Update on Ozone Transport Issues in the Northeast

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CT SIPRAC Meeting
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What is NESCAUM?

- Northeast States for Coordinated Air Use Management
- Formed in 1967
- Association of 8 Northeast state air agencies
- Technical and policy support for air quality & climate initiatives

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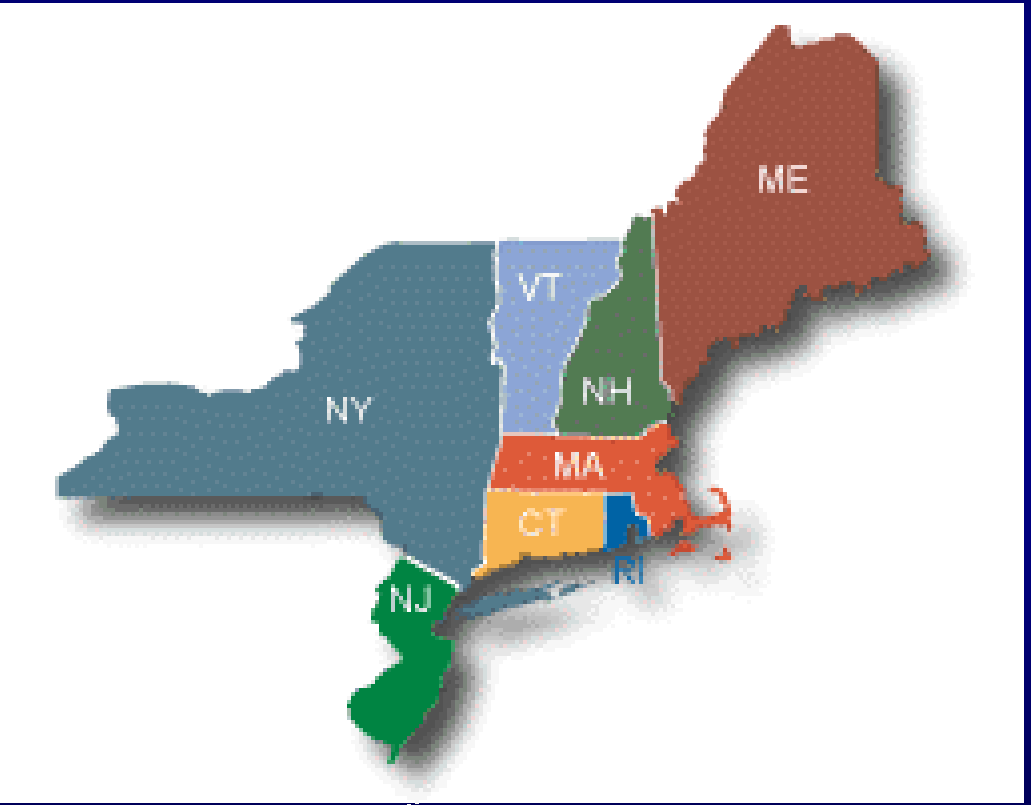
Member States

Connecticut
Maine
Massachusetts
New Hampshire
New Jersey
New York
Rhode Island
Vermont



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Talk Overview

- Background for effort
- Conceptual description of ozone transport
- Trends in ozone
- CT challenges

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Background

- EPA guidance requests states include a "conceptual description" of pollution transport problems in their SIPs

- To that end, NESCAUM seeks to:

  - *Synthesize information across Northeast*
  - *Provide common foundation for all states*
  - *Avoid redundant efforts by states*

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Status

- NESCAUM has developed conceptual description of pollution transport as resource for states
- States may extract info according to needs
- States need to supplement with state-specific info
- Conceptual description available at:

http://www.nescaum.org/activities/major-reports/

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Covers ozone, PM2.5, and haze

- Separate volumes cover ozone and PM2.5/haze
- This presentation focuses on ozone
- NESCAUM received input and review from states

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Conceptual description

- Qualitative in nature
- Not a new analysis
- Synthesizes & expands upon existing information
- Seeks to address questions posed by EPA guidance
  - Is O_3 problem local or regional in character?
  - Is transport important?
  - What types of weather lead to high O_3?
  - Is O_3 limited by NOx, VOCs, or both?

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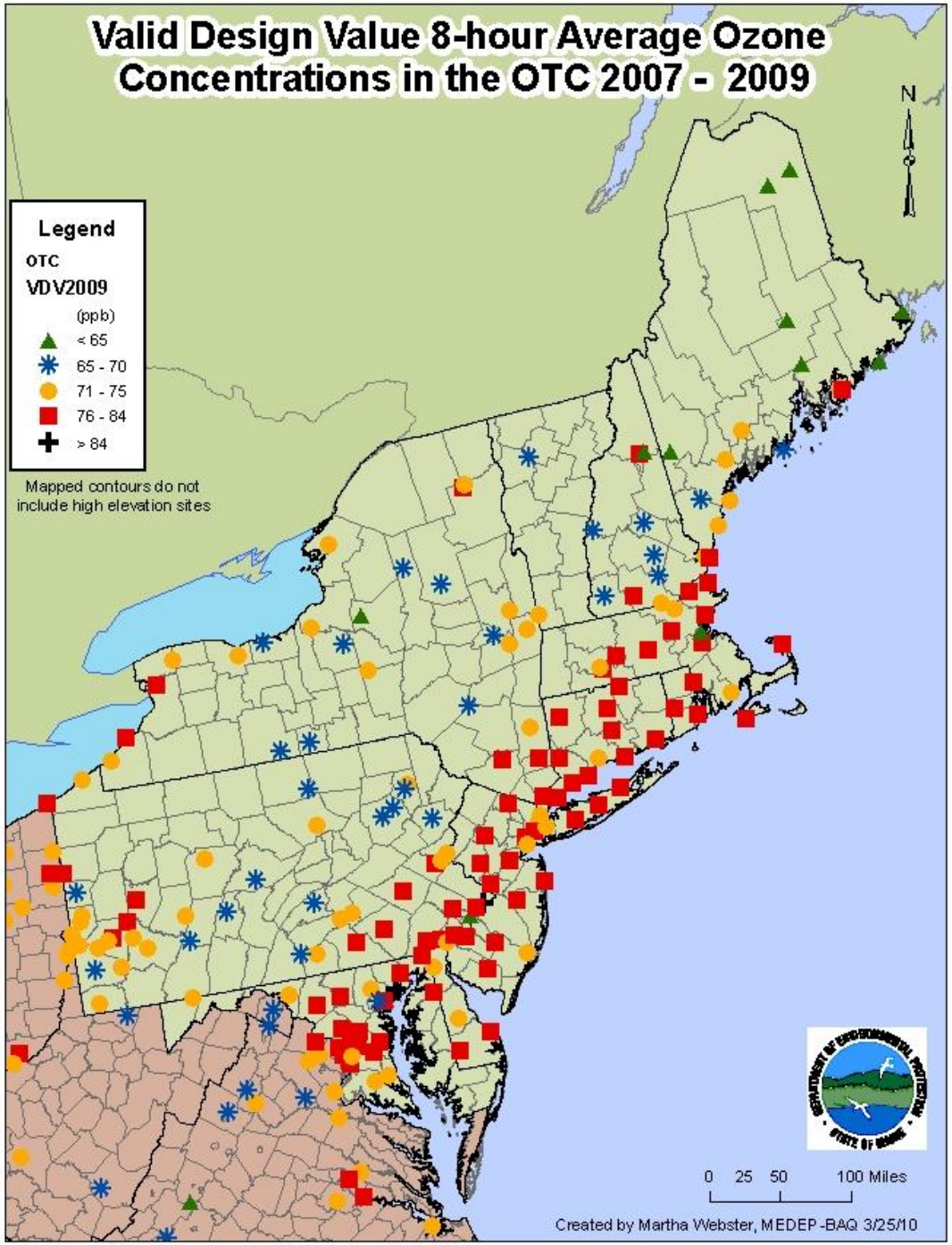
The Big Picture



