CALGRID Screening Modeling for Attainment Planning October 2005

Ozone Transport Commission

Control Strategy Committee Meeting

Baltimore, MD

October 5, 2005

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Why CALGRID?

- It's been updated substantially with CAMx and CMAQ science.
- It's publicly available through the Earth Tech Website
- It's a 1-atmosphere model.
- It uses MM5 meteorology and SMOKE/EPS emission modeling inputs.
- For screening, we use a simplified emissions processor (EMSPROC) for faster processing.

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Why CALGRID Screening?

- Timing
  - ➢ It's available now
  - ➢ The OTC?MANE-VU SIP quality modeling platform is still under construction and Q/A
- Intended for screening possible control strategies and their effectiveness.
- Improve control strategy modeling throughput with SIP modeling platform

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The Questions

- What will bring the states of the OTR into attainment for ozone and PM2.5?
- Will sufficient progress be made for regional haze by 2018?
- Will CAIR be enough?
  - What about CAIR with planned additional local measures?
  - What if we add anything else we can think of whether they are practical/cost effective or not?
- Would the so-called CAIR Plus be enough?

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The Screening Modeling Plan

Three phases of work:

1. Phase I works from Clear Skies emission files upgraded,
   a) reflect OTC 2002 base year emissions
   b) adjust Clear Skies emissions to CAIR level emissions
2. Phase II works from EPA updated CAIR files
3. Phase III works from OTC modeling platform

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The Plan (continued)

8 Runs for each phase:

1. Base Case year emissions (2002)
2. CAIR alone
3. CAIR with On The Books/On The Way controls
4. Run 3 plus additional OTC controls
5. CAIR-Plus (MRPO EGU1 level) Controls
6. CAIR-Plus (MRPO EGU2 level) Controls
7. CAIR-Plus (MRPO EGU1 level) Controls and additional local measures
8. CAIR-Plus (MRPO EGU2 level) Controls and additional local measures

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The Plan (continued)

Additional Screening:

- Sensitivity matrix for NOx, VOCs, and SO_2
- Sensitivity to small emission changes (small emission control measures)
- Screening effectiveness of local vs. regional measures
- State specific needs
- Etc.

Model predicted concentrations adjusted according to EPA's latest guidance proposal (average of 3 most recent DVs)

