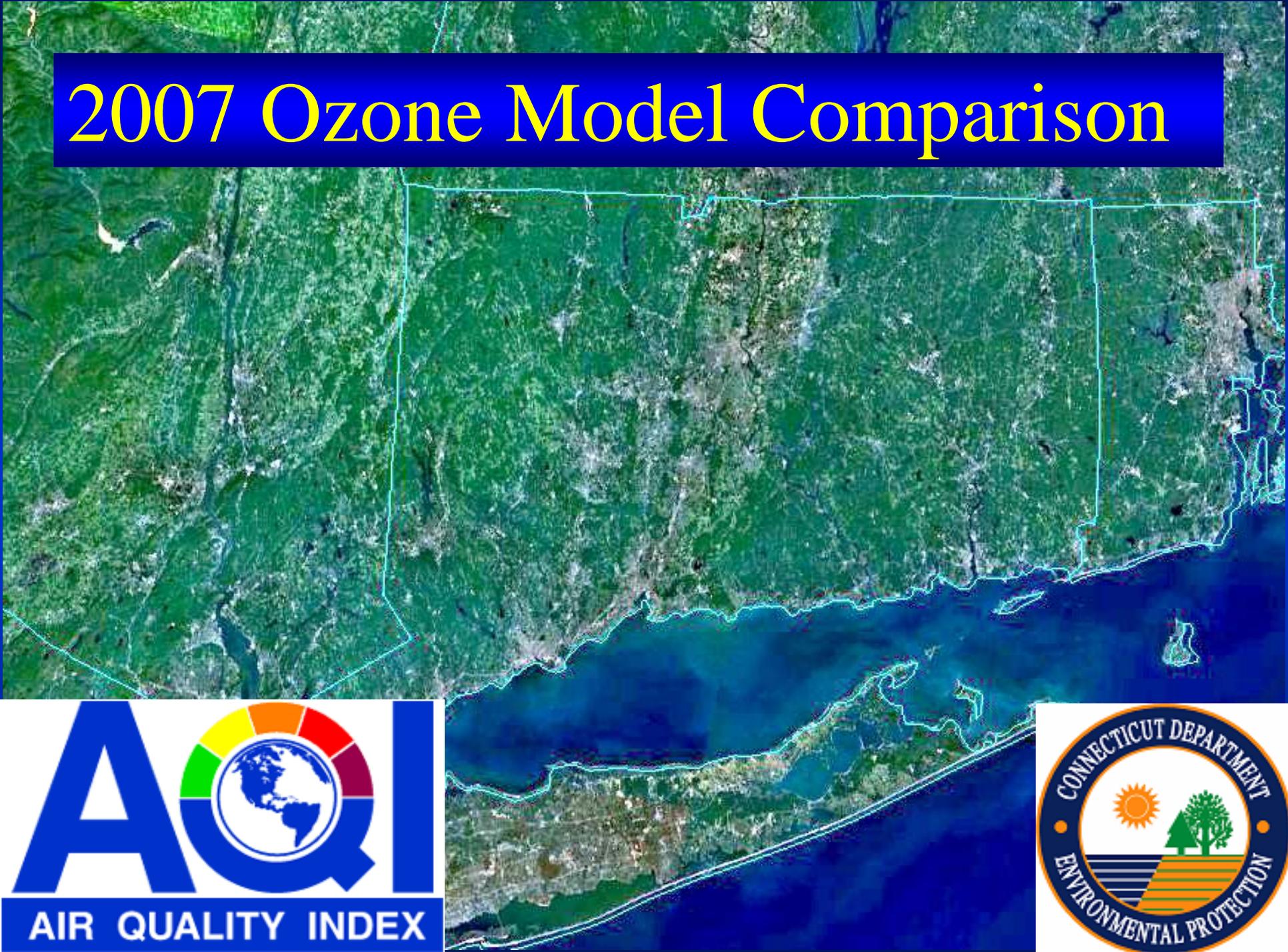


2007 Ozone Model Comparison



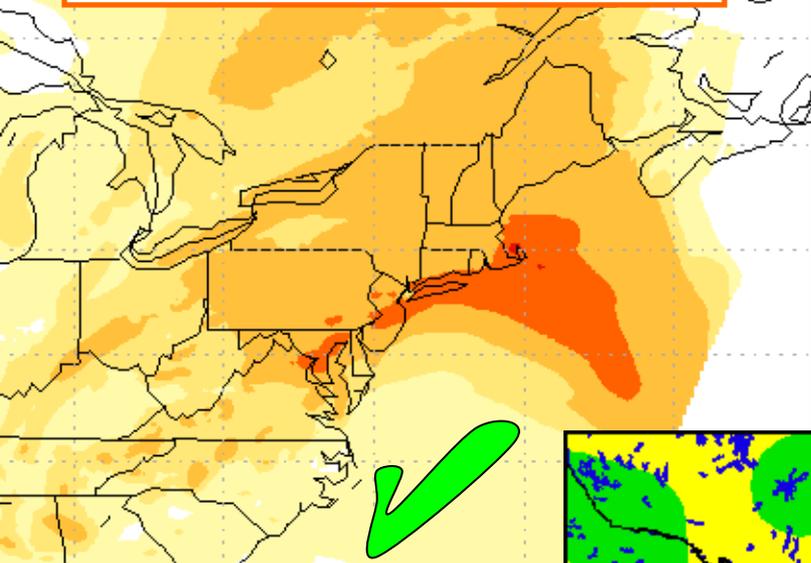
- **NCEP model comparison using actual AQI levels for the State of Connecticut.**
- **Both the Operational and Developmental compared.**
- **Any “orange” AQI forecast over the State of Connecticut was counted as a verification.**
- **There were 16 ozone exceedance days for Connecticut this ozone season.**
- **06z forecasts from the previous day were used for comparison.**

2007 NCEP Ozone Model Verification for Connecticut

Date	NCEP Operational	NCEP Developmental	Actual AQI
May 25			
June 1			
June 2			
June 25			
June 26			
June 27			
June 28			
July 8			
July 9			
July 10			
July 17			
August 2			
August 3			
August 4			
August 16			
August 30			
Total Verified (%)	10 (62.5%)	12 (75%)	16

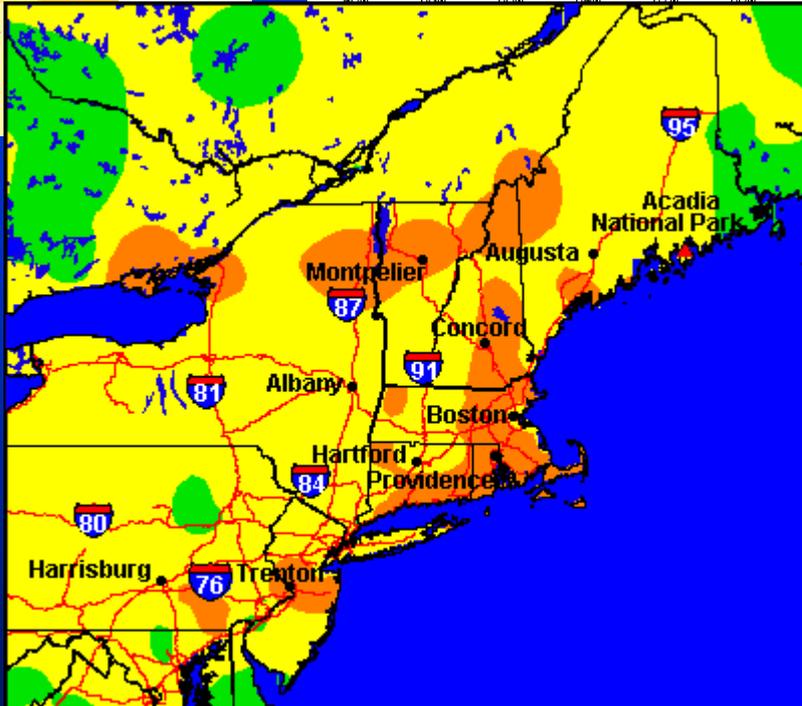
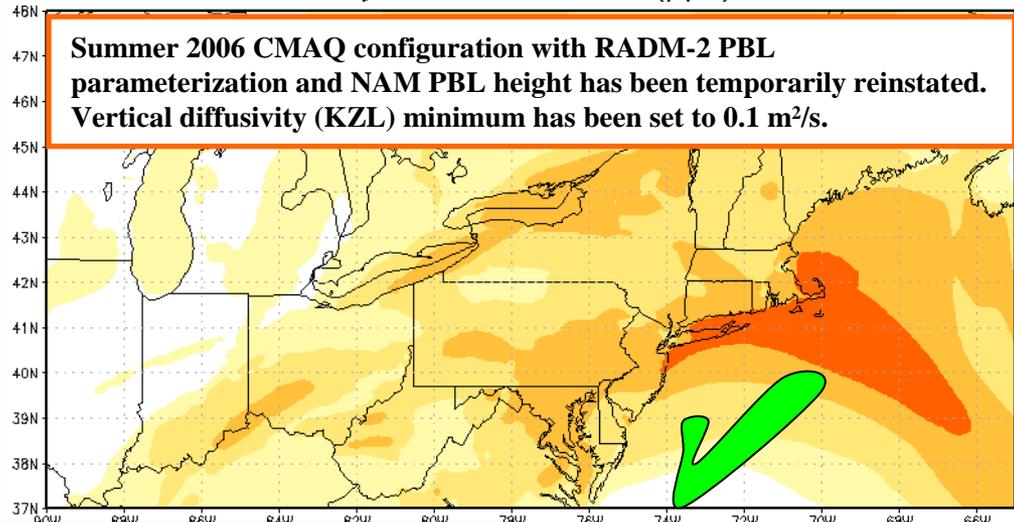
8h max sfc O3 (ppb) Valid 26 MA

CMAQ static area emissions updated with 2007 projections.



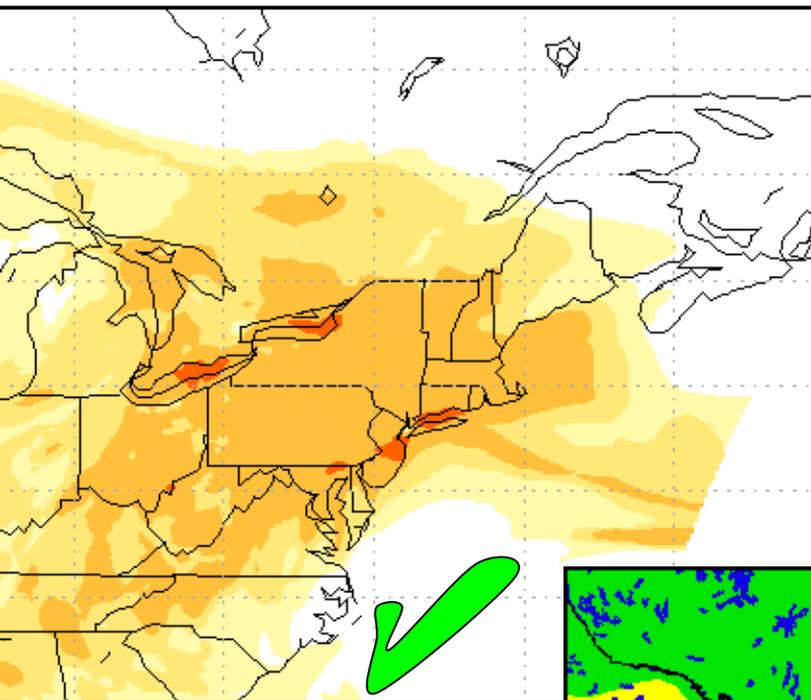
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 26 MAY 2007

Summer 2006 CMAQ configuration with RADM-2 PBL parameterization and NAM PBL height has been temporarily reinstated. Vertical diffusivity (KZL) minimum has been set to 0.1 m²/s.

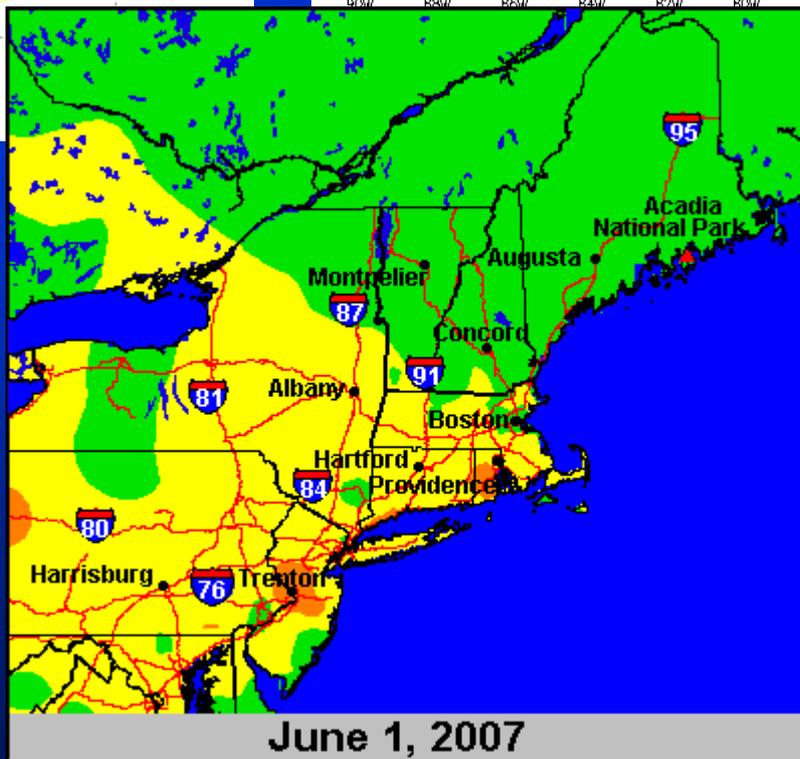
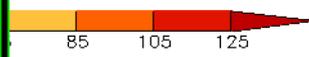
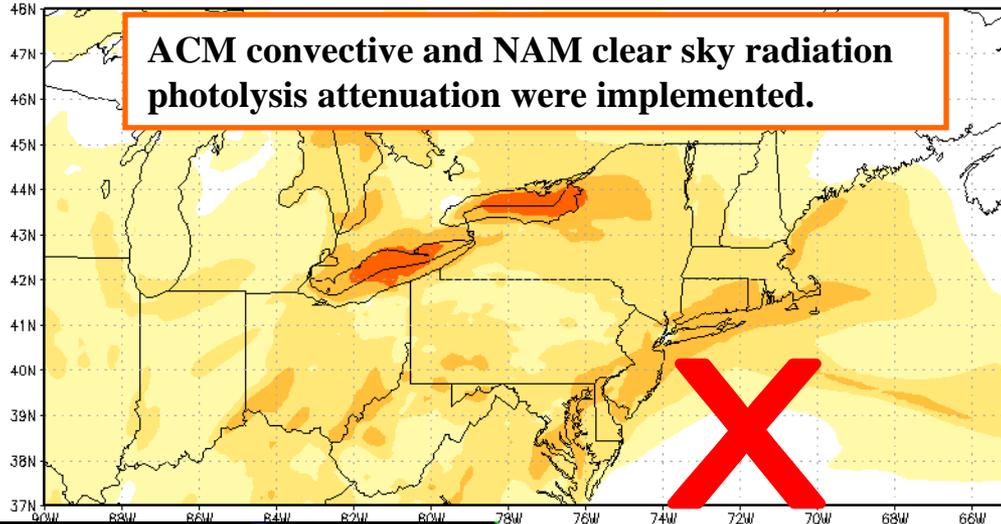