Regional nature of ozone

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Recap of NE ozone studies

- Peer-reviewed science literature thru 2010
- OTAG 1995-1997 (eastern US)
- NE-OPS 1998-2002 (Philadelphia)
- NARSTO 2000 (Northeast)
- NEAQS 2002-2004 (New England)
- RAMMPP 2003 (eastern blackout)

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Transport pathways

1. Smaller scale - sea breeze/surface winds

2. Regional scale – mid-level channeled flow; nocturnal low level jets

3. Largest scale – synoptic wind flow and upper level ozone reservoir

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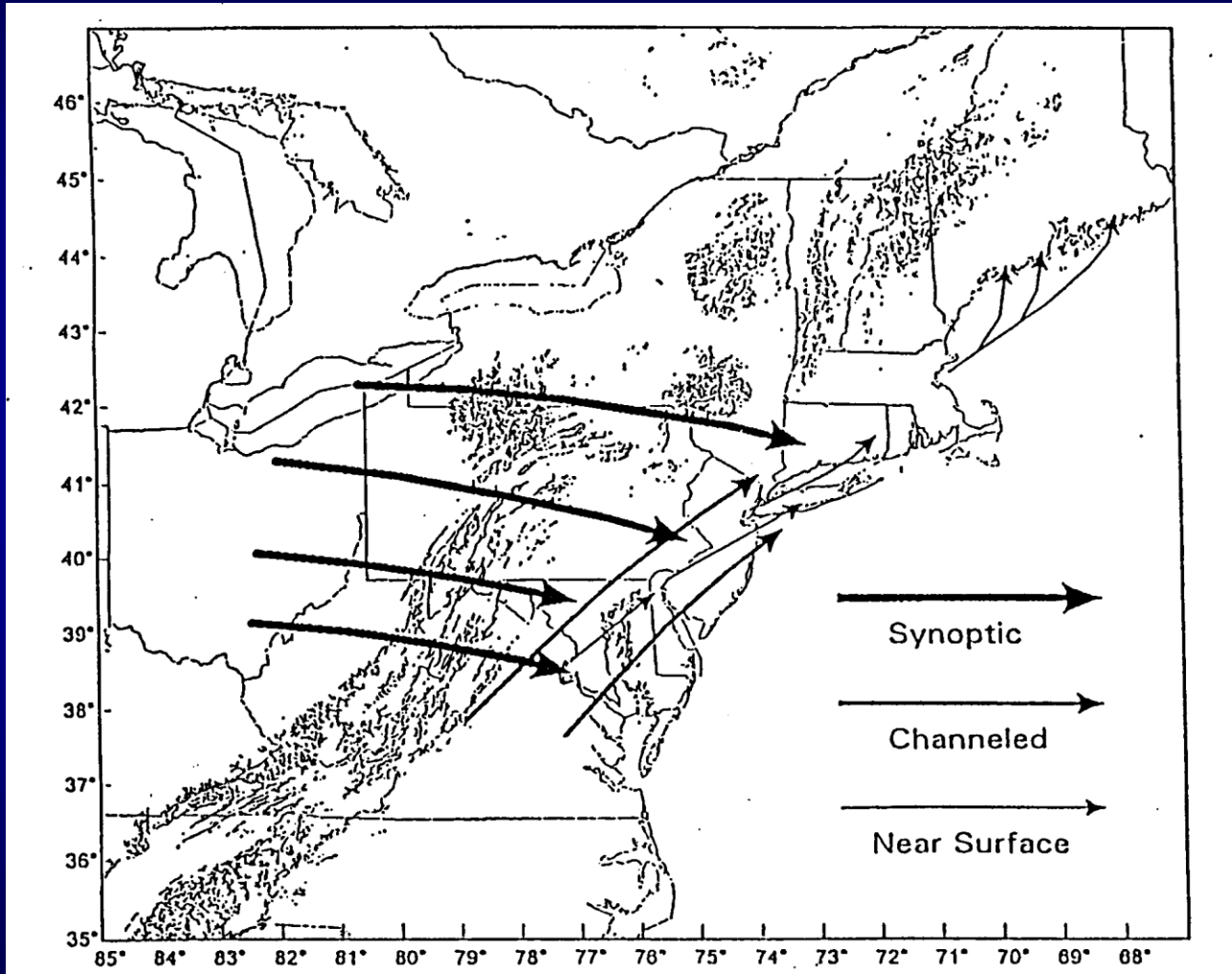
Schematic of transport paths