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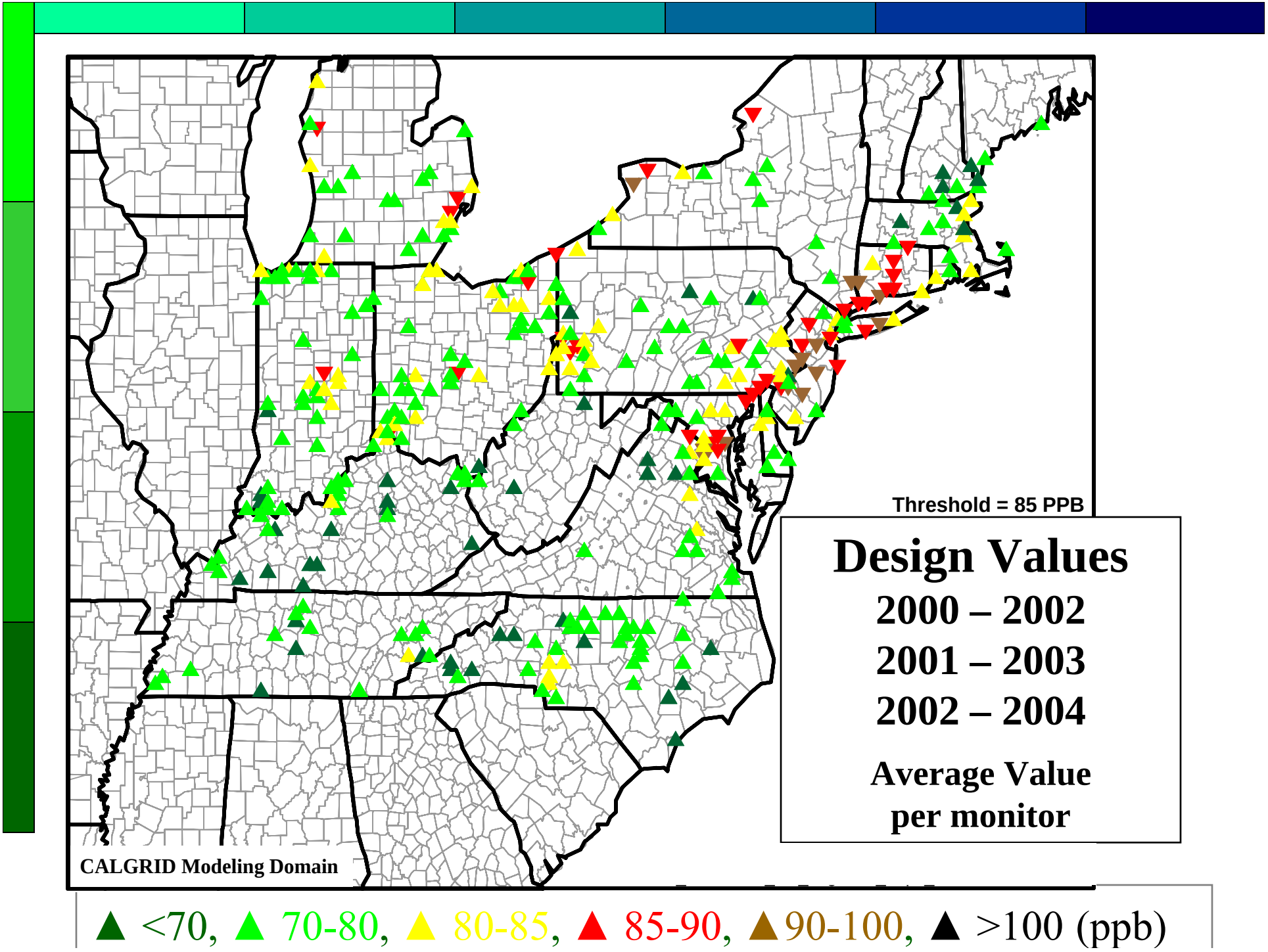
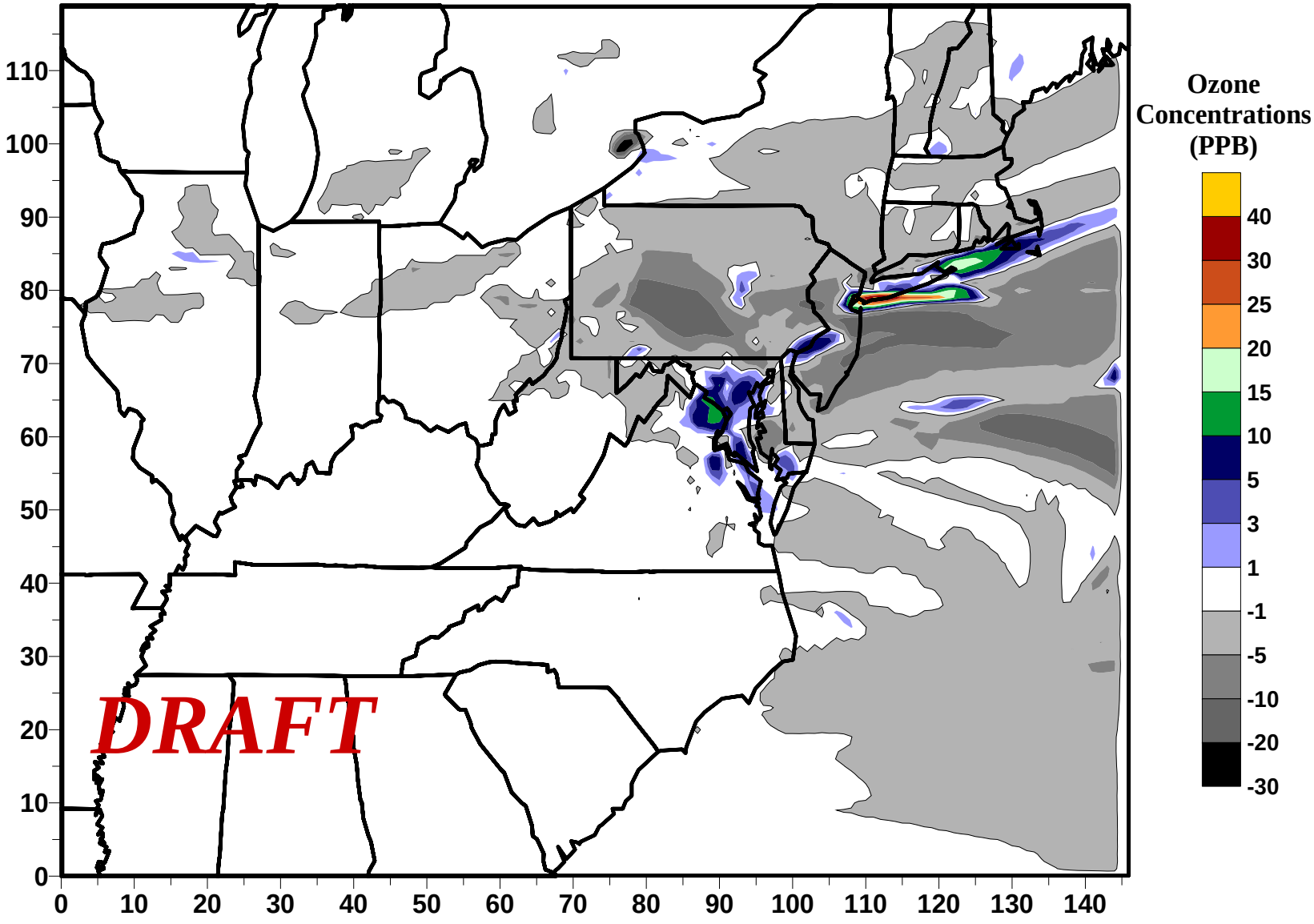