May 25, 2007

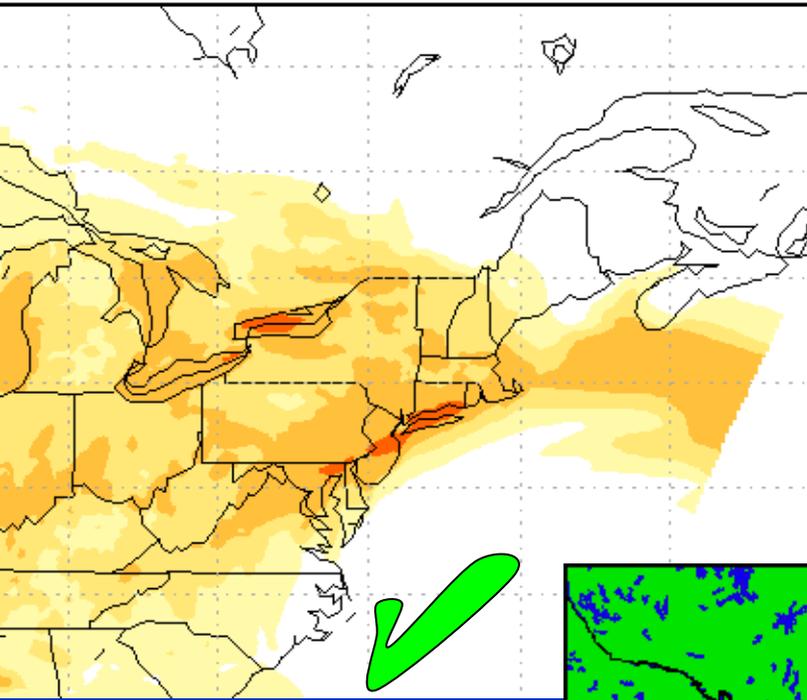
8h max sfc O3 (ppb) Valid 02 JUN



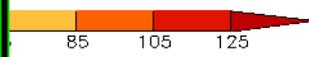
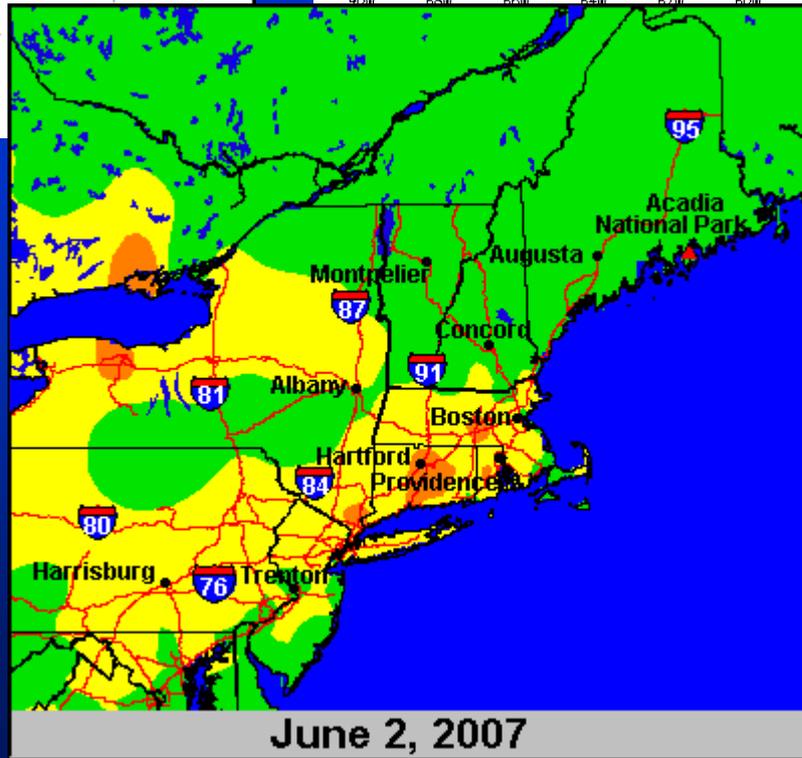
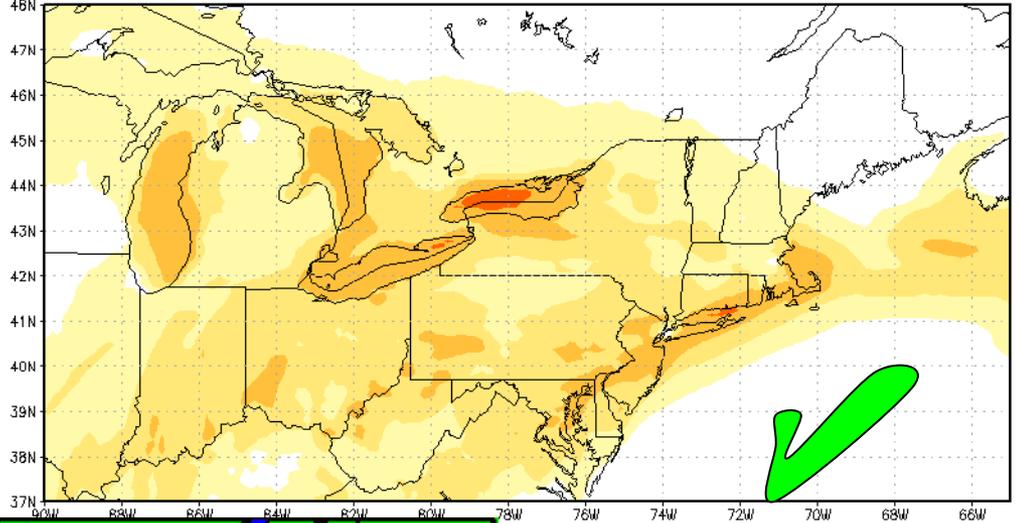
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 02 JUN 2007



8h max sfc O3 (ppb) Valid 03 JUN

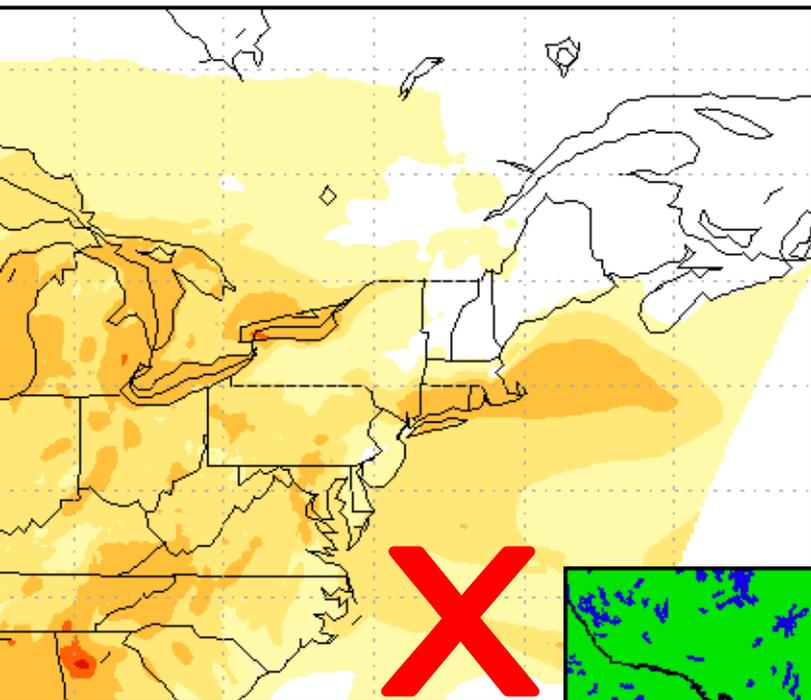


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 03 JUN 2007

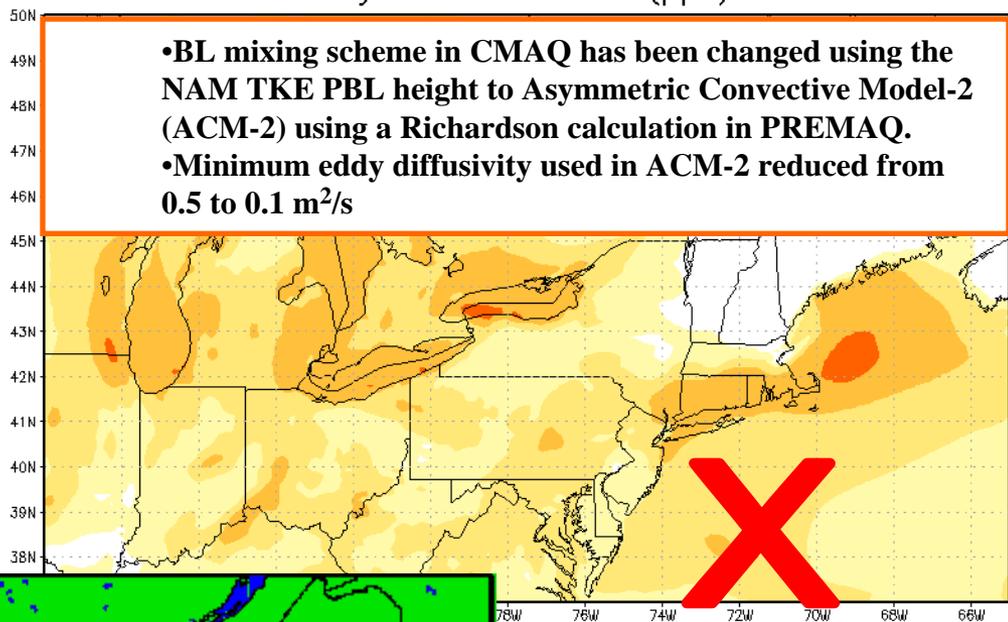


June 2, 2007

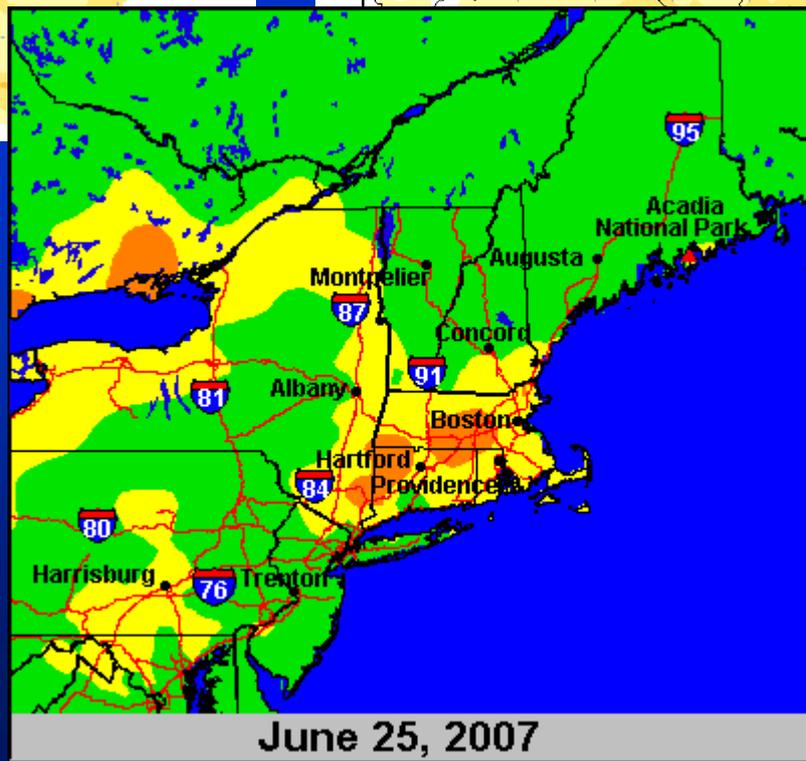
8h max sfc O3 (ppb) Valid 26 JUN 2007



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 26 JUN 2007

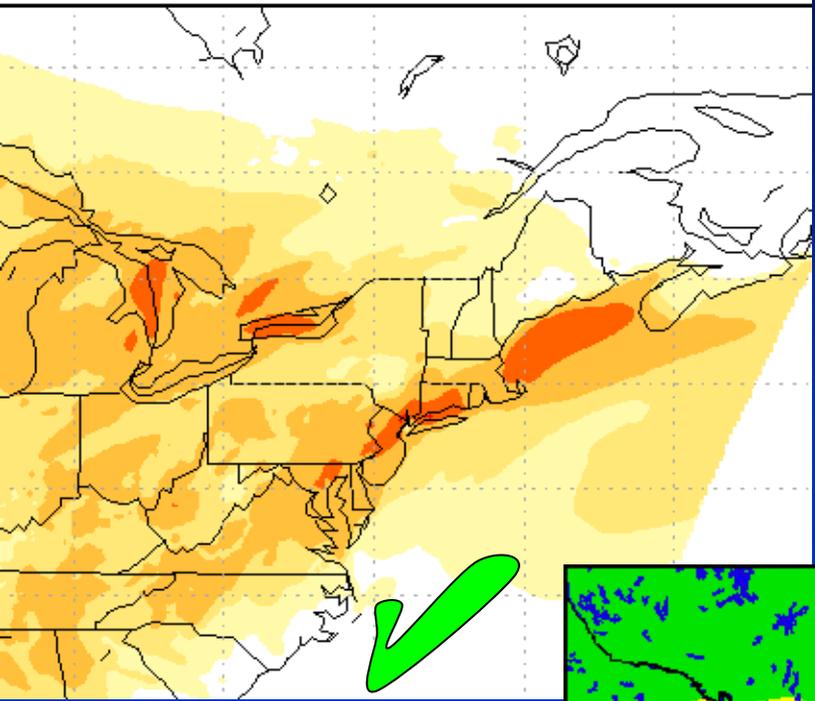


- BL mixing scheme in CMAQ has been changed using the NAM TKE PBL height to Asymmetric Convective Model-2 (ACM-2) using a Richardson calculation in PREMAQ.
- Minimum eddy diffusivity used in ACM-2 reduced from 0.5 to 0.1 m²/s