Transport Regimes Observed During NARSTO-Northeast

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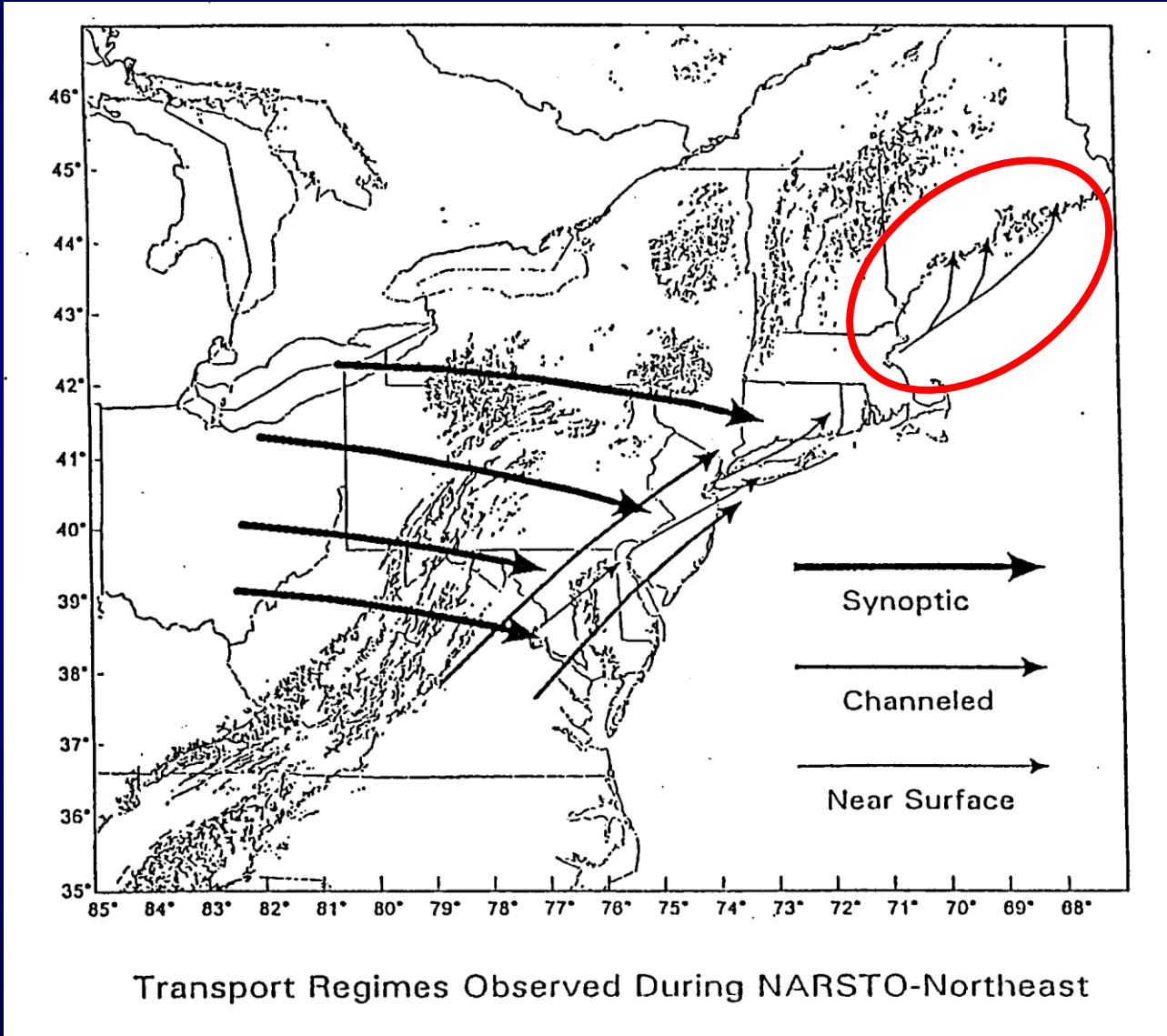
Small scale surface



Transport Regimes Observed During NARSTO-Northeast

Over water transport

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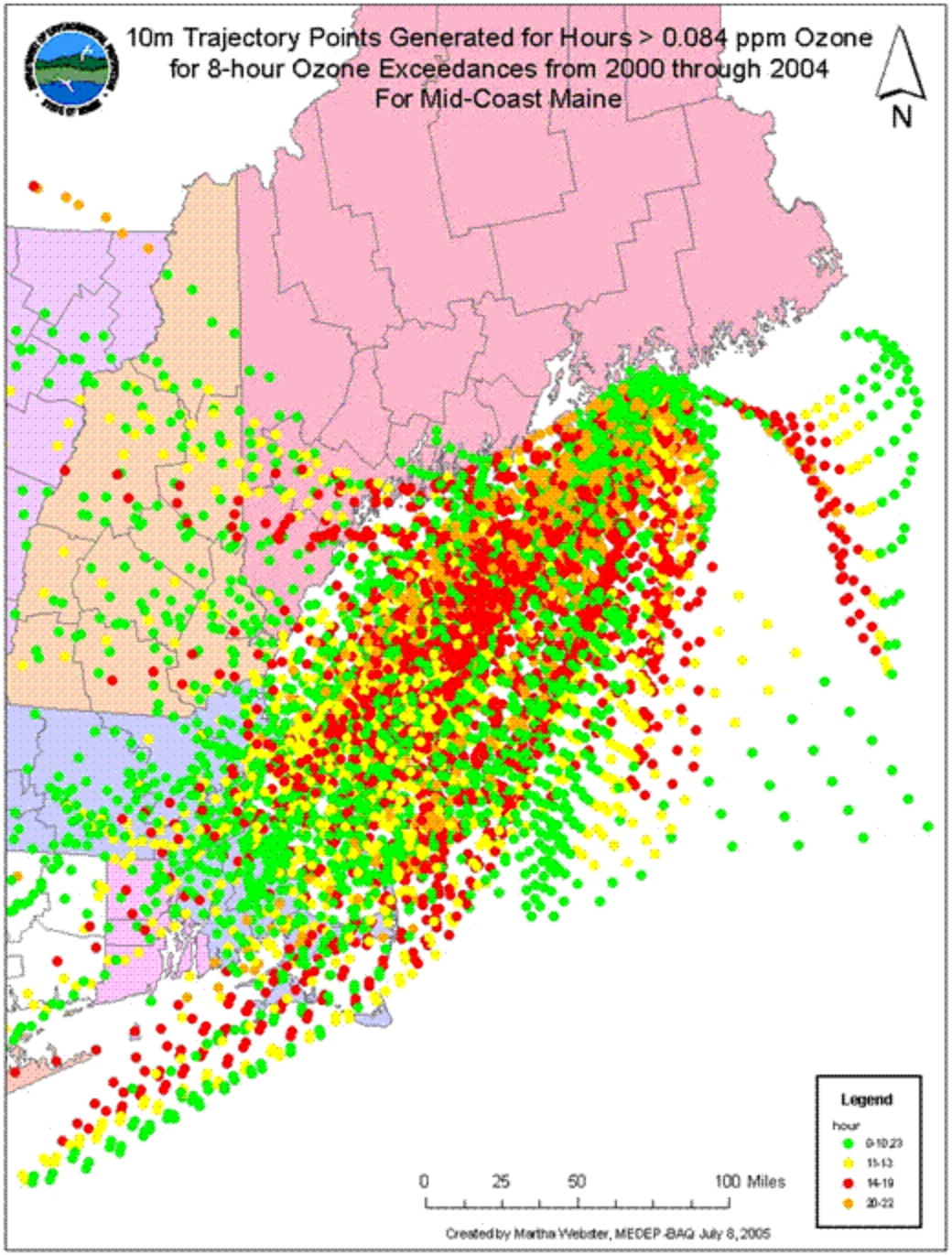