Threshold = 85 PPB
Design Values
2000 – 2002
2001 – 2003
2002 – 2004
Average Value
per monitor
CALGRID Modeling Domain
▲ <70, ▲ 70-80, ▲ 80-85, ▲ 85-90, ▲90-100, ▲ >100 (ppb)

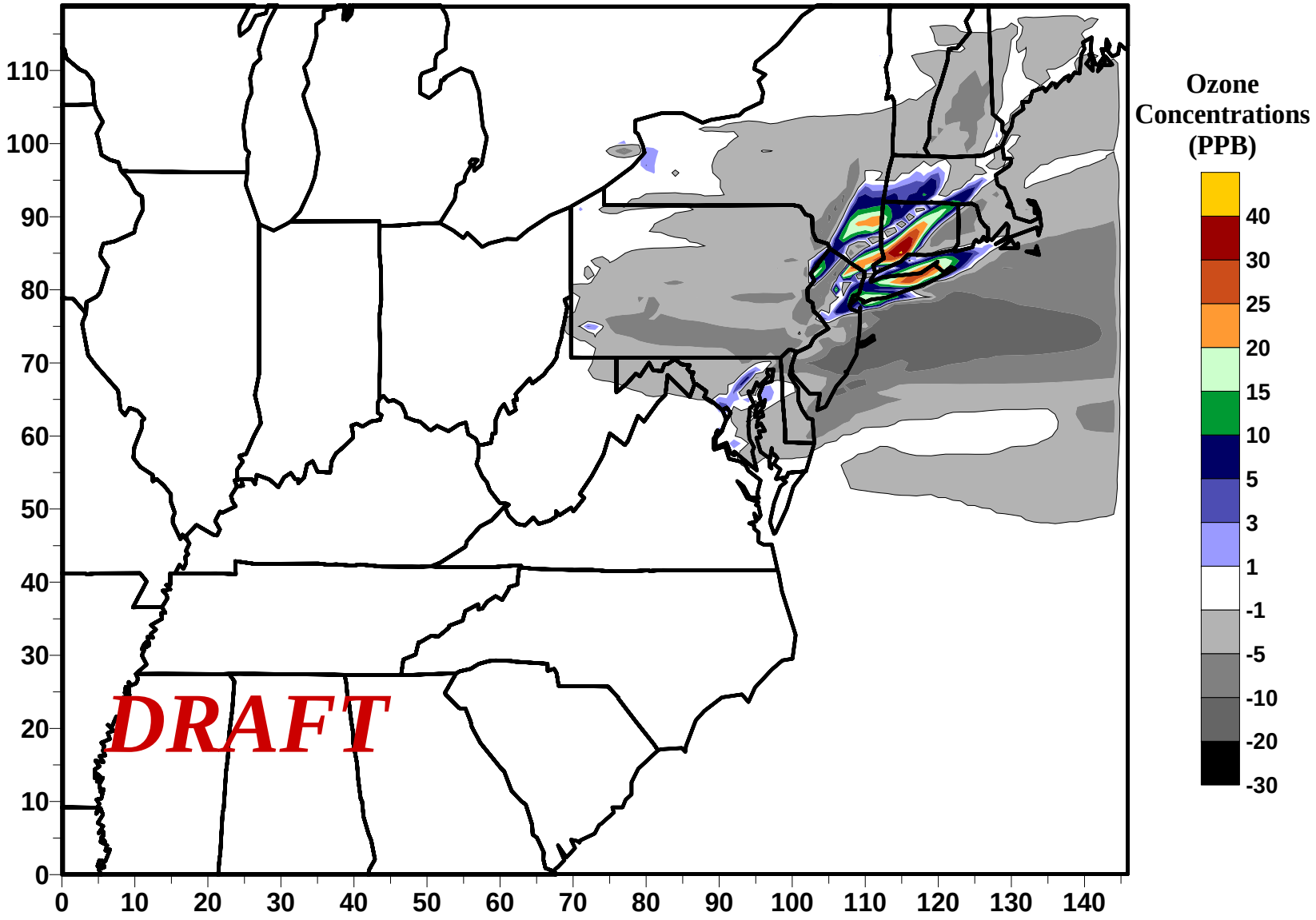
Differences from 2002 OTC Proxy and 2001 EPA Proxy - June