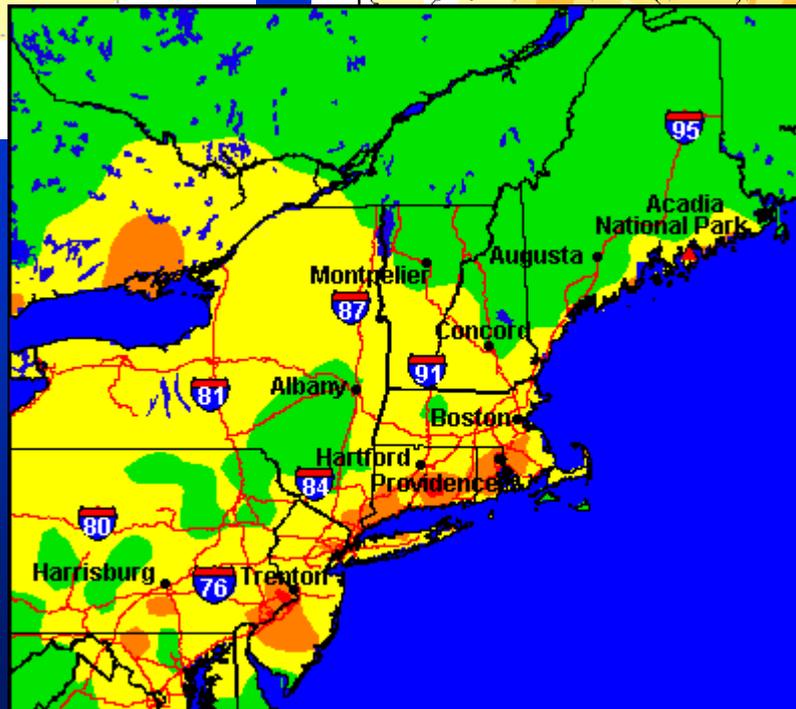
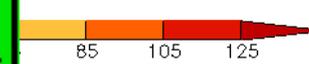
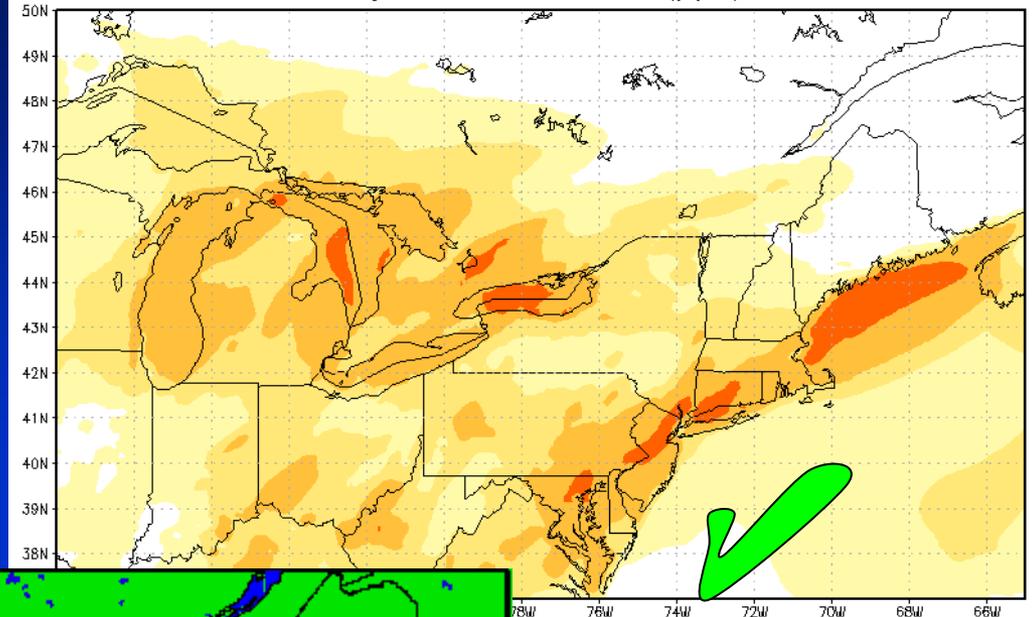


June 25, 2007

8h max sfc O3 (ppb) Valid 27 JUN

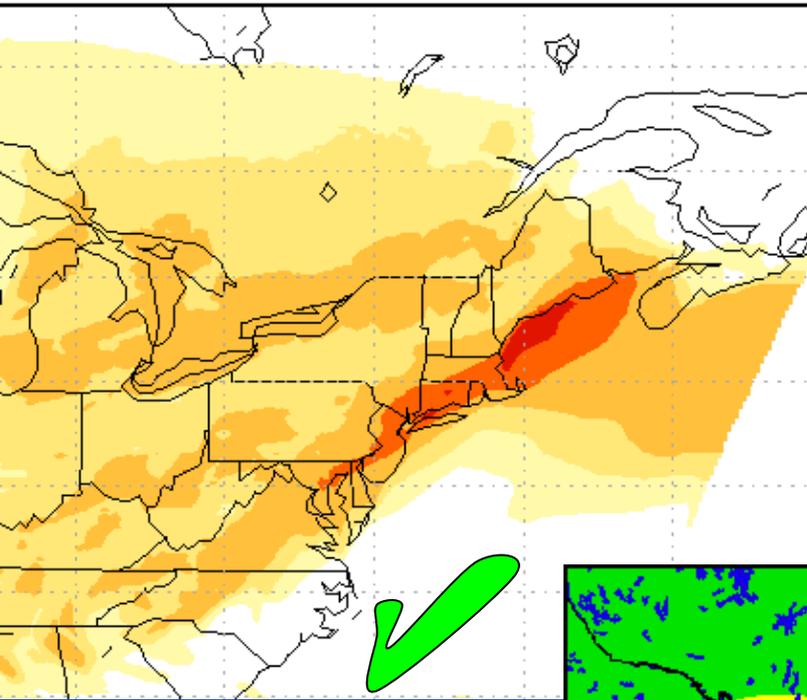


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 27 JUN 2007

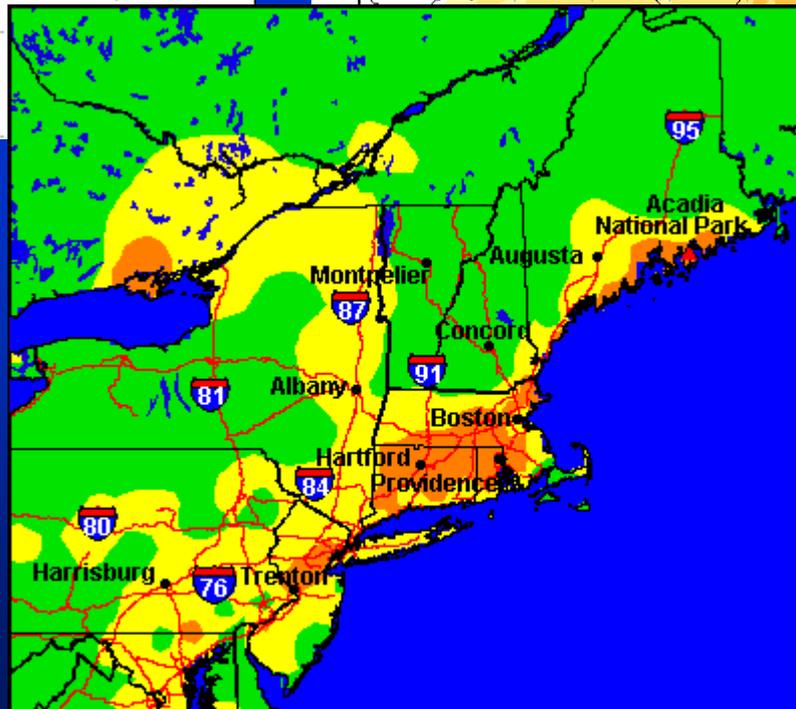
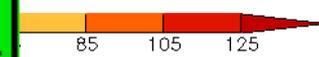
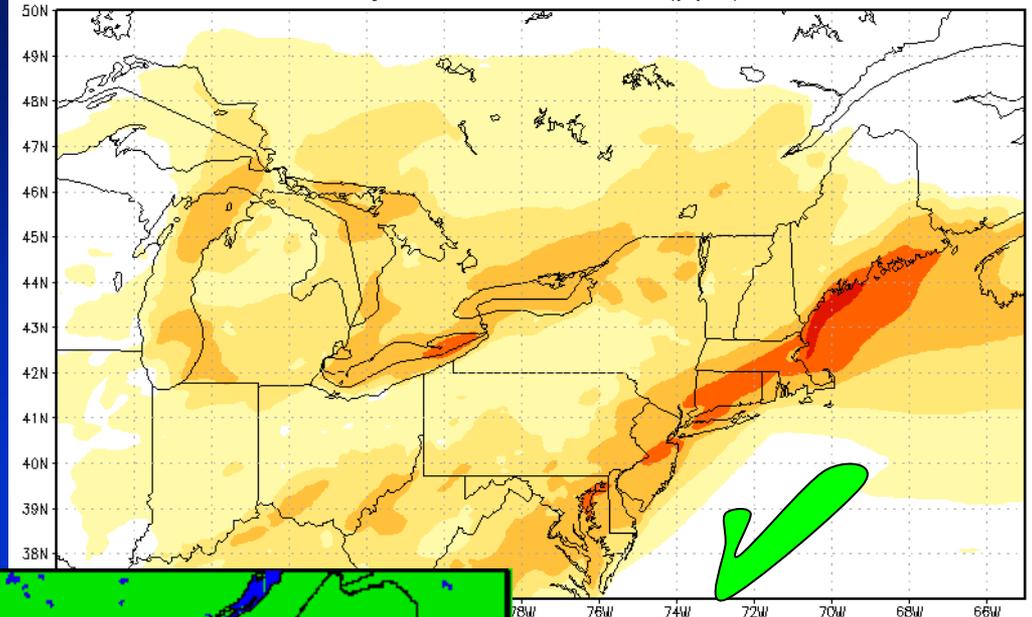


June 26, 2007

8h max sfc O3 (ppb) Valid 28 JUN



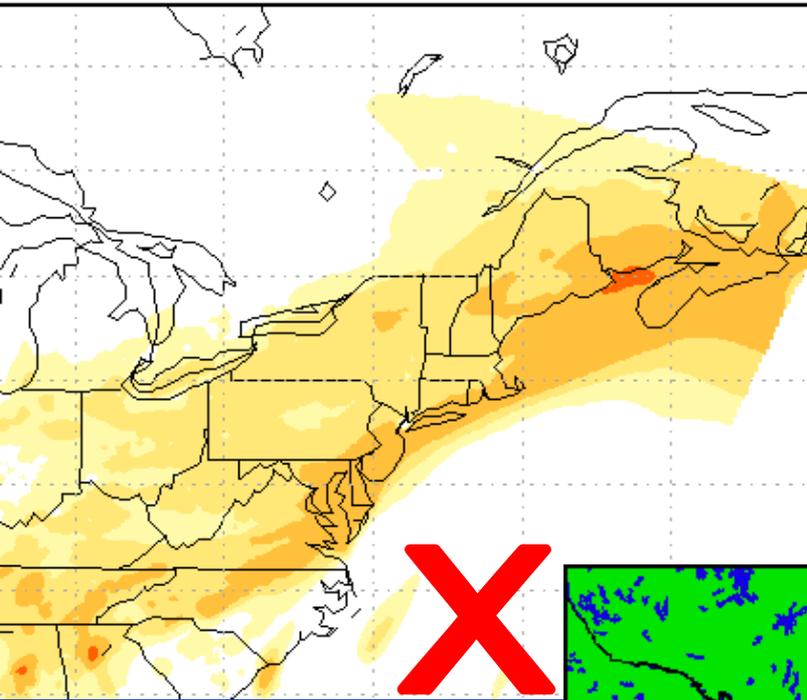
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 28 JUN 2007