Air trajectory paths arriving at Acadia Natl. Park on high ozone days

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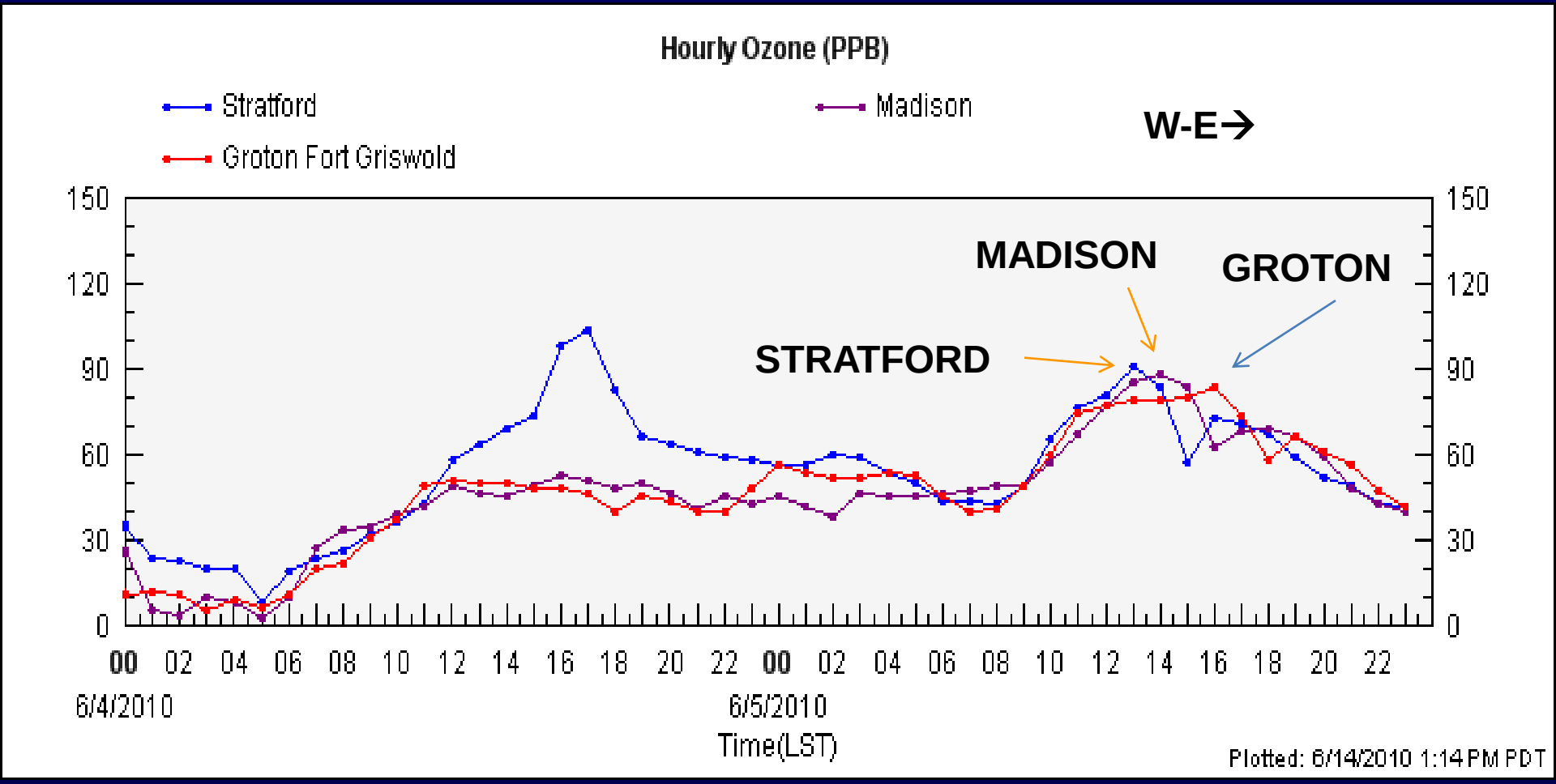
Transport along coastal CT



Peak ozone migrates east on June 5, 2010 over coastal CT.
Mixing heights low near Long Island Sound.

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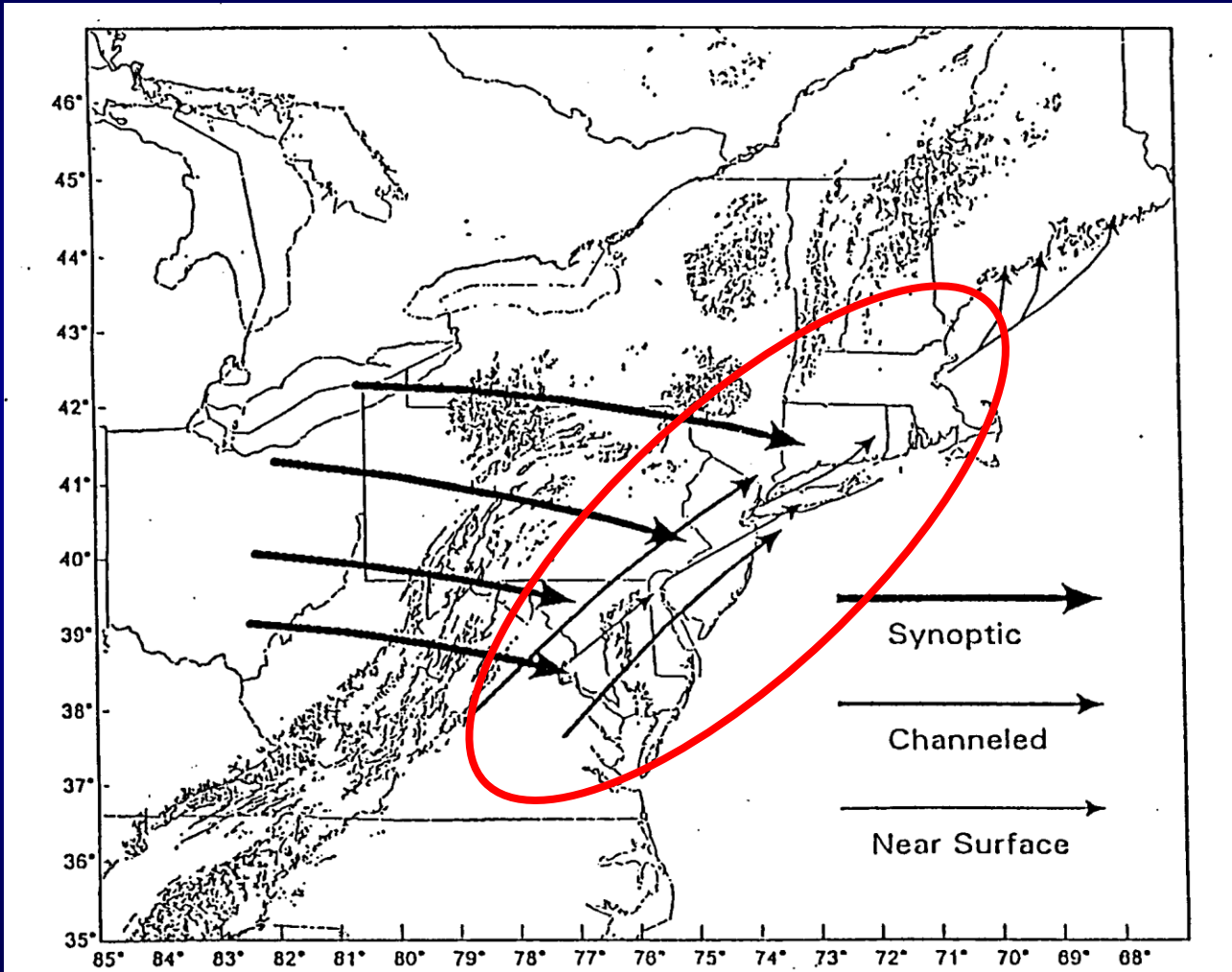
Regional scale flow