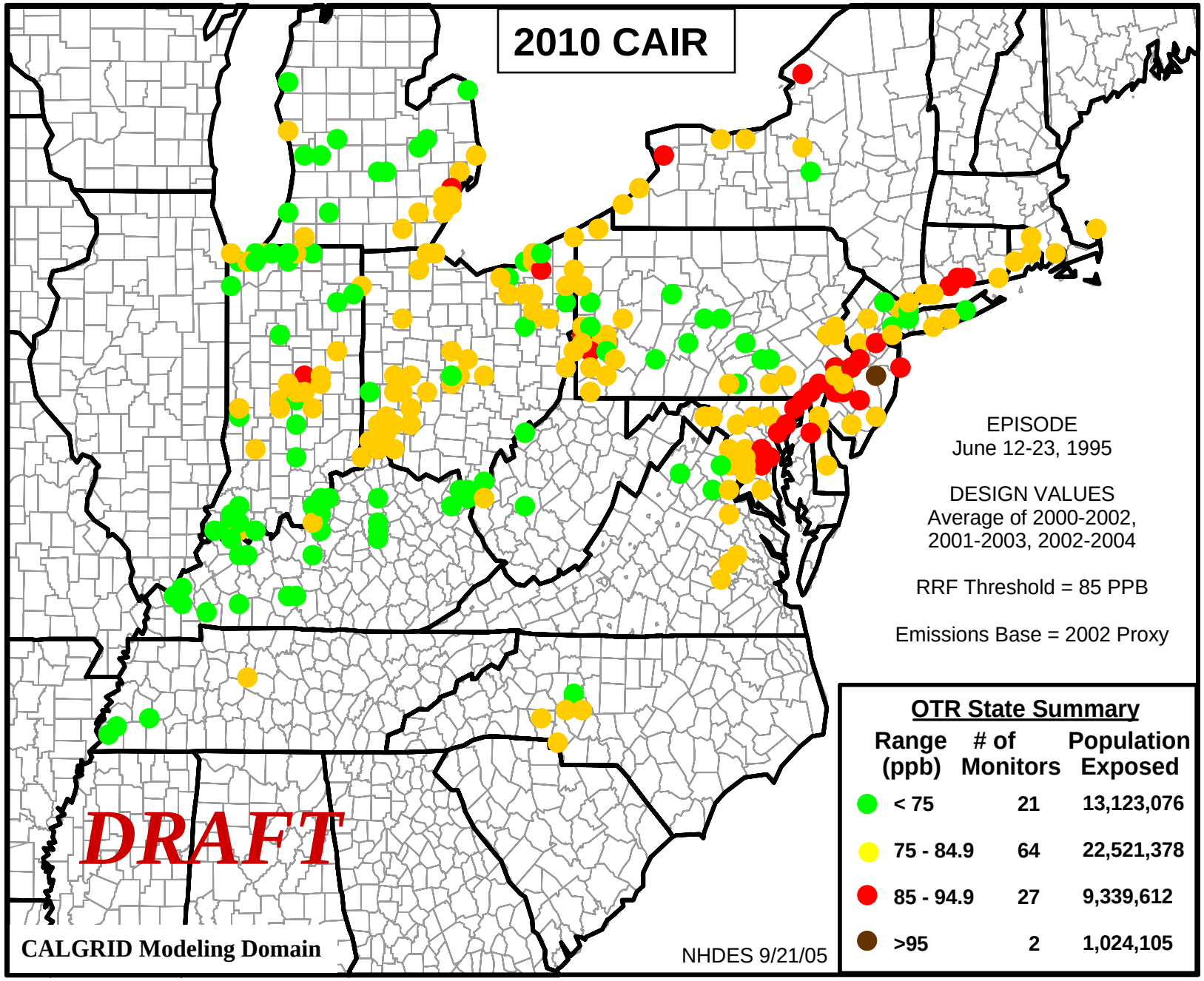
Episode 8-Hour Ozone Difference Concentrations
2002 Base Case Approximation minus the 2001 Proxy
CALGRID Modeling Domain - JUNE 12-23, 1995 Episode