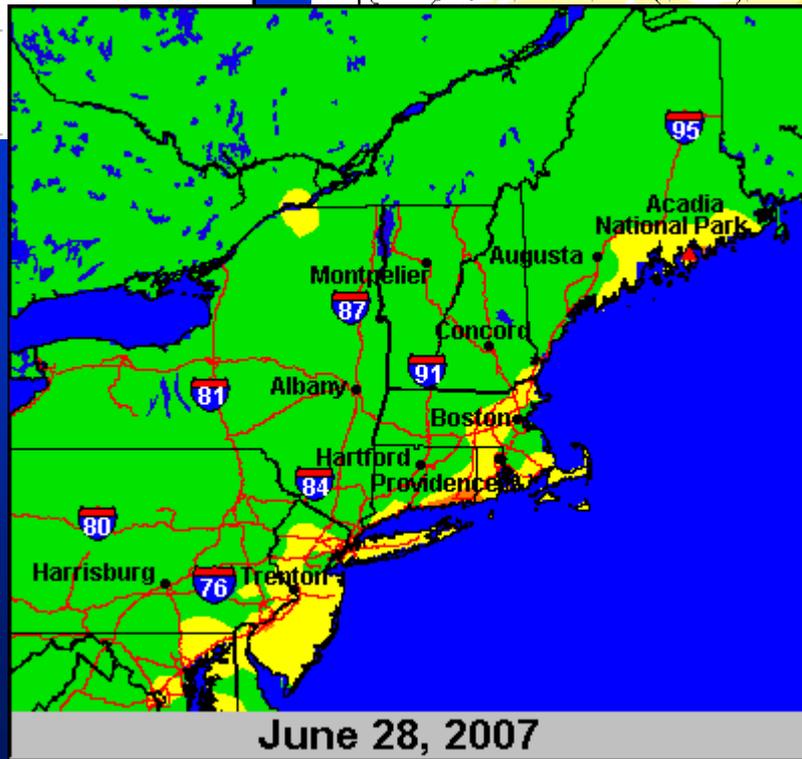
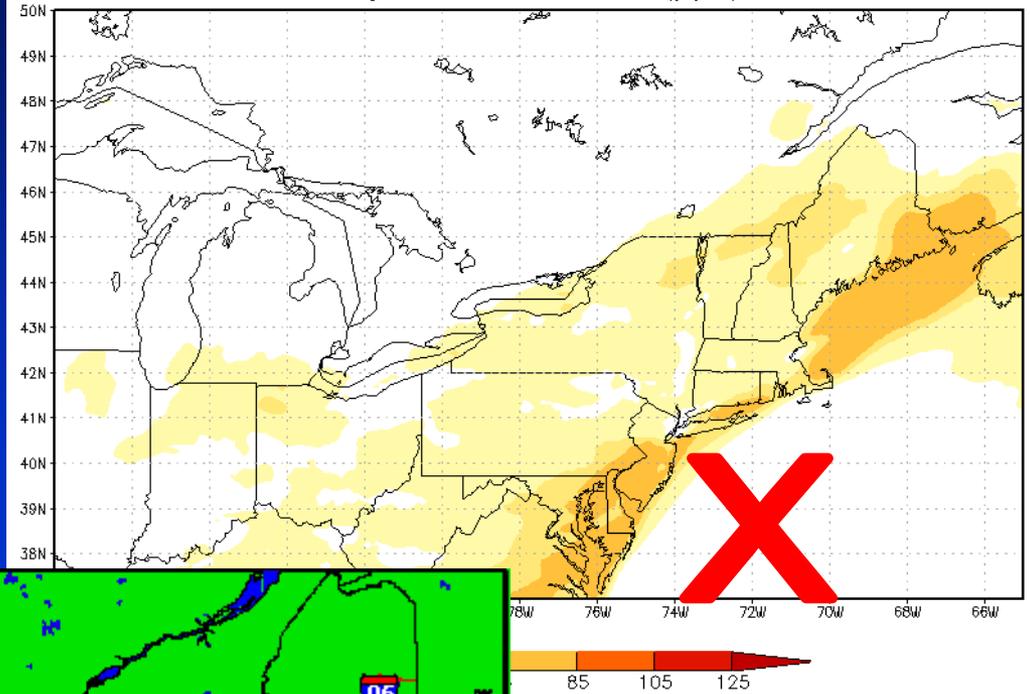
June 27, 2007

A very good prediction!

8h max sfc O3 (ppb) Valid 29 JUN



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 29 JUN 2007

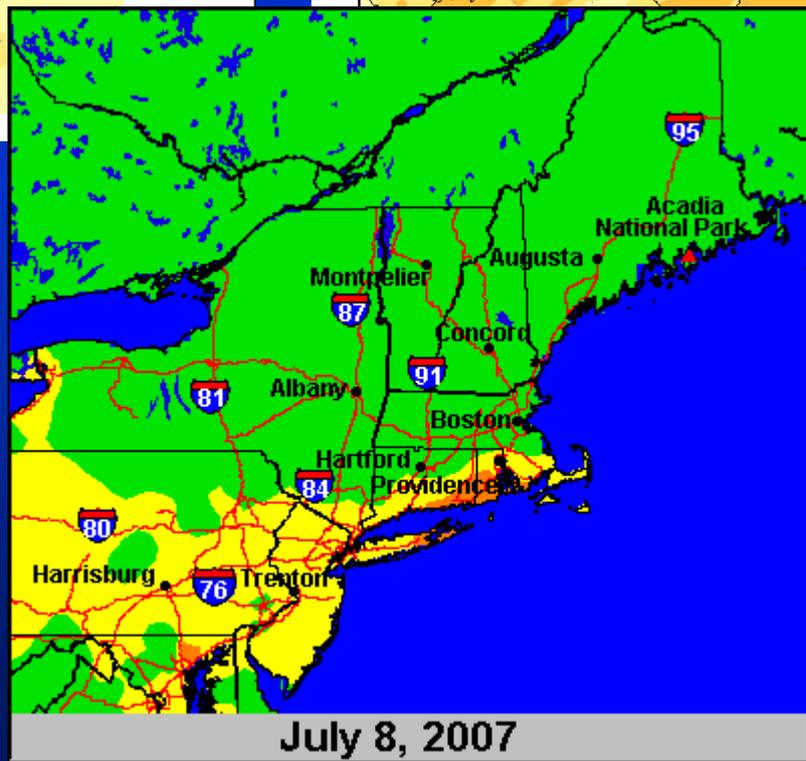
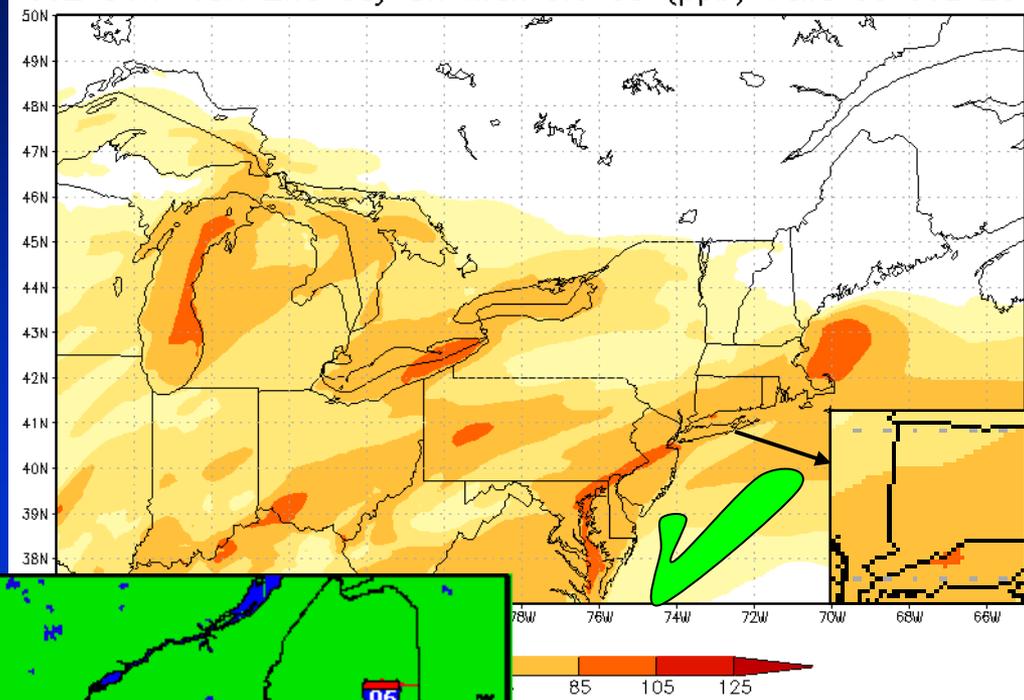
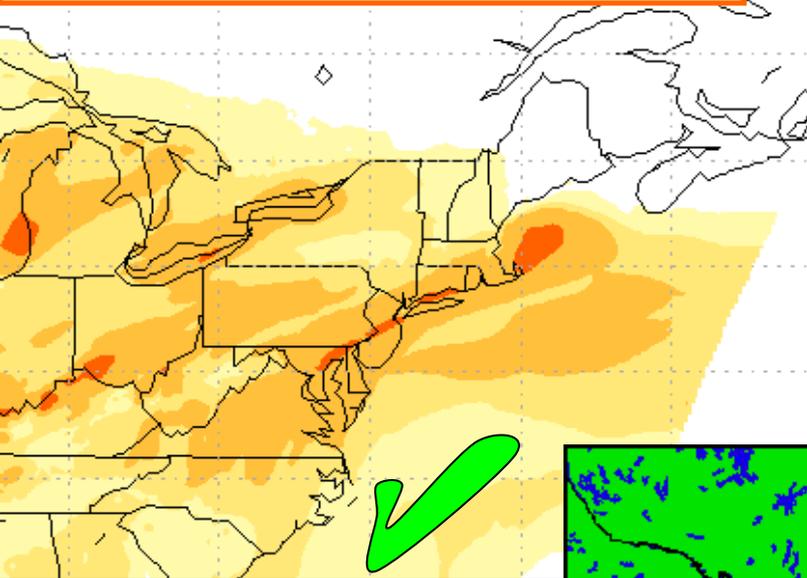


June 28, 2007

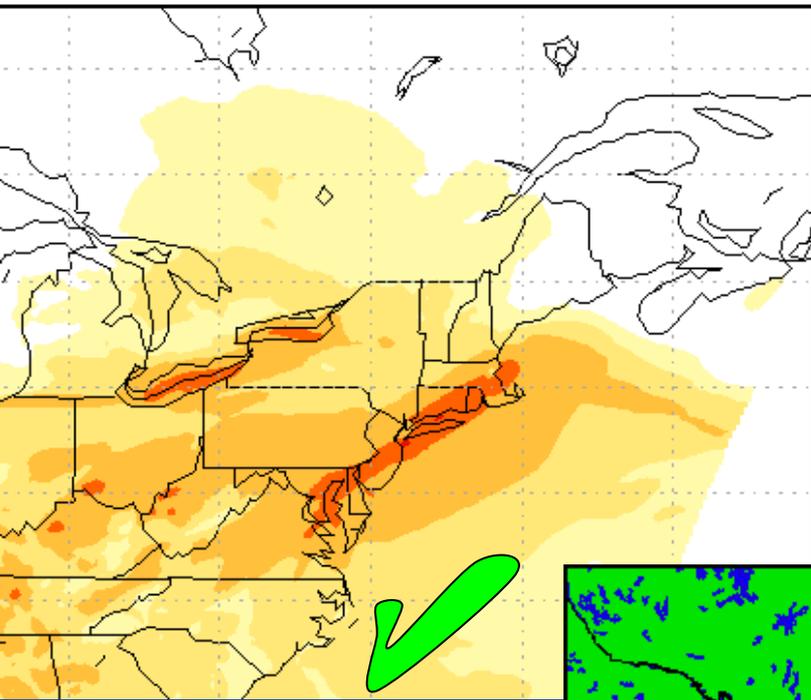
8h max sfc O3 (ppb) Valid 09 JUL

06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 09 JUL 2007

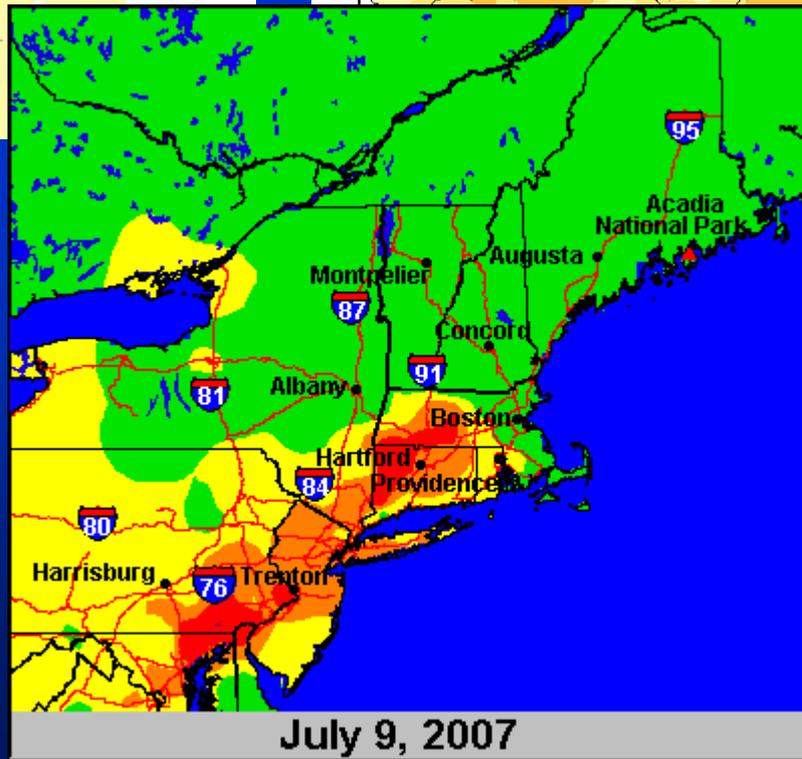
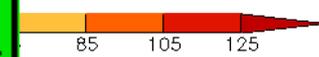
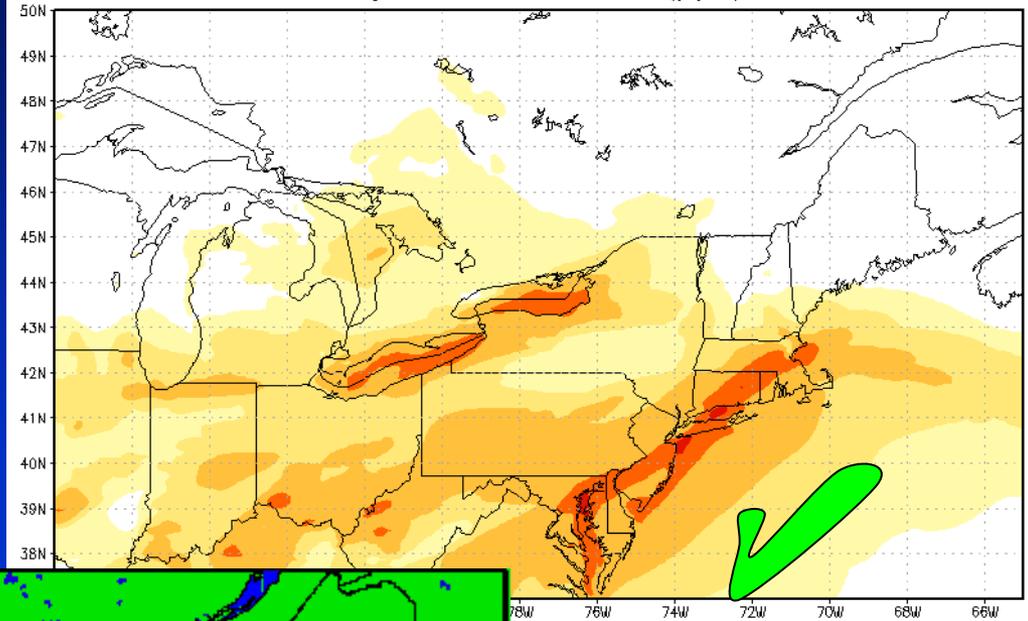
CMAQ Point source emission files updated with 2007 projections.



