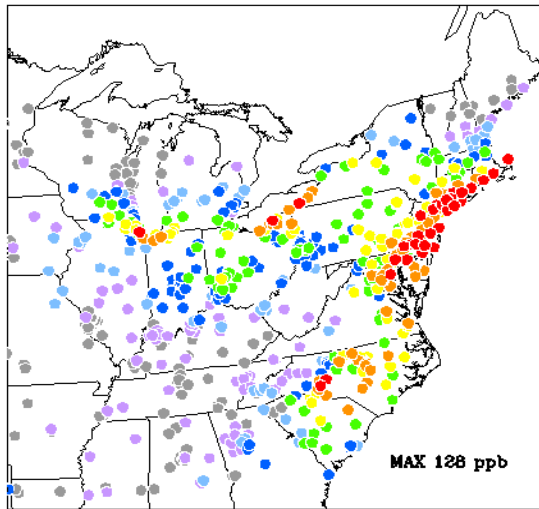
### CMAQ 36km 8-Hr Max Ozone



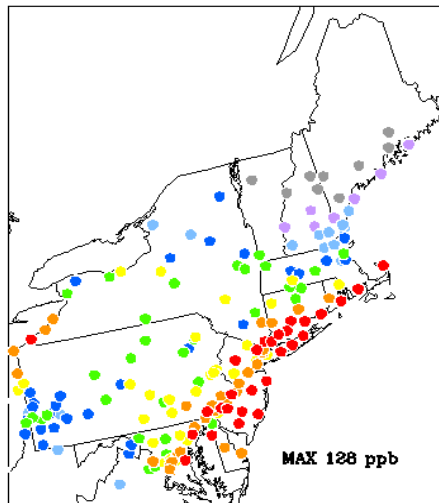
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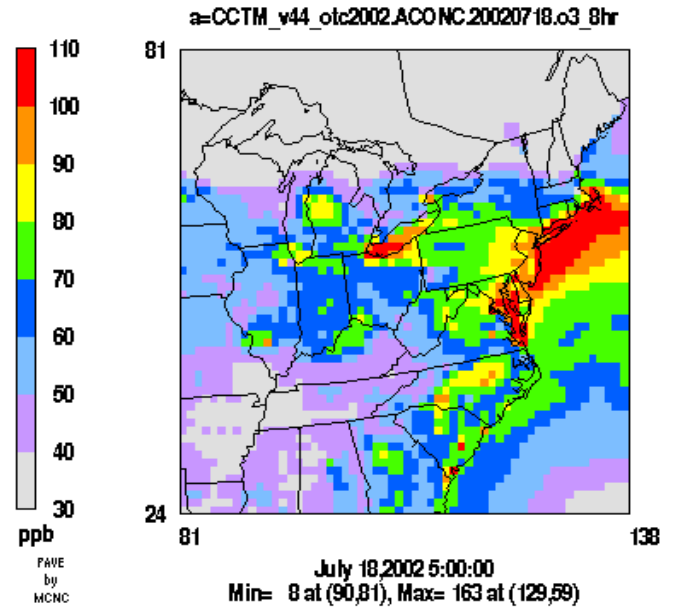
July 18, 2002



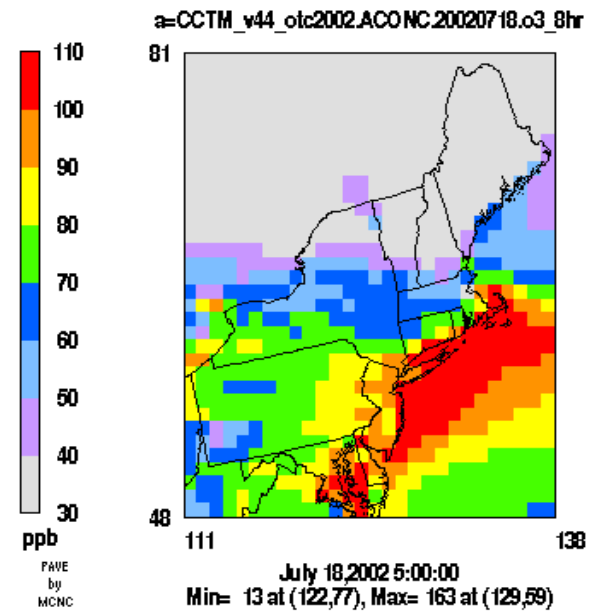
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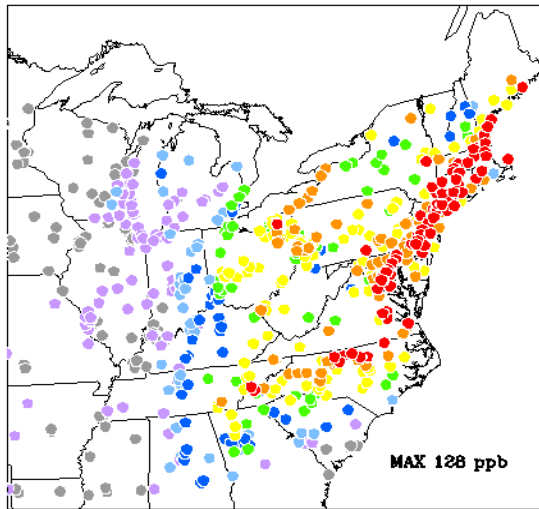