Transport Regimes Observed During NARSTO-Northeast

Nocturnal low level jet

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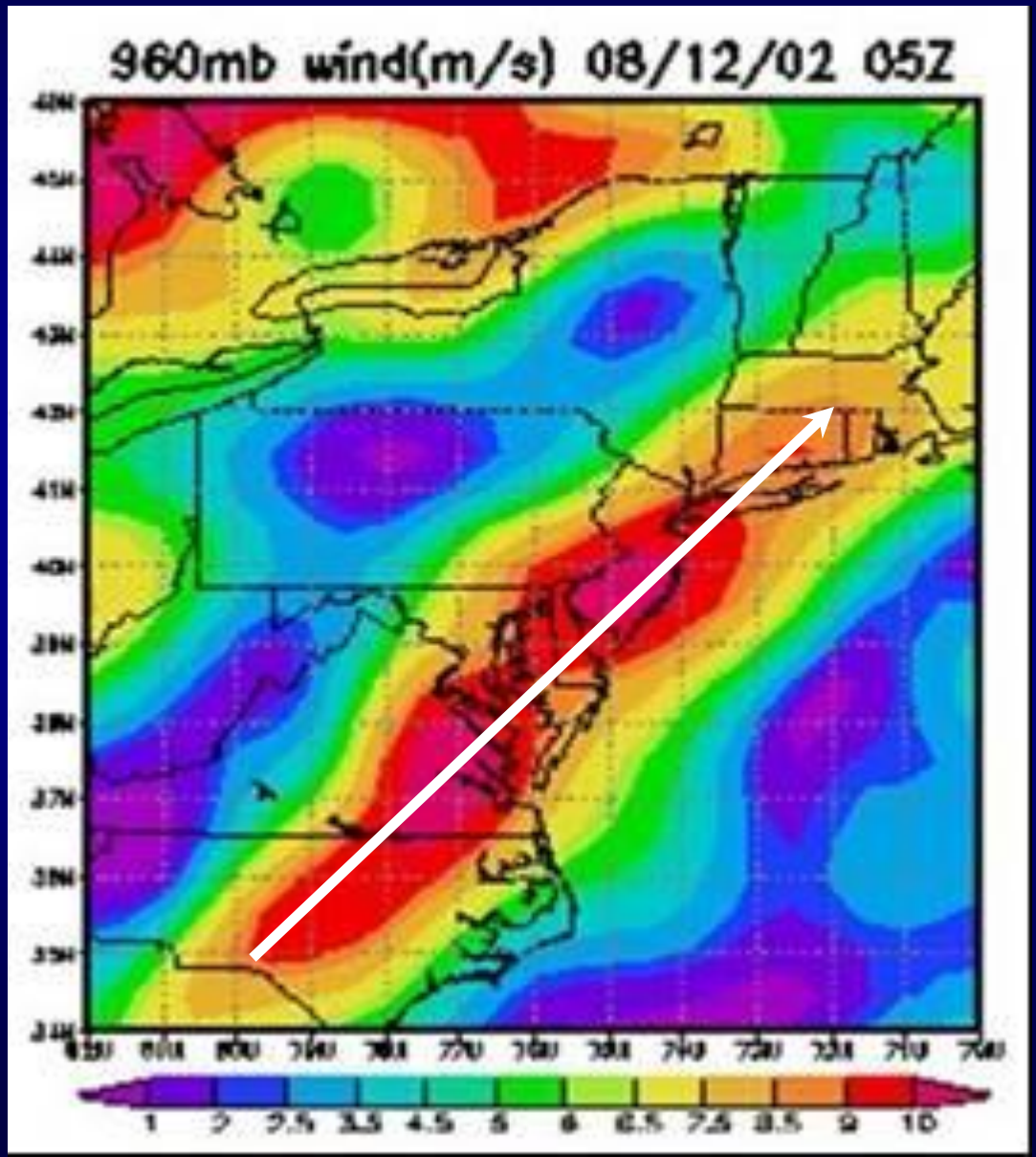
OTR-wide low level jet 8/12/2002



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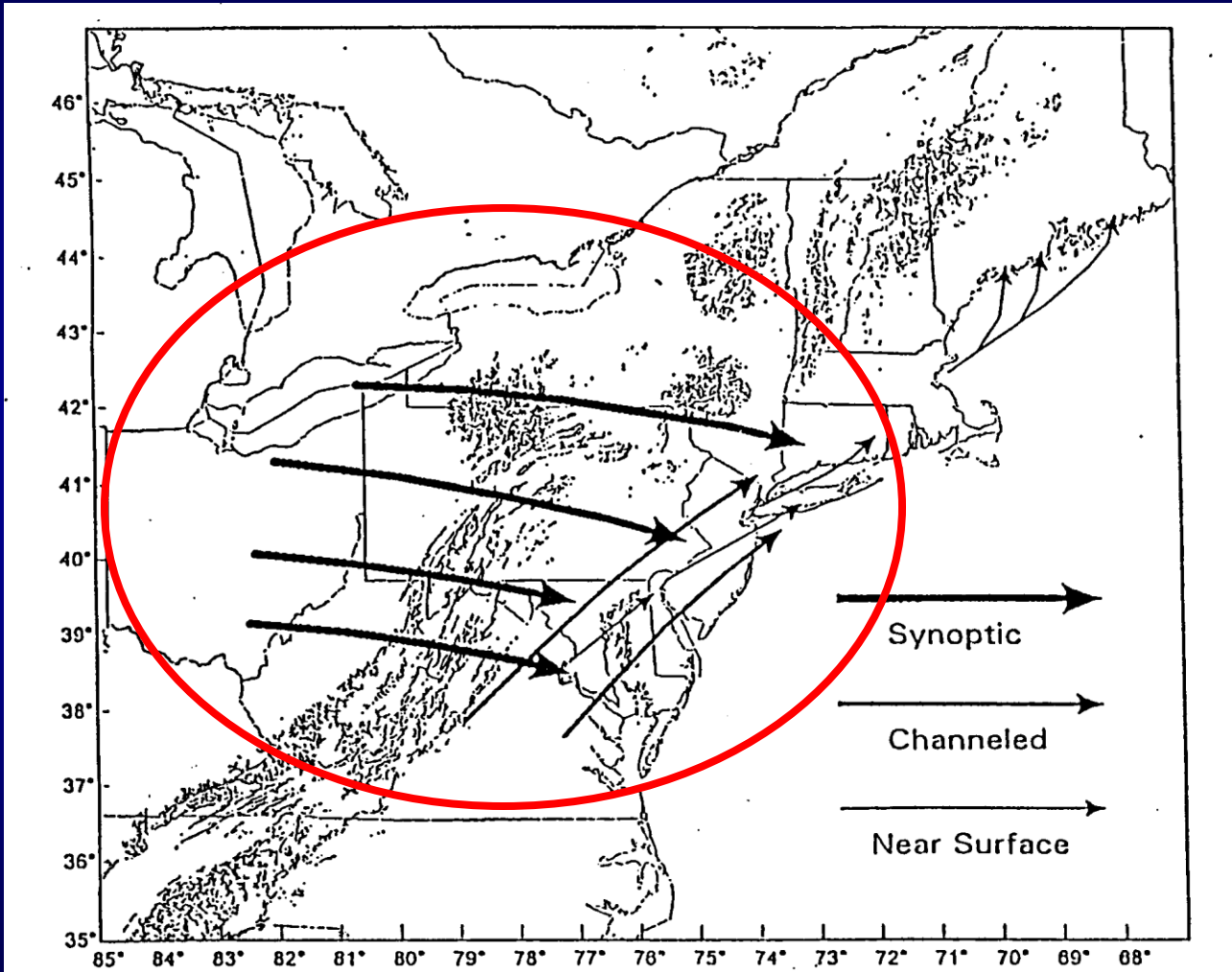
Upper level transport