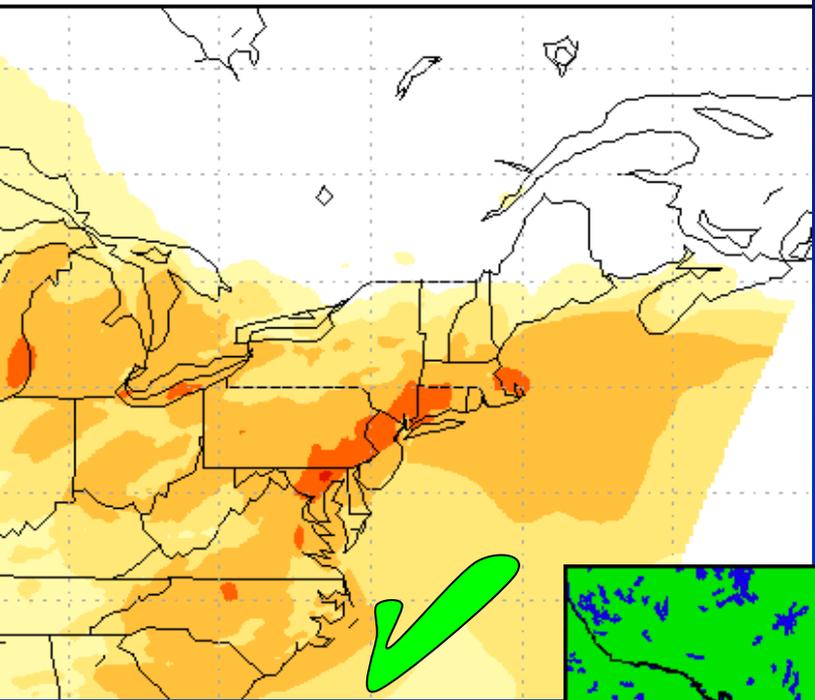
8h max sfc O3 (ppb) Valid 10 JUL



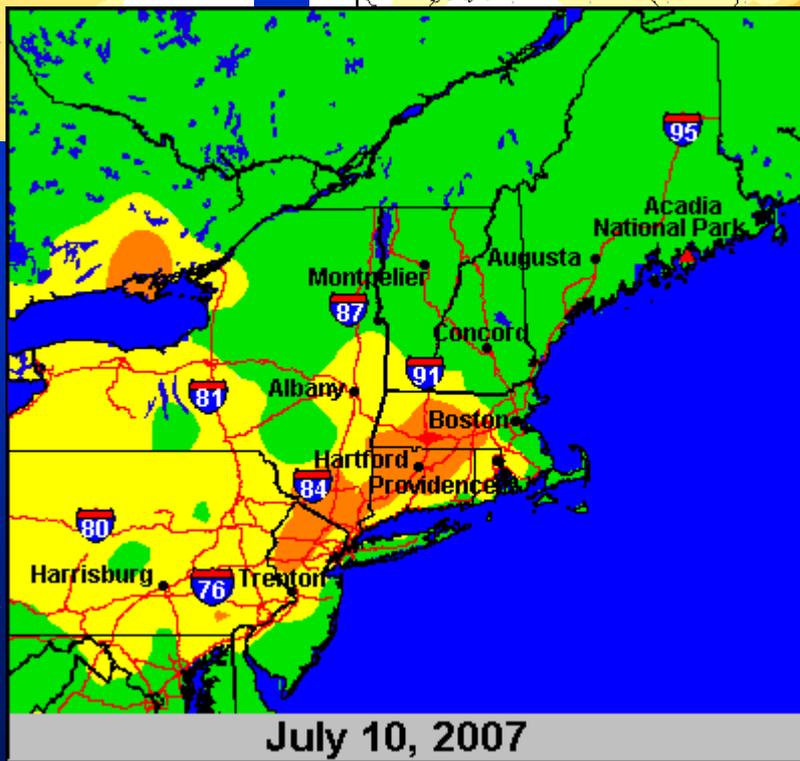
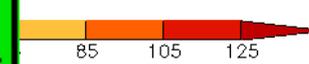
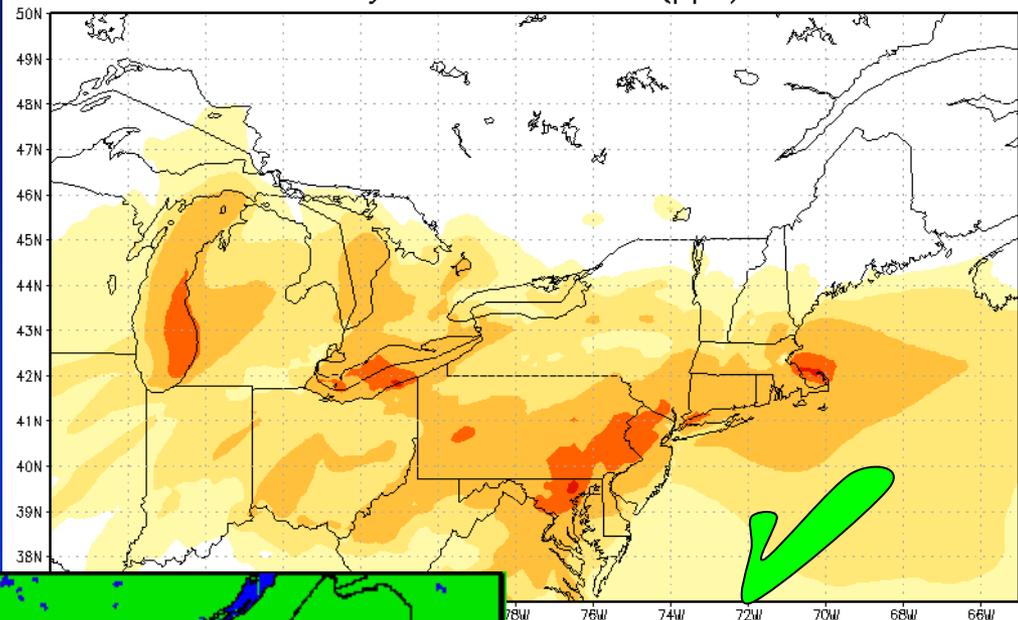
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 10 JUL 2007



8h max sfc O3 (ppb) Valid 11 JUL 2007

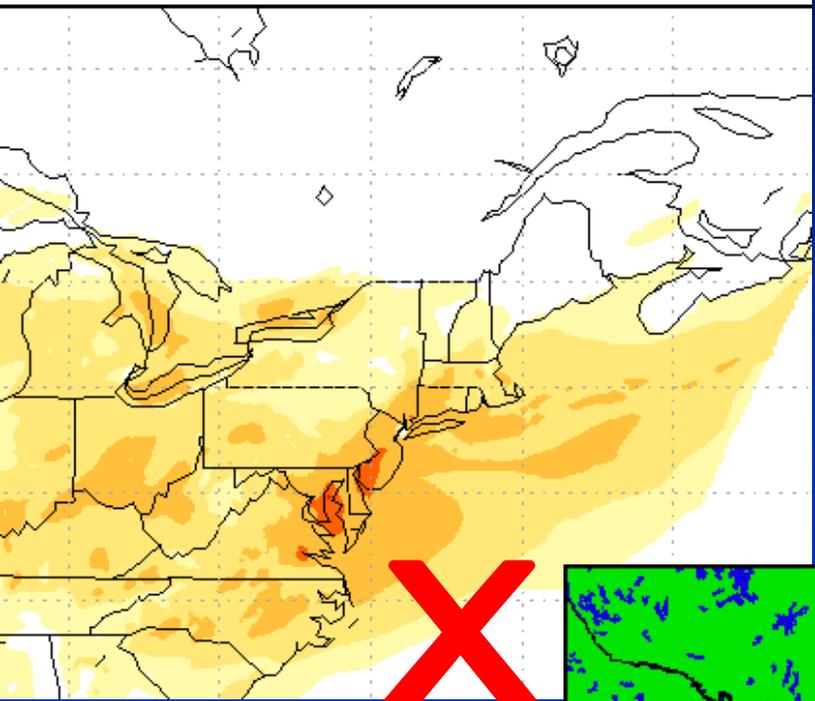


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 11 JUL 2007

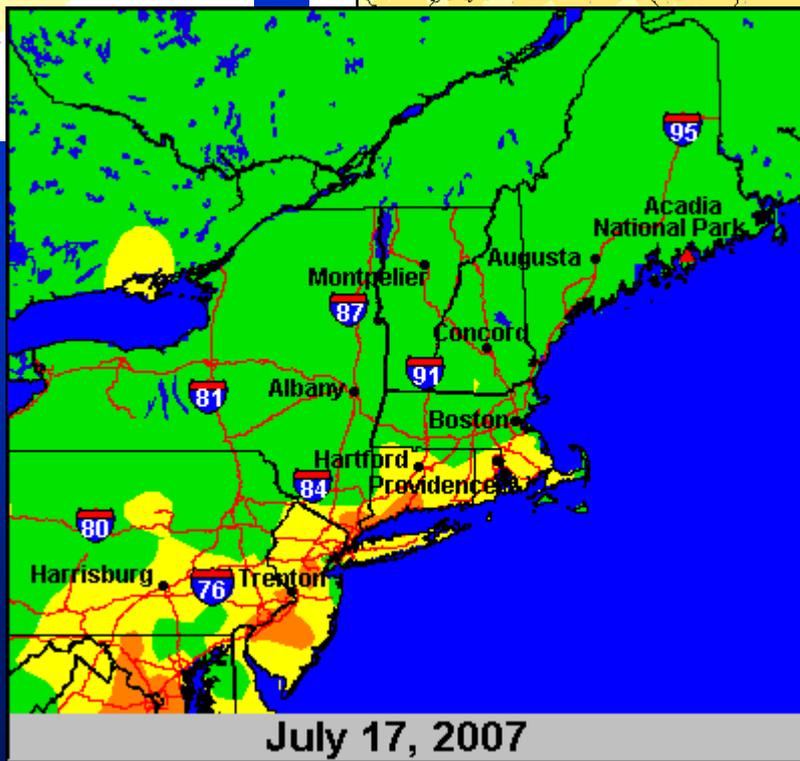
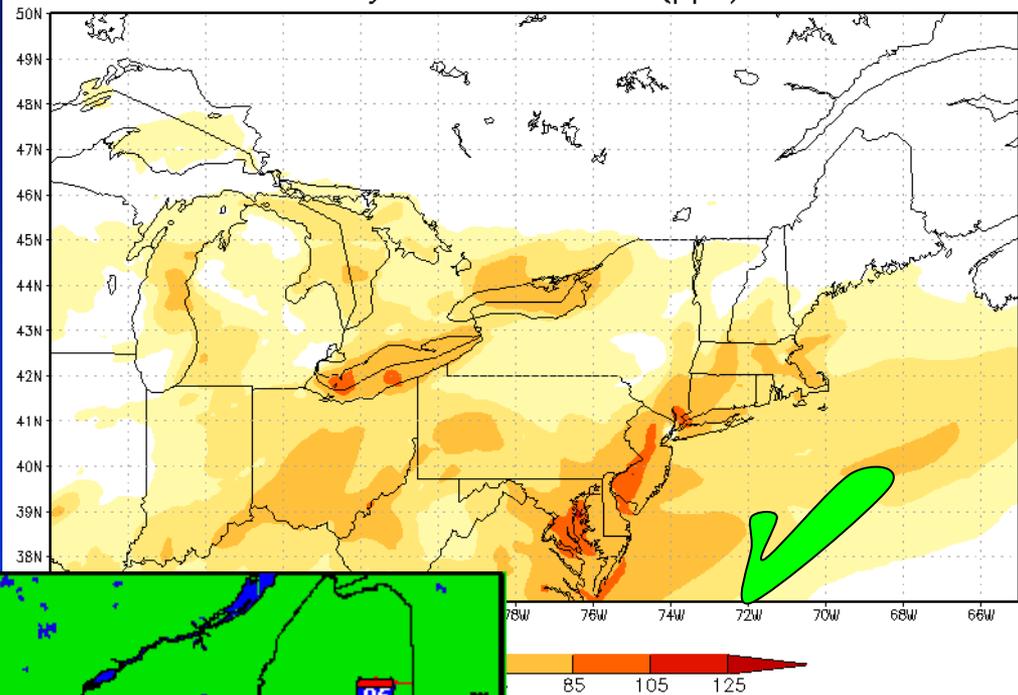