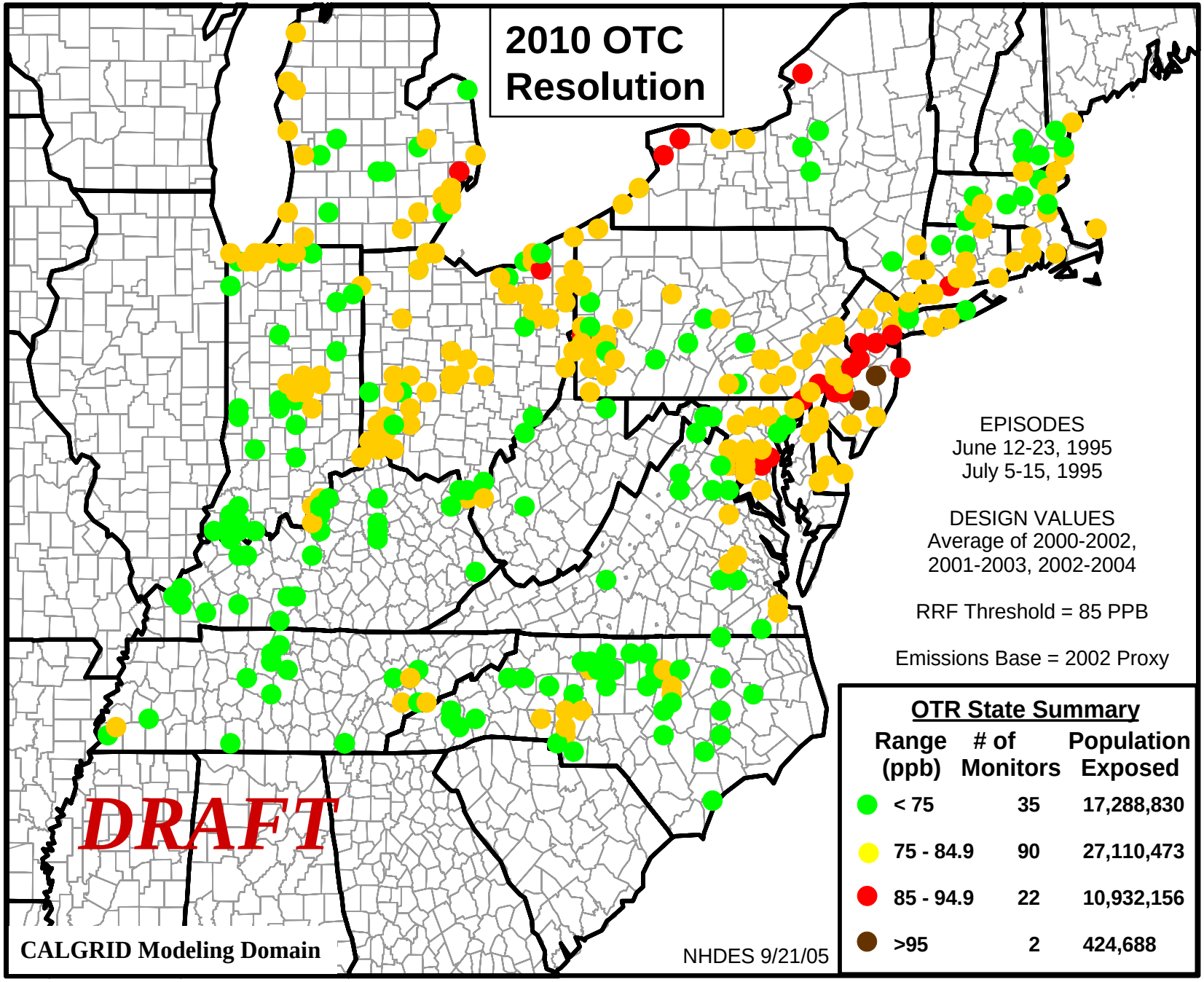


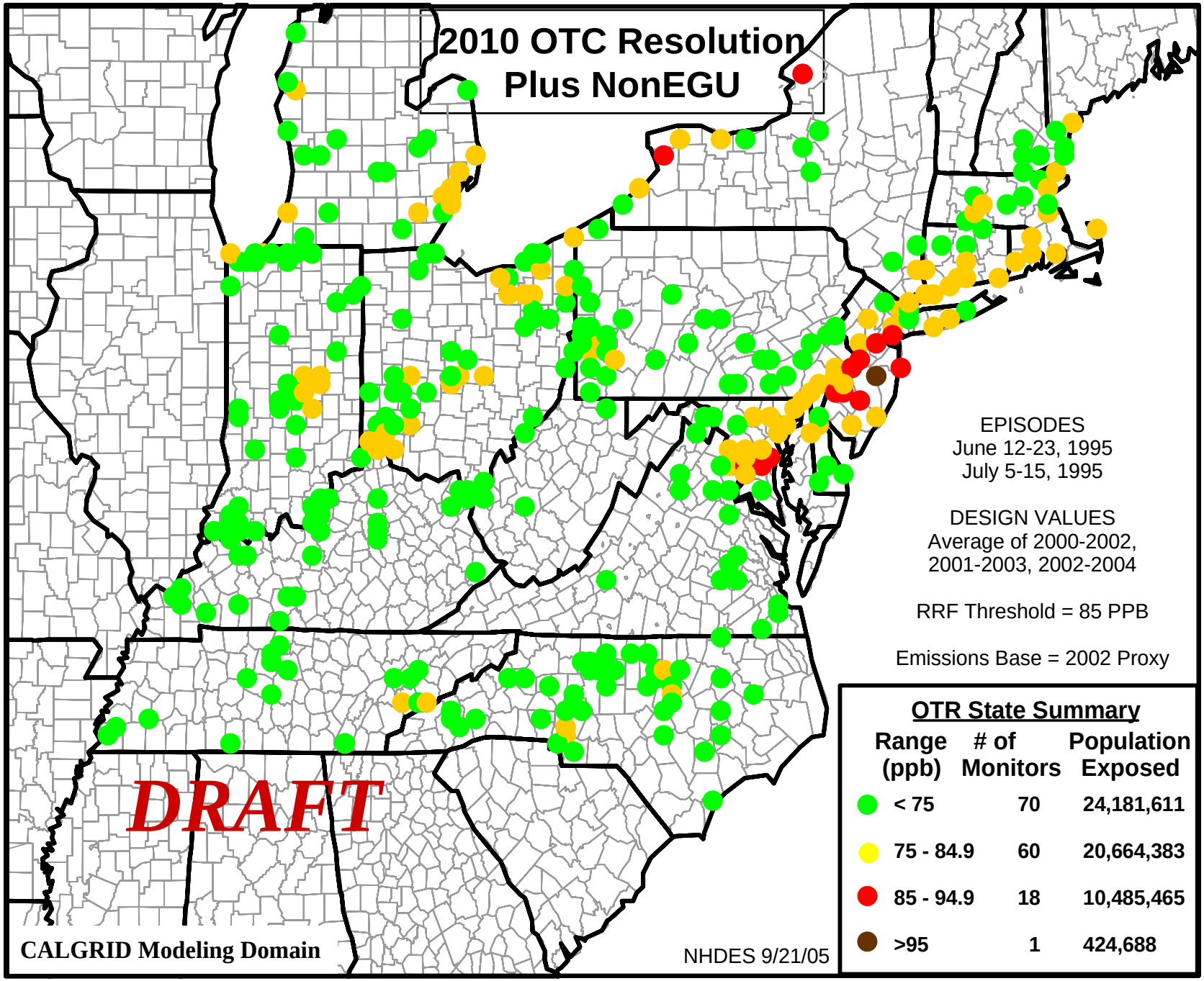
Differences from 2002 OTC Proxy and 2001 EPA Proxy - July