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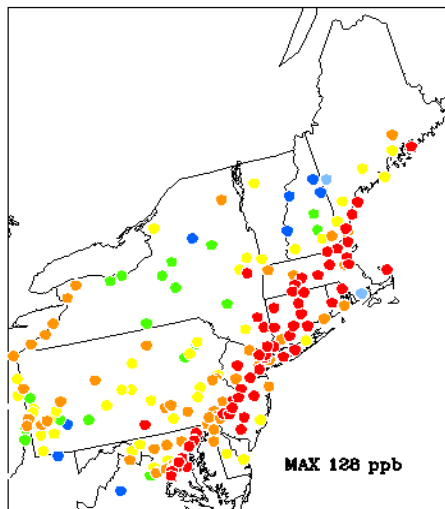




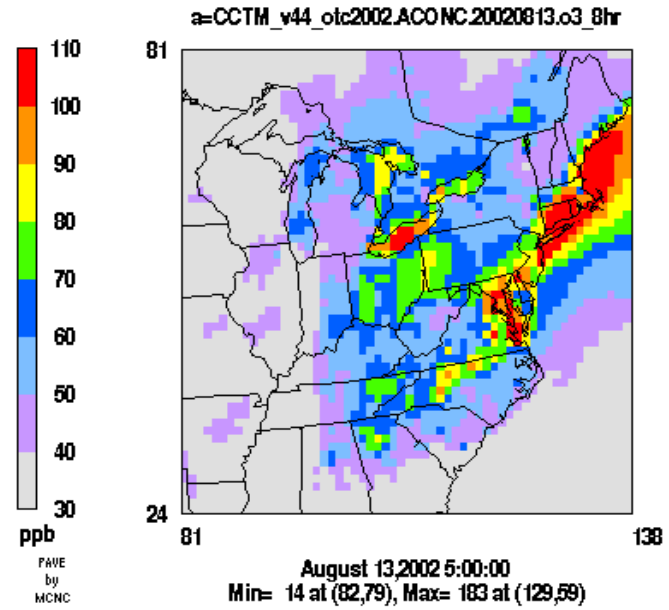
August 13, 2002



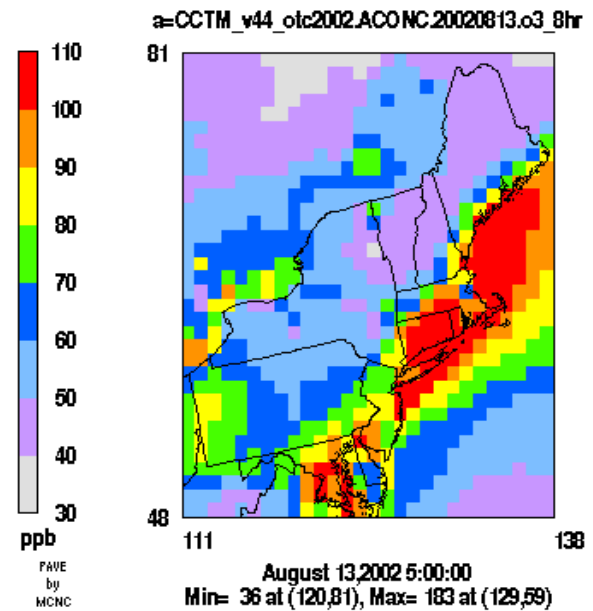
August 13, 2002



### CMAQ 36km 8-Hr Max Ozone



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# Next Steps - Schedule

- 2002 fine-grid simulation by July 2005
- Future base-year (“OTB”) simulation by Fall 2005
- Control Strategy identification by Fall 2005, simulations thereafter
- Briefing at the November 2005 Meeting