July 10, 2007

8h max sfc O3 (ppb) Valid 18 JUL

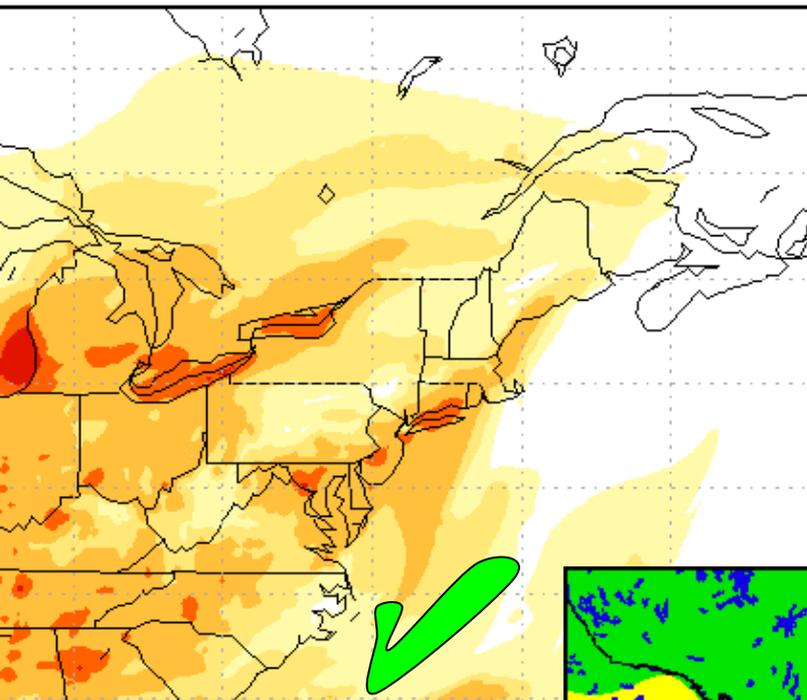


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 18 JUL 2007

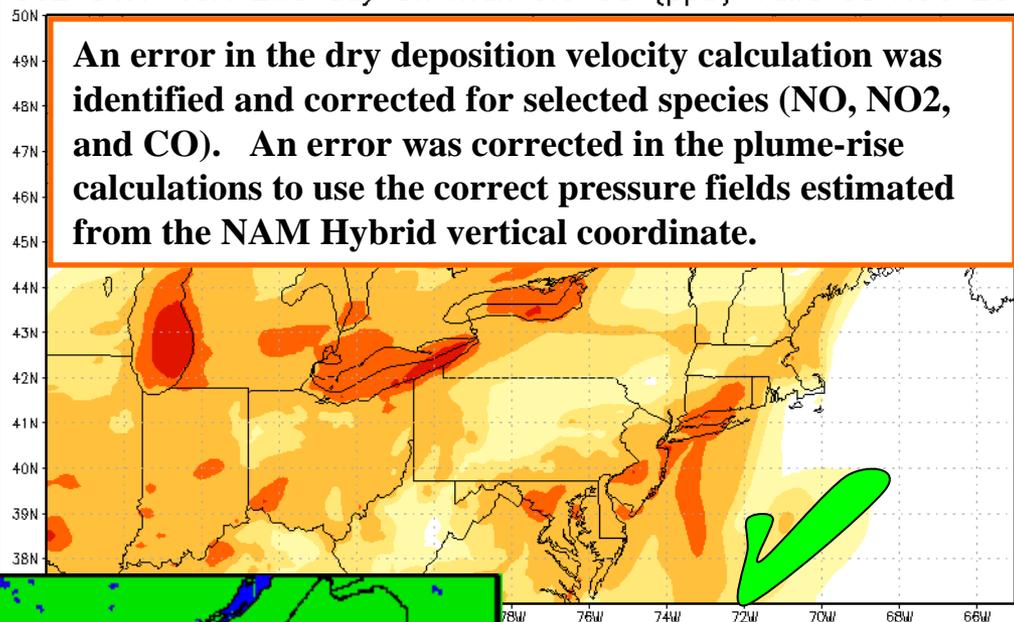


July 17, 2007

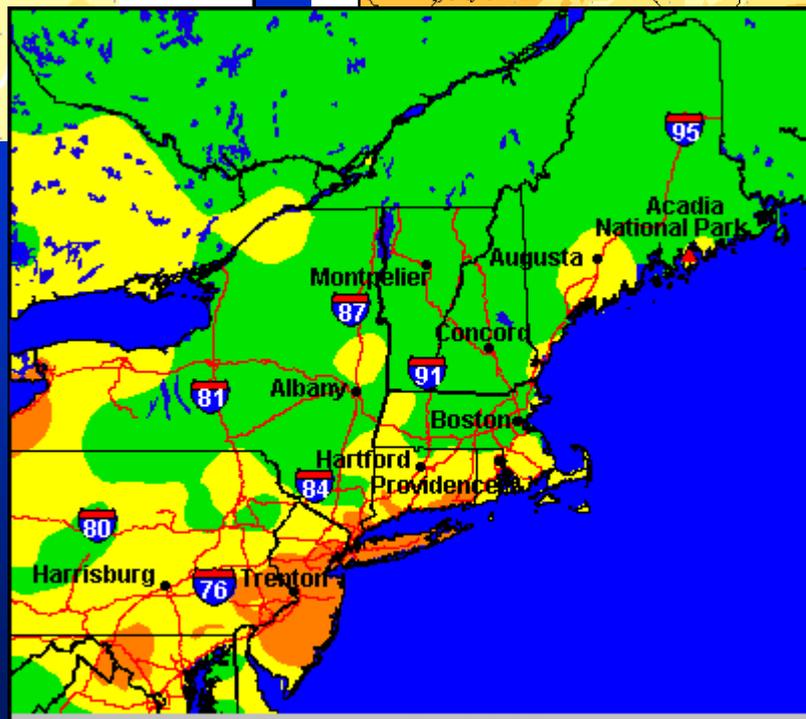
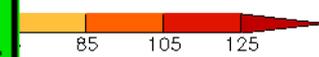
8h max sfc O3 (ppb) Valid 03 AUG



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 03 AUG 2007

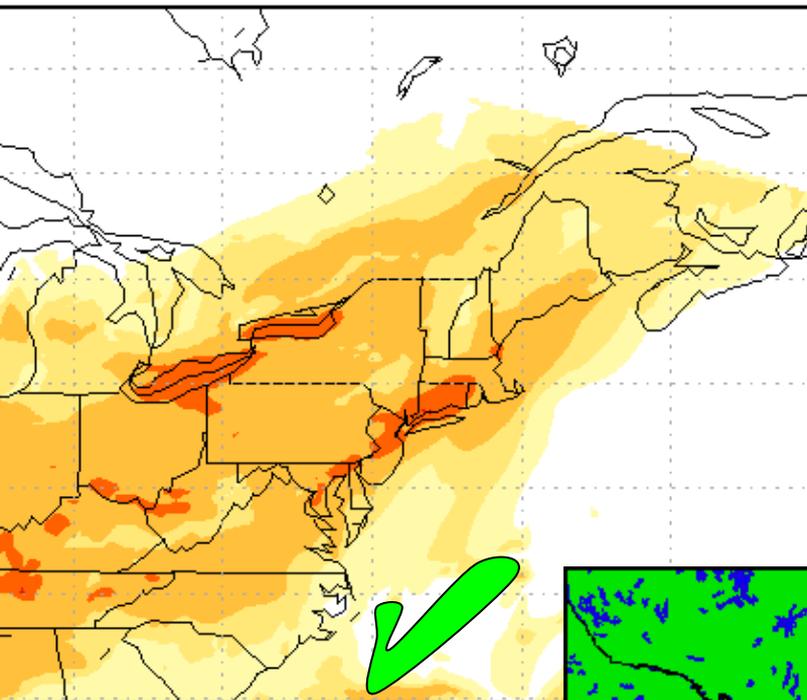


An error in the dry deposition velocity calculation was identified and corrected for selected species (NO, NO2, and CO). An error was corrected in the plume-rise calculations to use the correct pressure fields estimated from the NAM Hybrid vertical coordinate.

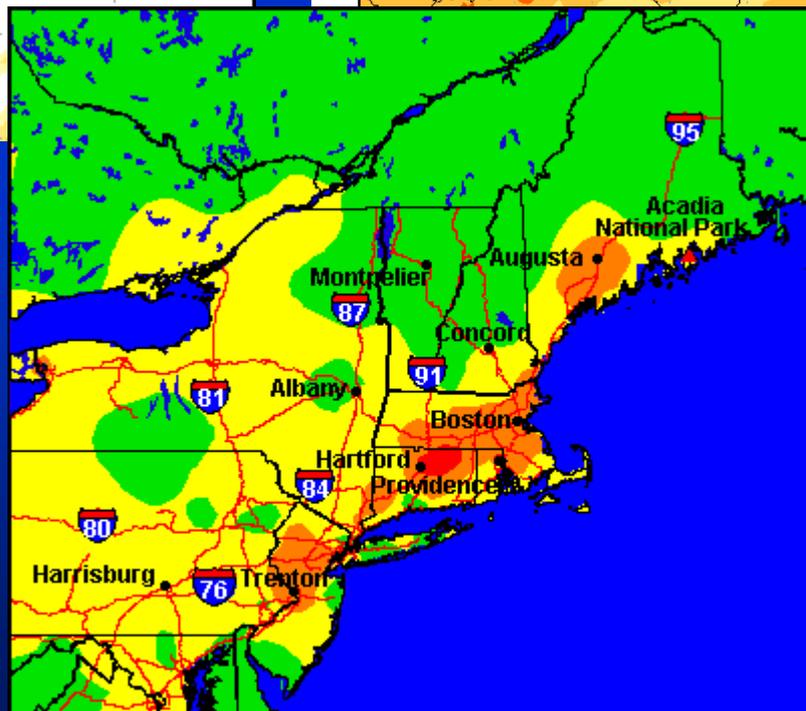
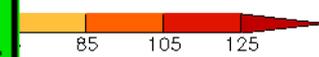
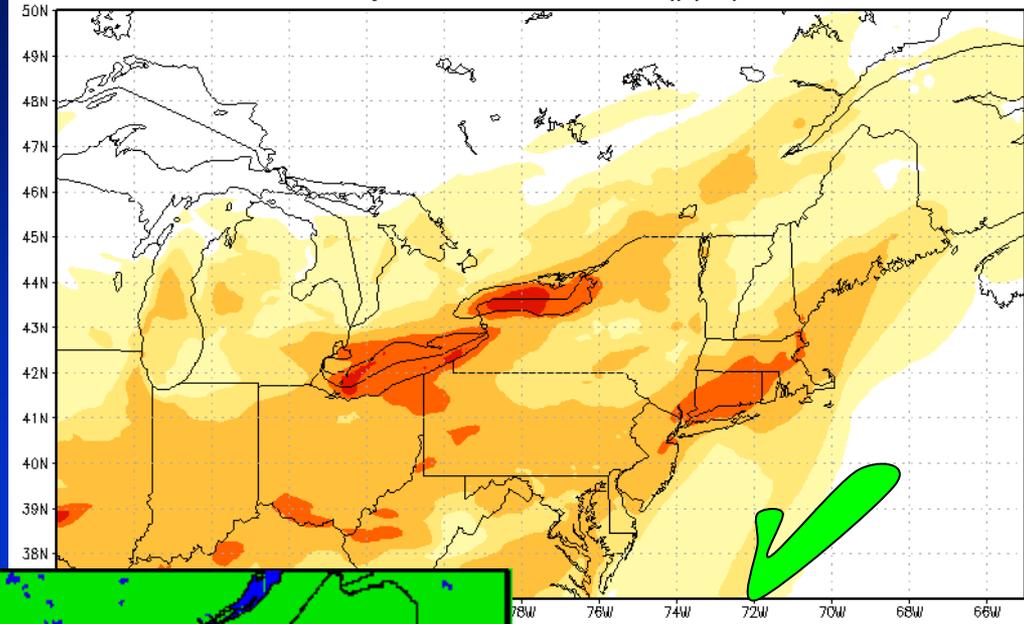


August 2, 2007

8h max sfc O3 (ppb) Valid 04 AUG

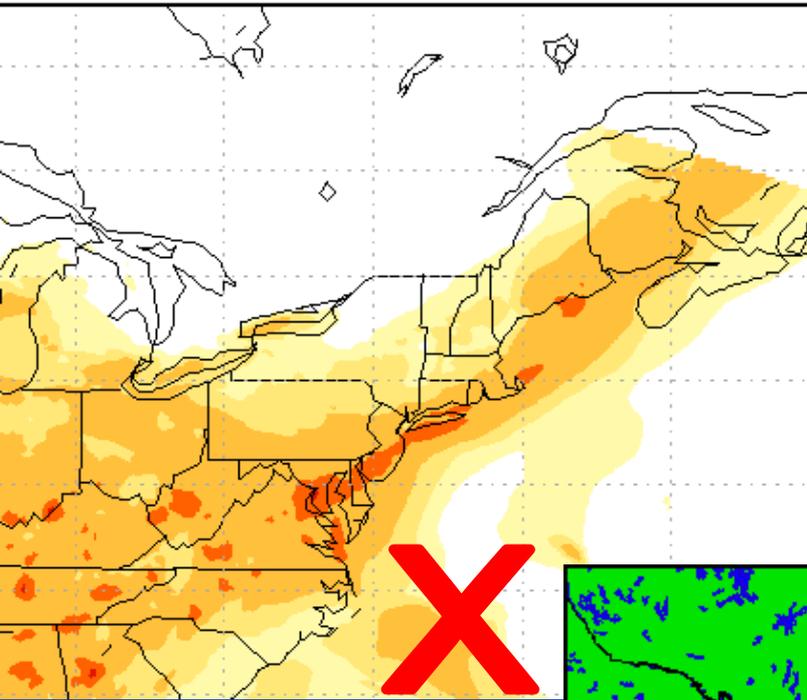


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 04 AUG 2007

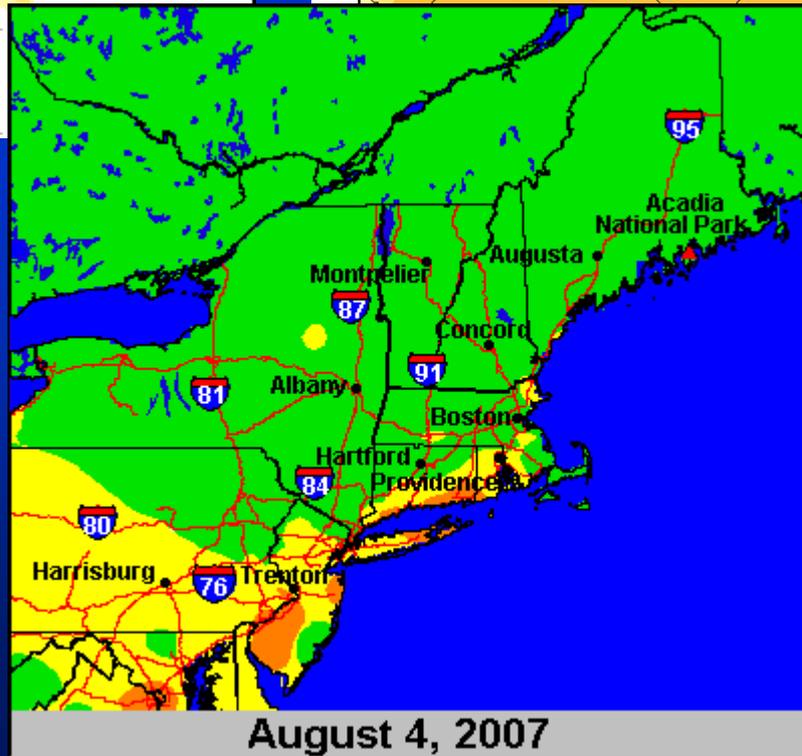
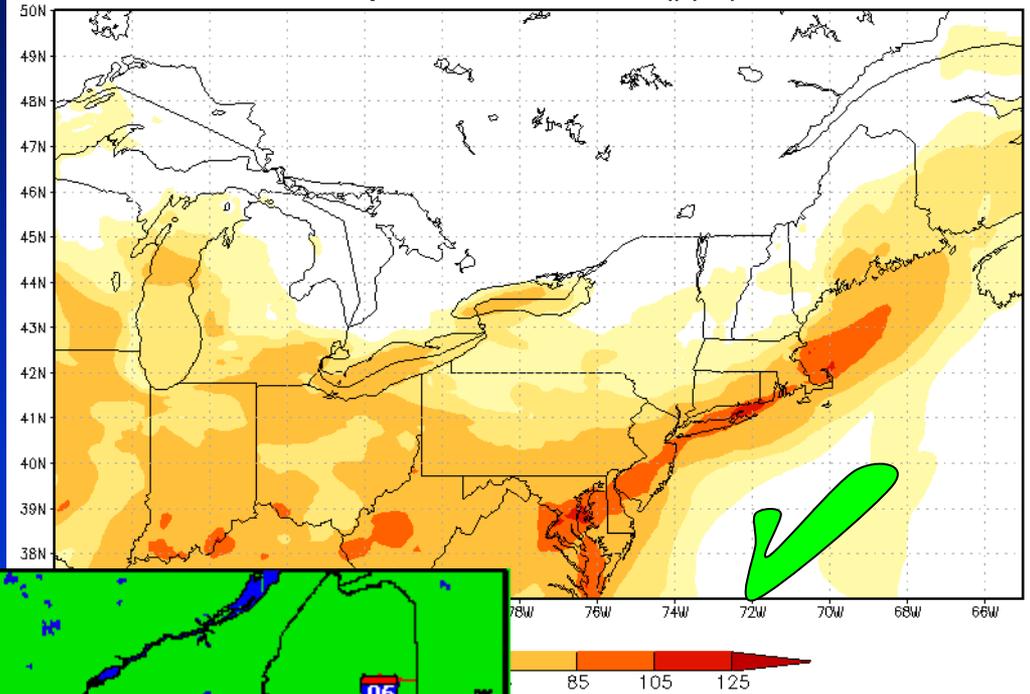