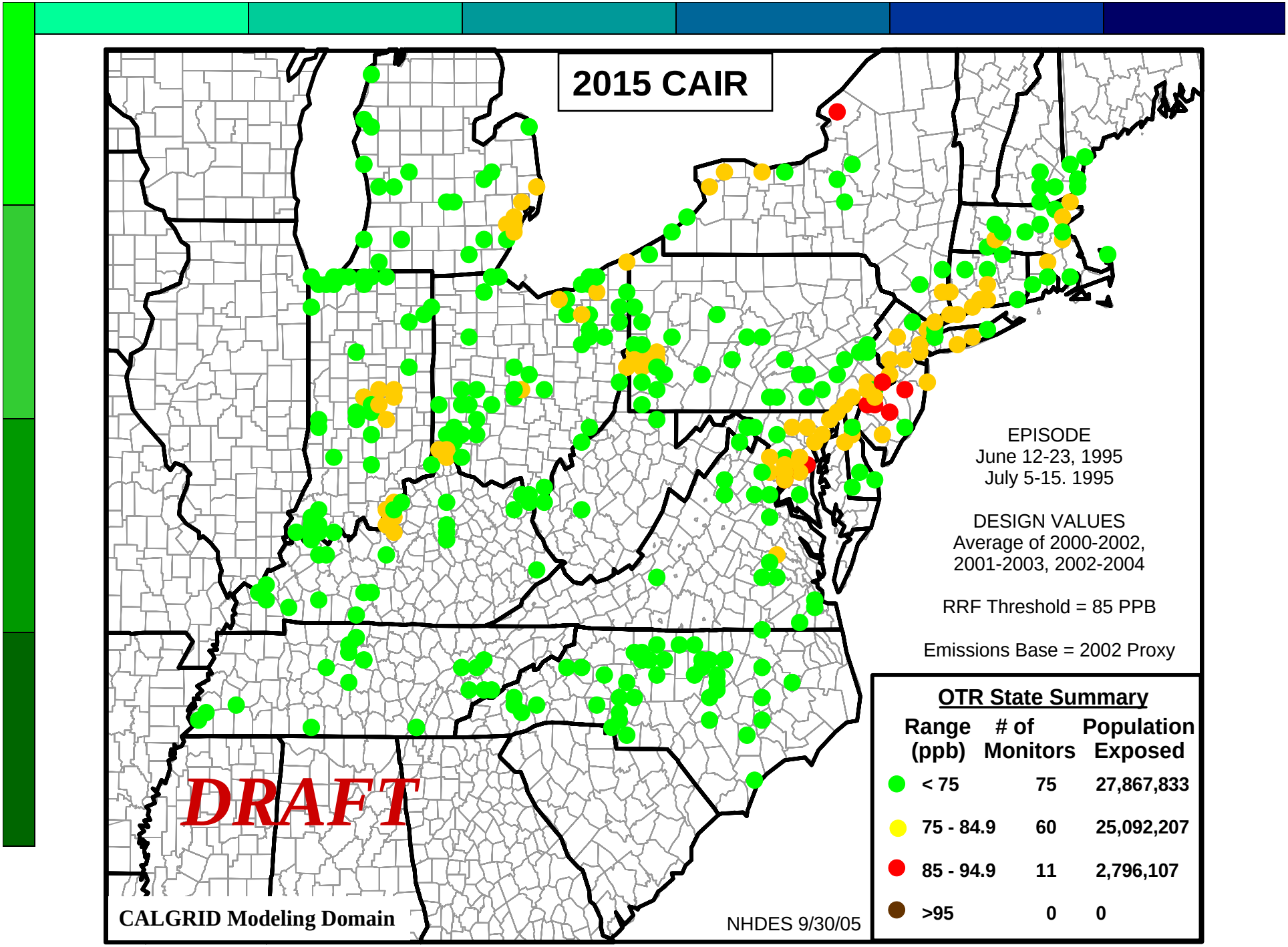
Episode 8-Hour Ozone Difference Concentrations
2002 Base Case Approximation minus the 2001 Proxy
CALGRID Modeling Domain - JULY 5-15, 1995 Episode