Transport Regimes Observed During NARSTO-Northeast

Upper level ozone reservoir

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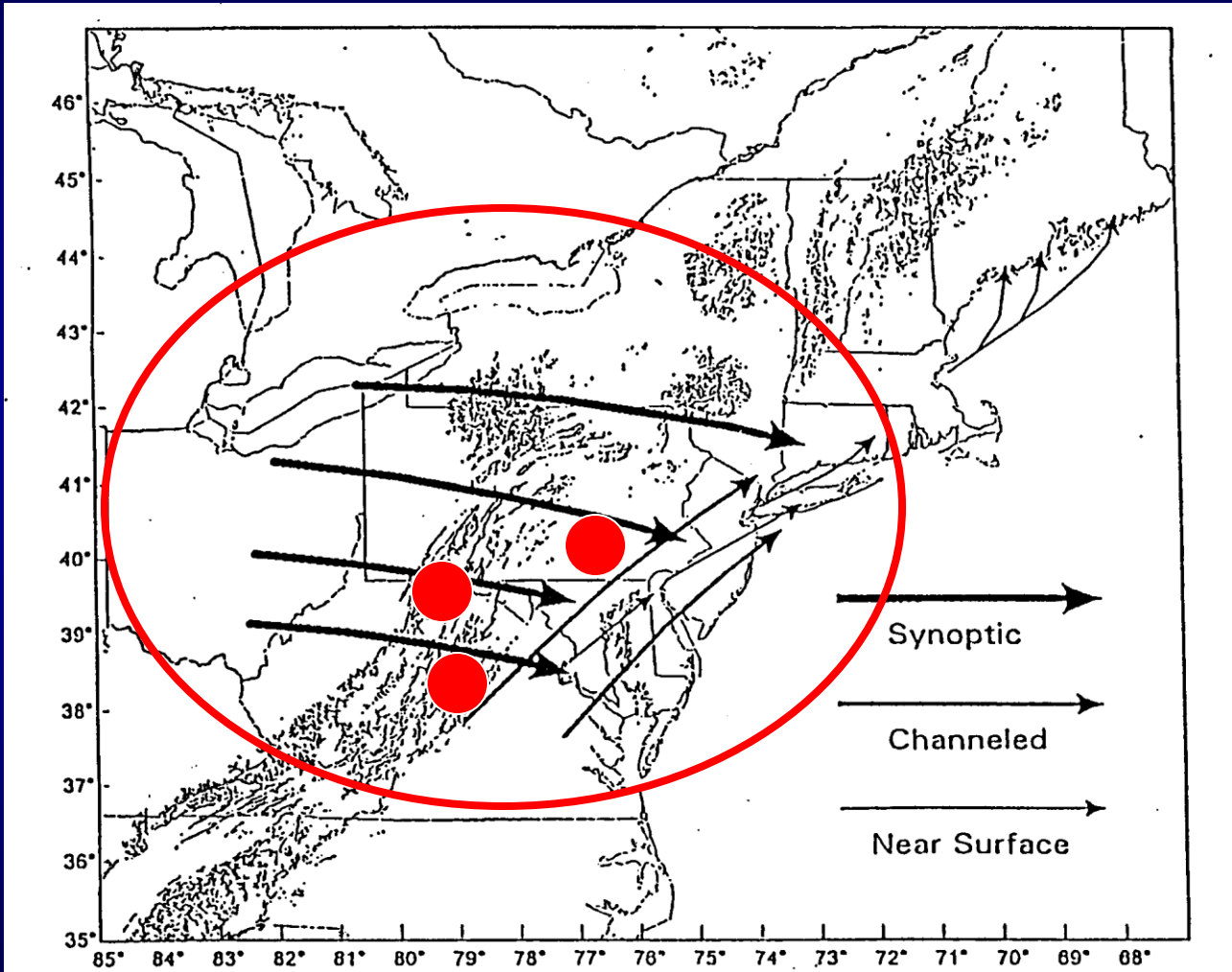
Hi-elevation ozone monitors



Transport Regimes Observed During NARSTO-Northeast

Upper level ozone reservoir

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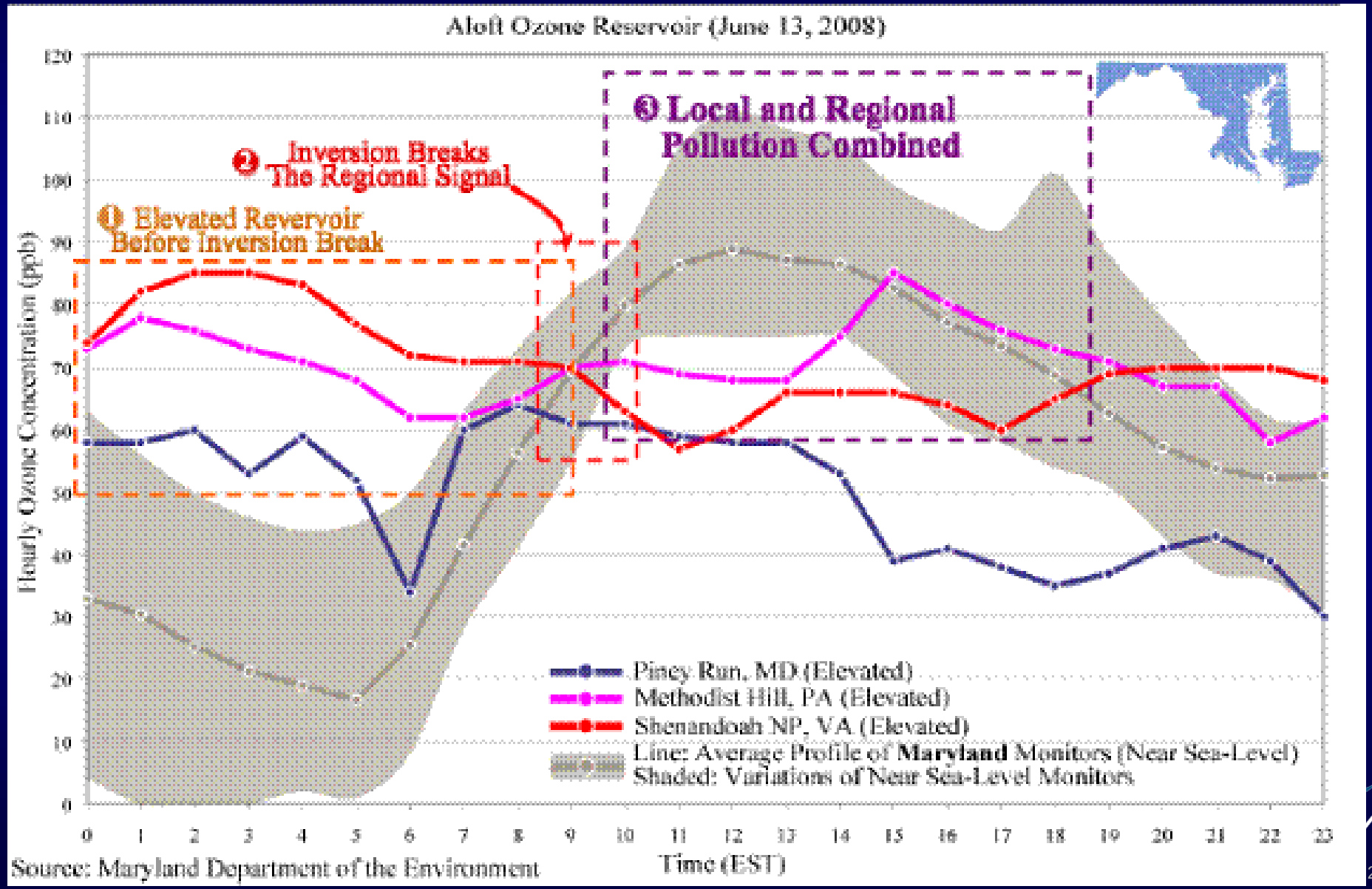
The ozone reservoir aloft