August 3, 2007

8h max sfc O3 (ppb) Valid 05 AUG 2007

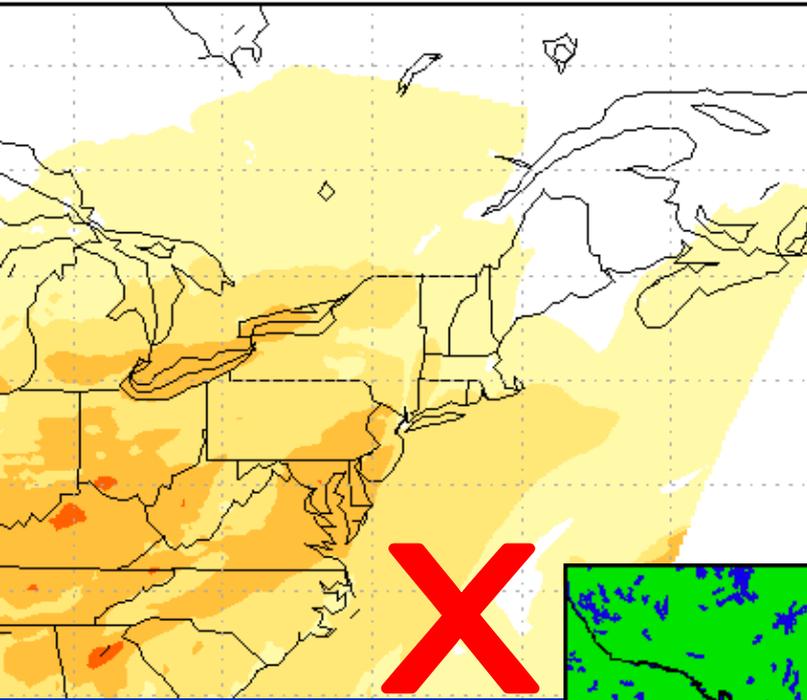


06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 05 AUG 2007

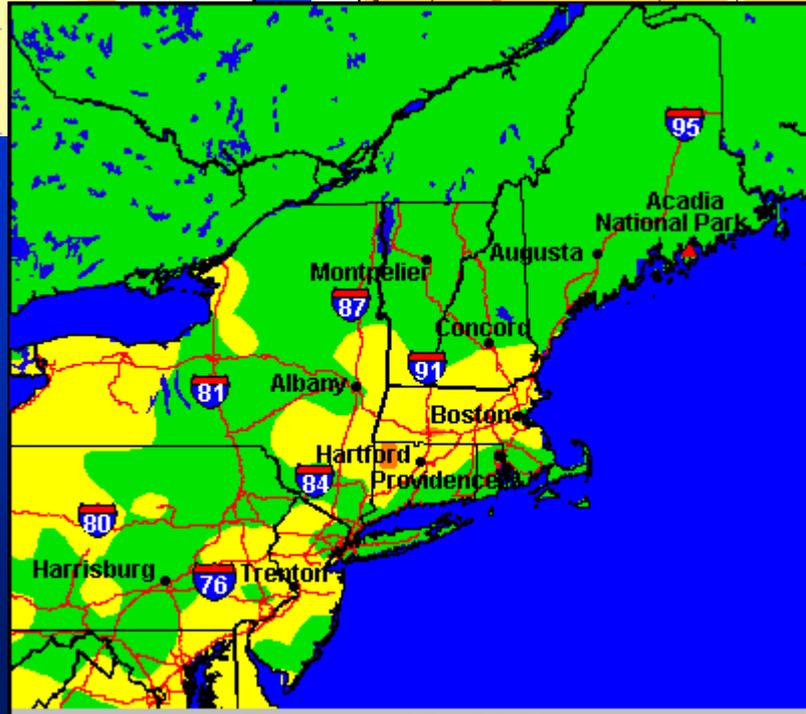
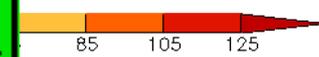
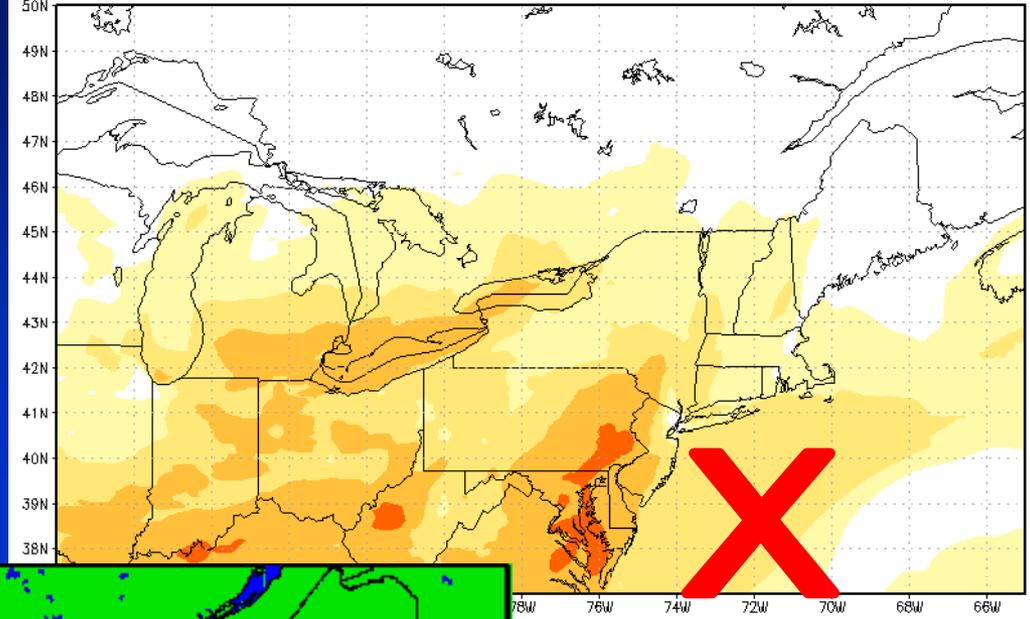


August 4, 2007

8h max sfc O3 (ppb) Valid 17 AUG 2007



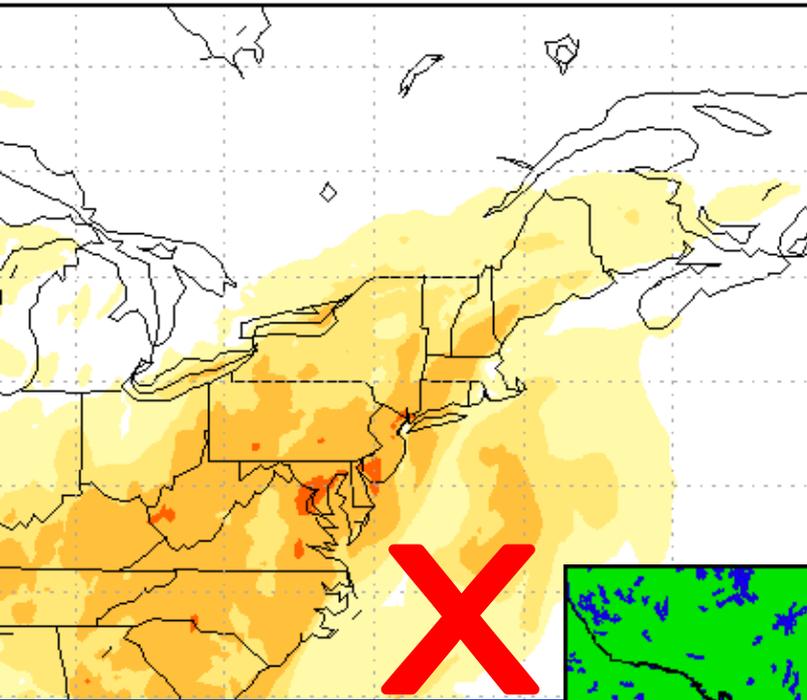
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 17 AUG 2007



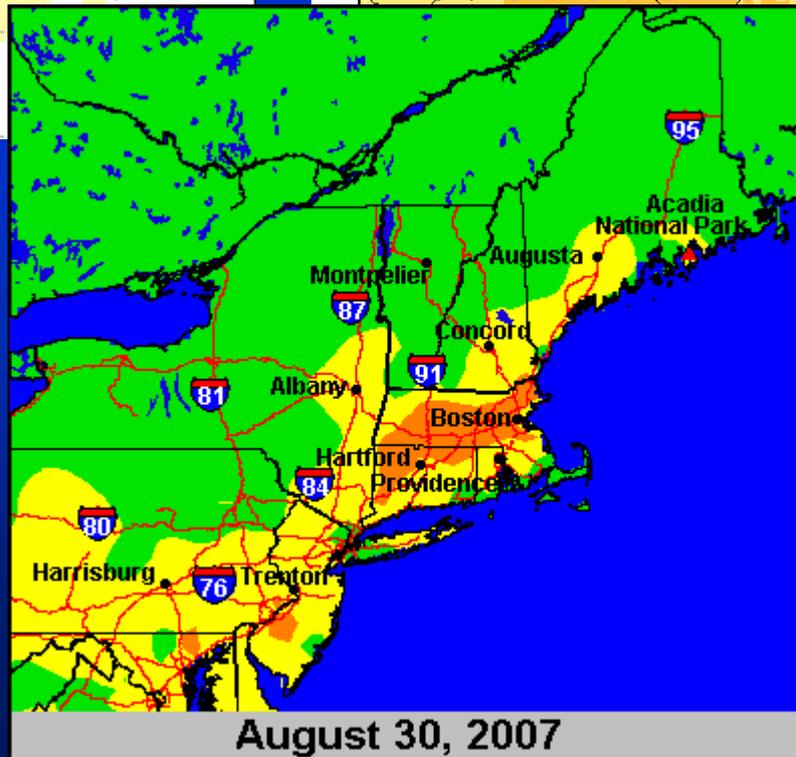
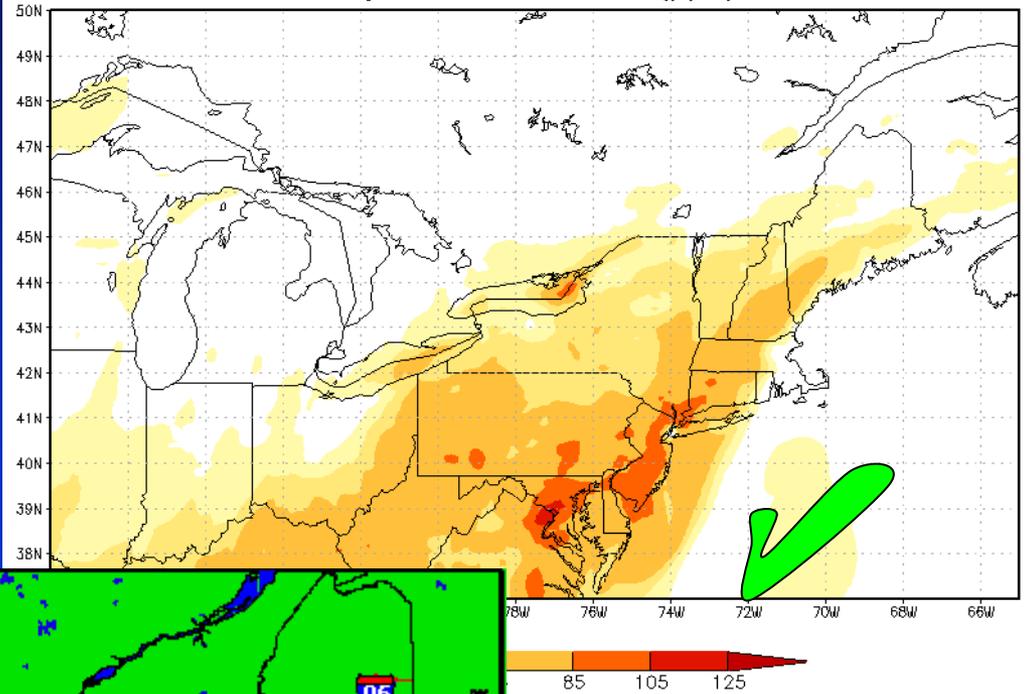
August 16, 2007

Worst under-prediction for New England and over-prediction for Mid-Atlantic!