2010 CAIR
EPISODE
June 12-23, 1995
DESIGN VALUES
Average of 2000-2002,
2001-2003, 2002-2004
RRF Threshold = 85 PPB
Emissions Base = 2002 Proxy
OTR State Summary
Range (ppb) # of Monitors Population Exposed
< 75 21 13,123,076
75 - 84.9 64 22,521,378
85 - 94.9 27 9,339,612
>95 2 1,024,105
DRAFT
CALGRID Modeling Domain
NHDES 9/21/05


2010 OTC Resolution
EPISODES
June 12-23, 1995
July 5-15, 1995
DESIGN VALUES
Average of 2000-2002,
2001-2003, 2002-2004
RRF Threshold = 85 PPB
Emissions Base = 2002 Proxy
OTR State Summary
Range (ppb) # of Monitors Population Exposed
< 75 35 17,288,830
75 - 84.9 90 27,110,473
85 - 94.9 22 10,932,156
>95 2 424,688
DRAFT
CALGRID Modeling Domain
NHDES 9/21/05


2010 OTC Resolution
Plus NonEGU
EPISODES
June 12-23, 1995
July 5-15, 1995
DESIGN VALUES
Average of 2000-2002,
2001-2003, 2002-2004
RRF Threshold = 85 PPB
Emissions Base = 2002 Proxy
OTR State Summary
Range (ppb) # of Monitors Population Exposed
< 75 70 24,181,611
75 - 84.9 60 20,664,383
85 - 94.9 18 10,485,465
>95 1 424,688
DRAFT
CALGRID Modeling Domain
NHDES 9/21/05


2015 CAIR
EPISODE
June 12-23, 1995
July 5-15. 1995
DESIGN VALUES
Average of 2000-2002,
2001-2003, 2002-2004
RRF Threshold = 85 PPB
Emissions Base = 2002 Proxy
OTR State Summary
Range (ppb) # of Monitors Population Exposed
< 75 75 27,867,833
75 - 84.9 60 25,092,207
85 - 94.9 11 2,796,107
>95 0 0
DRAFT
CALGRID Modeling Domain
NHDES 9/30/05

Questions?

Average Monitored 8-Hour Ozone Design Values
Design Value Periods: 2000-2002, 2001-2003, 2002-2004