Trends

- Trends in ozone
- Trends in NOx
- Retrospective look at NOx SIP Call

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Regional NOx Controls Work

- Can now look retrospectively at NOx SIP Call results
- Consistent set of results showing regional progress
  - *Peer-reviewed published studies*
  - *EPA trends reports*
  - *State monitoring*

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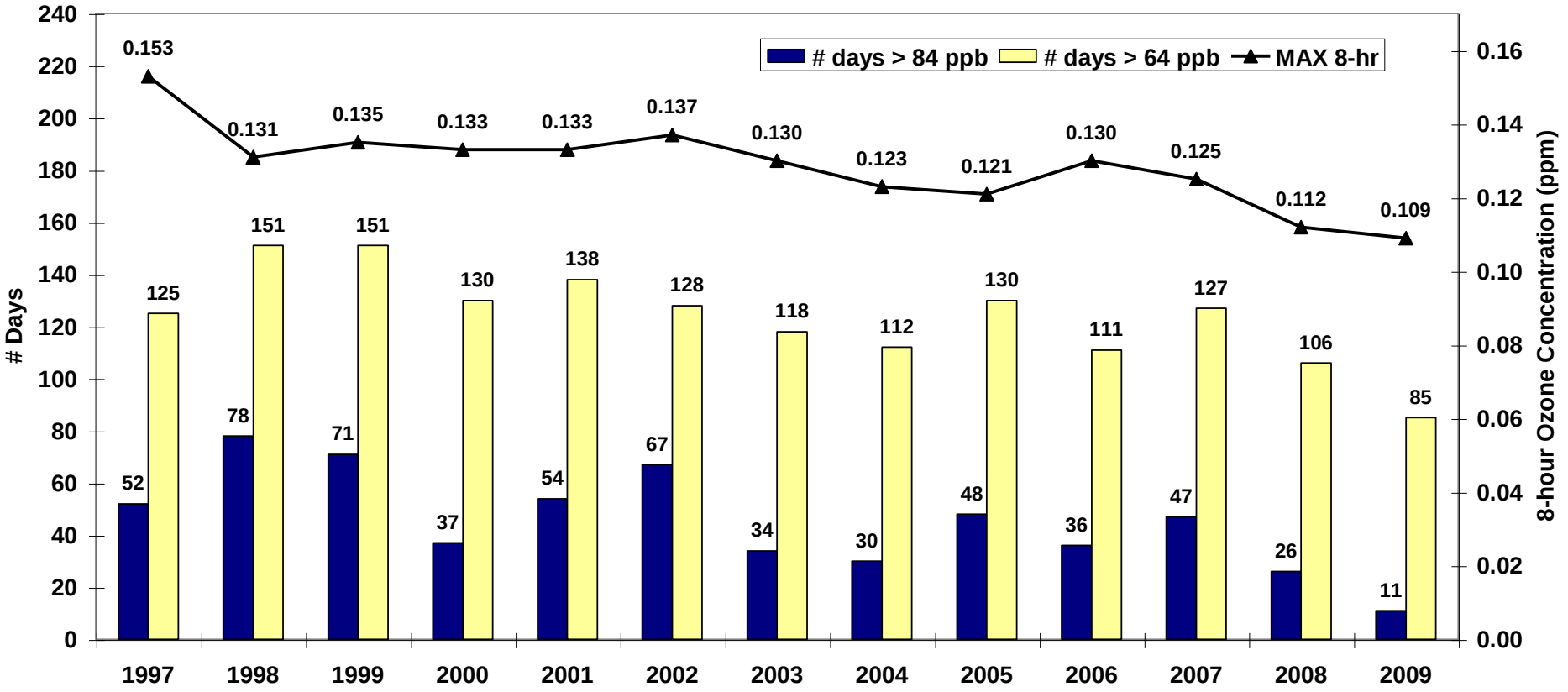
8-hr ozone trends in Northeast



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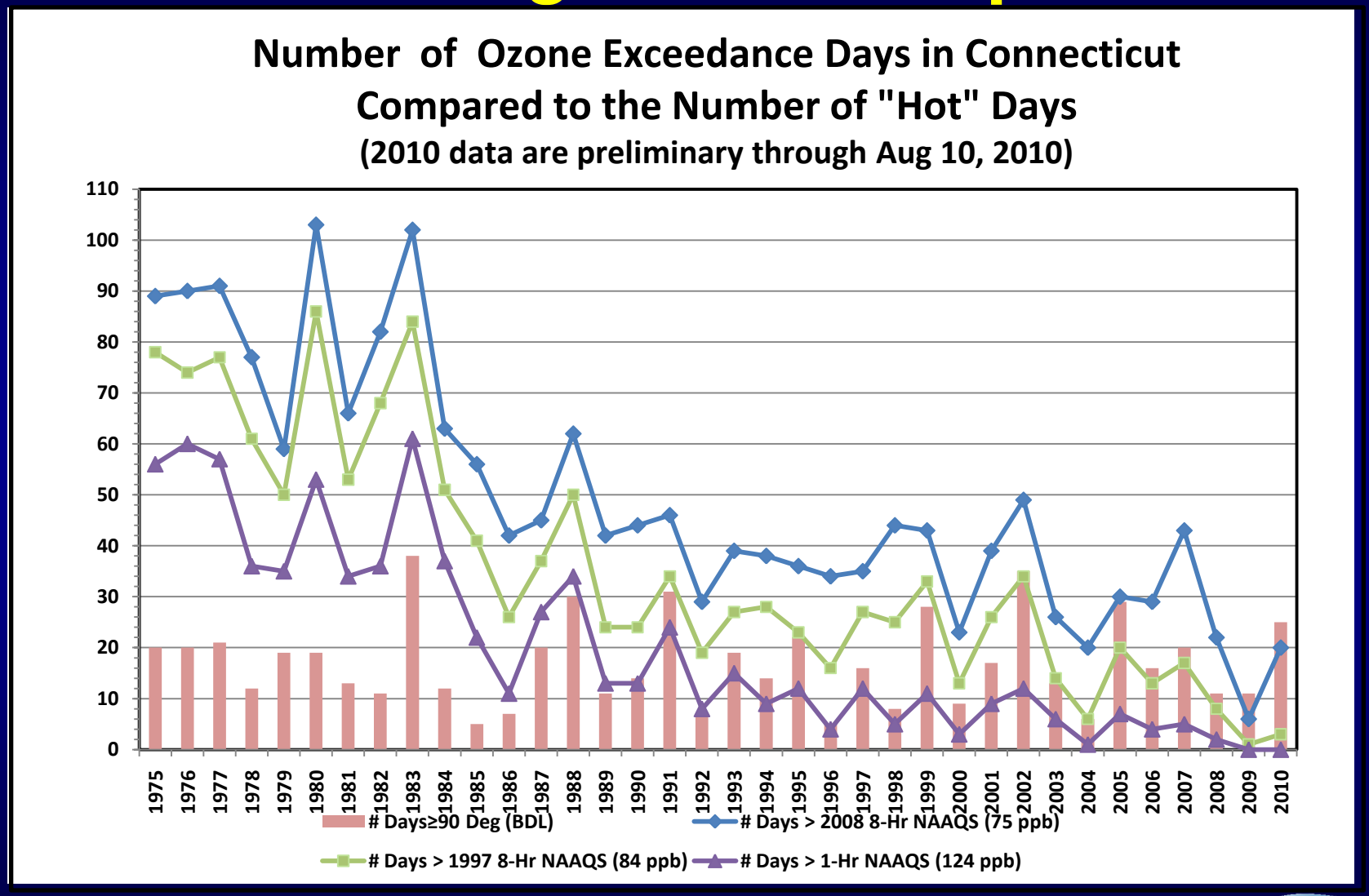
Trends in high O3 & temps in CT



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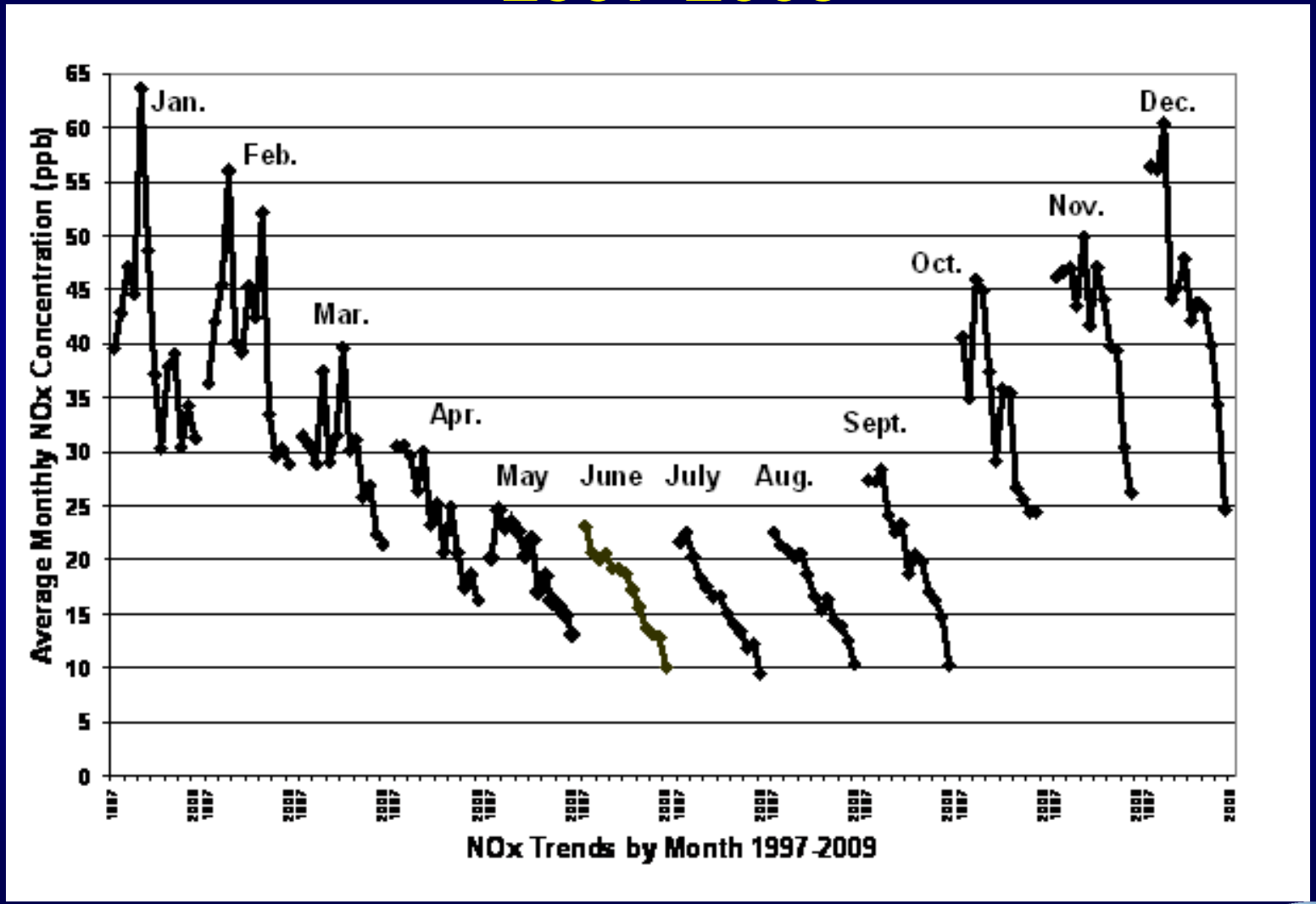
NOx going down in Northeast 1997-2009



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Heading in the right direction

- Regional NOx controls coupled with appropriate local VOC & NOx measures work
- Ozone still a regional problem in eastern US
- State SIPs must continue to address local as well as downwind impacts

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Future challenges

- Continuing challenges with current 85 ppb ozone NAAQS
- New ozone NAAQS on way
- Additional regional and local controls needed
- Peak ozone day strategies, e.g., high electric demand days

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Contributors to CT 85 ppb O3 NAAQS (maintenance) – 26 states total*

5 highest linkages (ppb)	
NY	22.7
NJ	15.8
PA	6.7
CT	6.1
VA	4.6

*Note: CT is 4th highest contributor to itself in proposed EPA transport rule

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New ozone NAAQS coming

- EPA reconsidering recently revised 75 ppb ozone NAAQS (2008)
- Panel of outside science experts recommended in range of 60-70 ppb
- EPA may finalize revision by Sept. 1

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Import of revised ozone NAAQS

- With revised ozone NAAQS, transport contribution thresholds will be 1% of new NAAQS (from EPA's proposed transport rule)

- E.g., if 70 ppb, contribution threshold becomes 0.7 ppb

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Examples of CT contributions if 70 ppb NAAQS*

State / site	*CT contribution (ppb)*
CT / Hartford	**15.6**
ME / Acadia NP	**1.6**
MA / Chicopee	**11.9**
NH / Miller SP	**5.0**
NJ / Monmouth	**1.4**
NY / Mt. Ninham	**3.7**
RI / Providence	**8.9**

***Revised 8-hr primary NAAQS to be in 60-70 ppb range. Contributions from proposed EPA transport rule.**

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Questions?

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