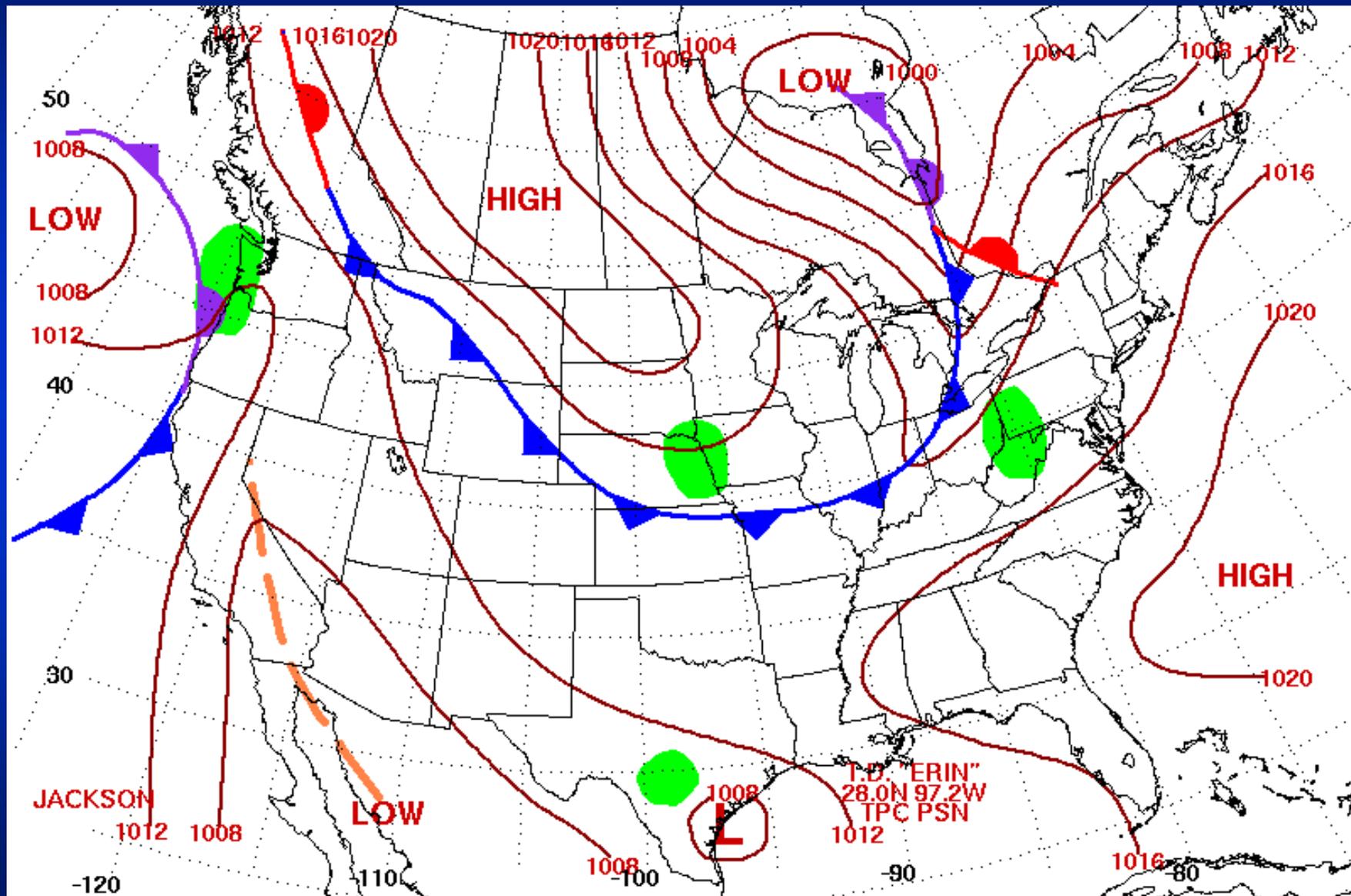
8h max sfc O3 (ppb) Valid 31 AUG 2007



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 31 AUG 2007

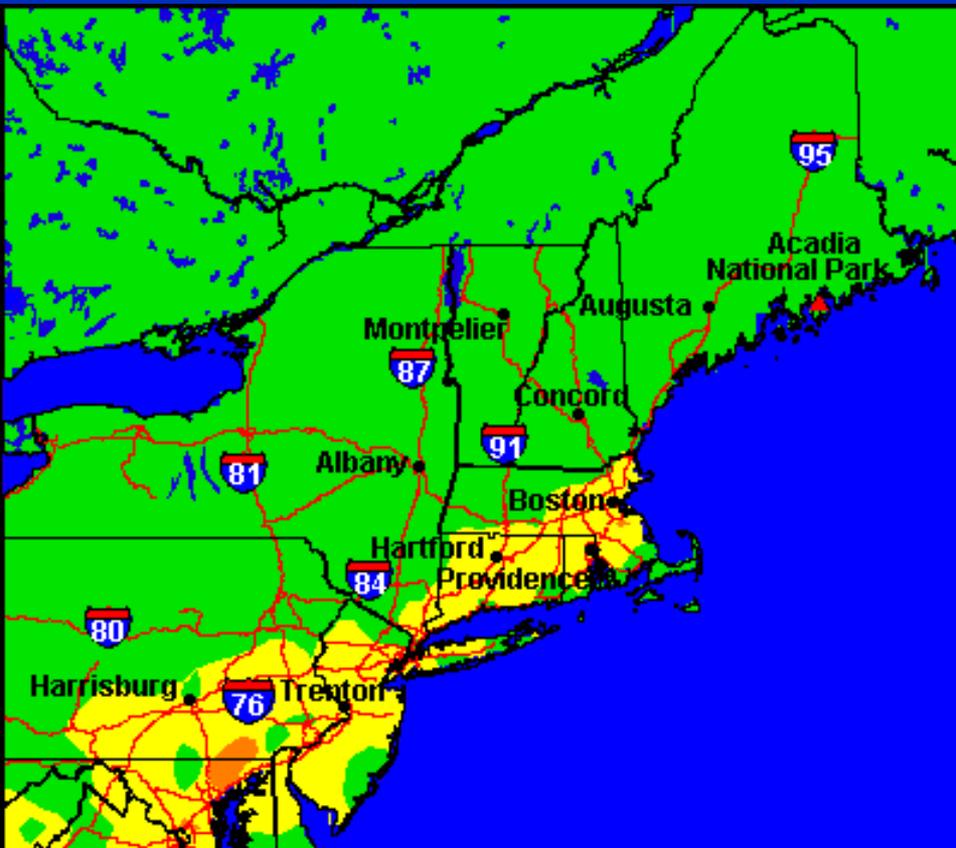


What Happened on August 16th?

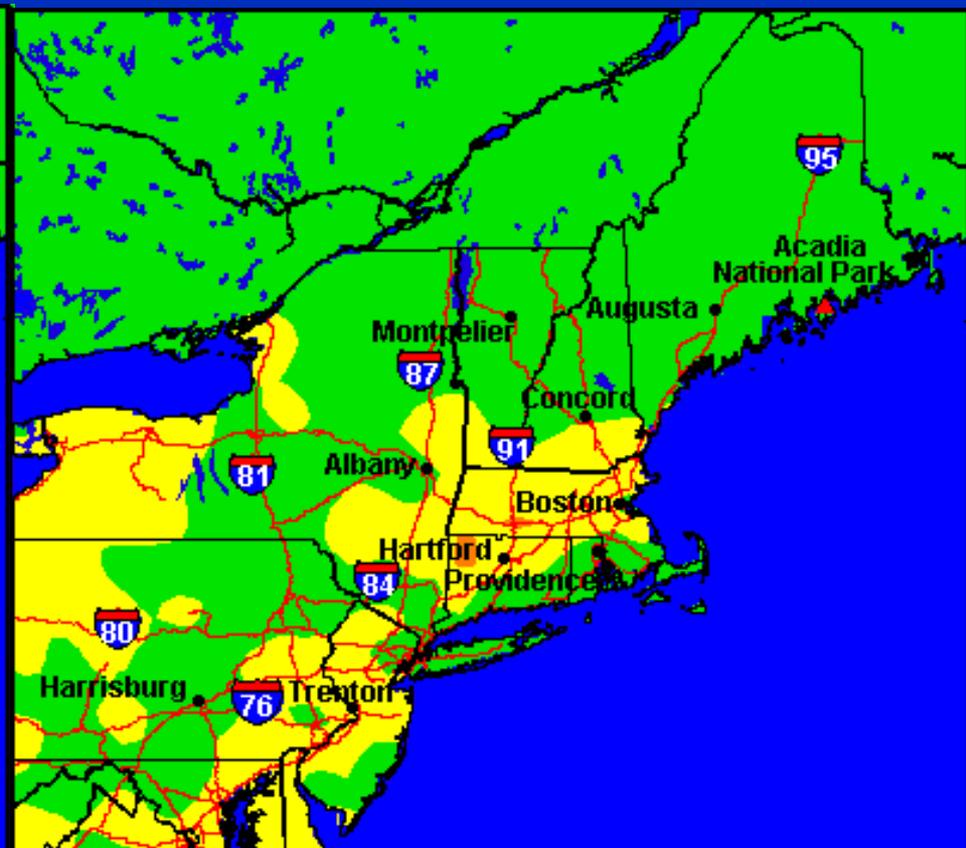


Surface Weather Map at 7:00 A.M. E.S.T.

Some ozone production was occurring on August 15th, but only the Cornwall CT monitor had an exceedance on August 16th!

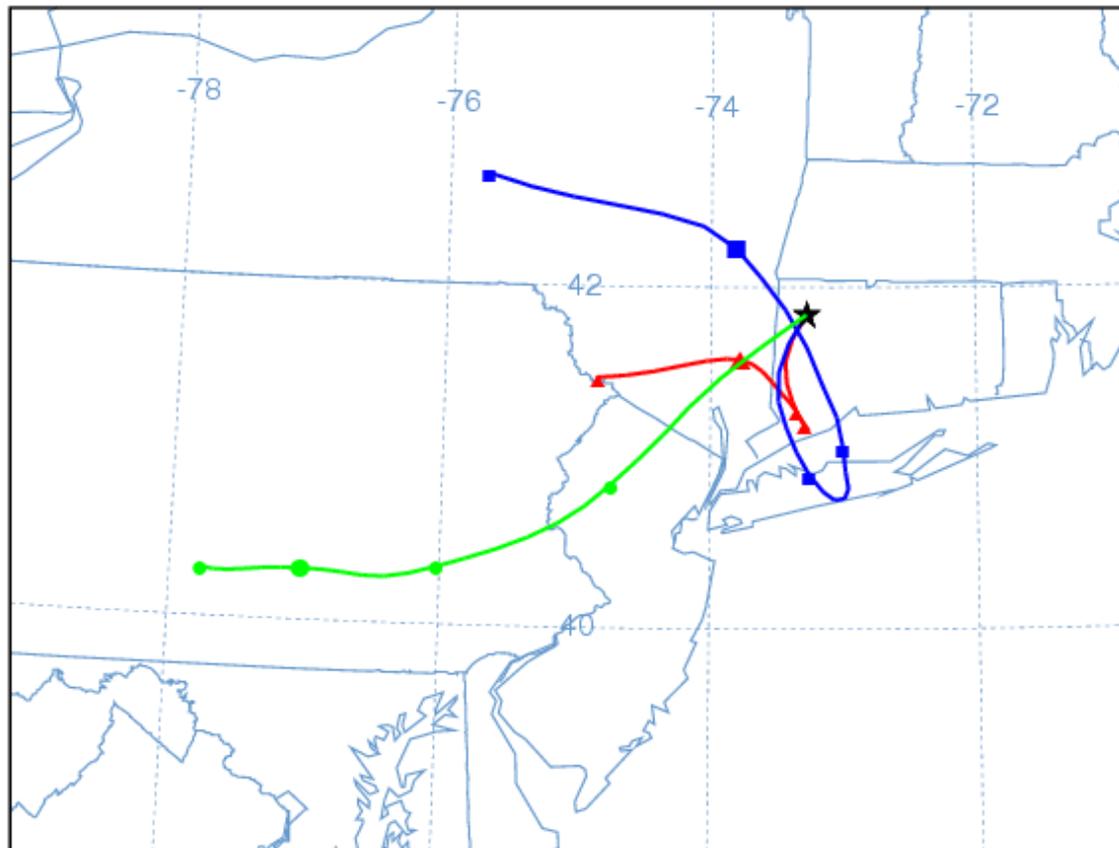


August 15, 2007

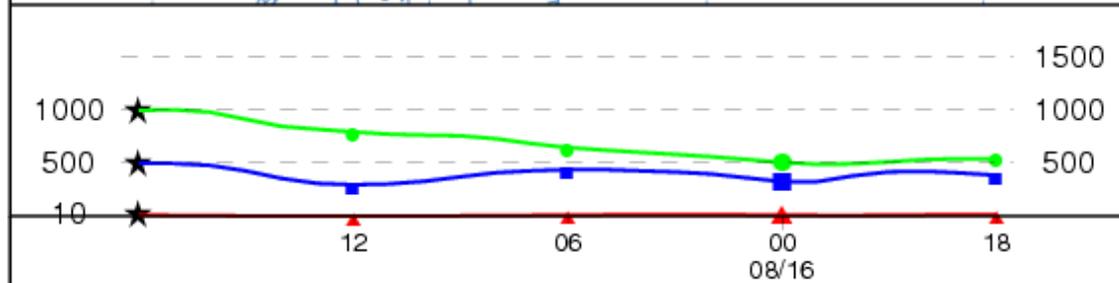


August 16, 2007

Source ★ at 41.84 N 73.28 W



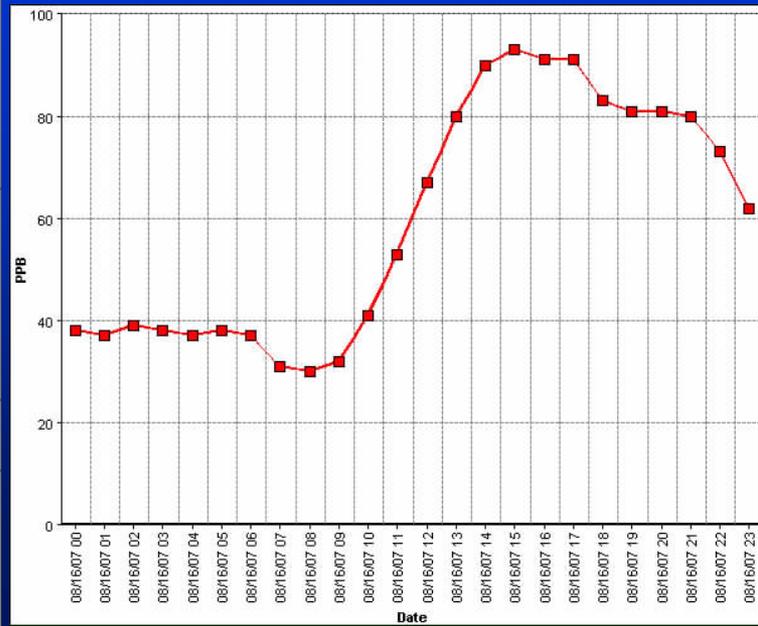
Meters AGL



Job ID: 399972 Job Start: Tue Sep 11 14:52:49 GMT 2007
Source 1 lat.: 41.84 lon.: -73.28 hghts: 10, 500, 1000 m AGL

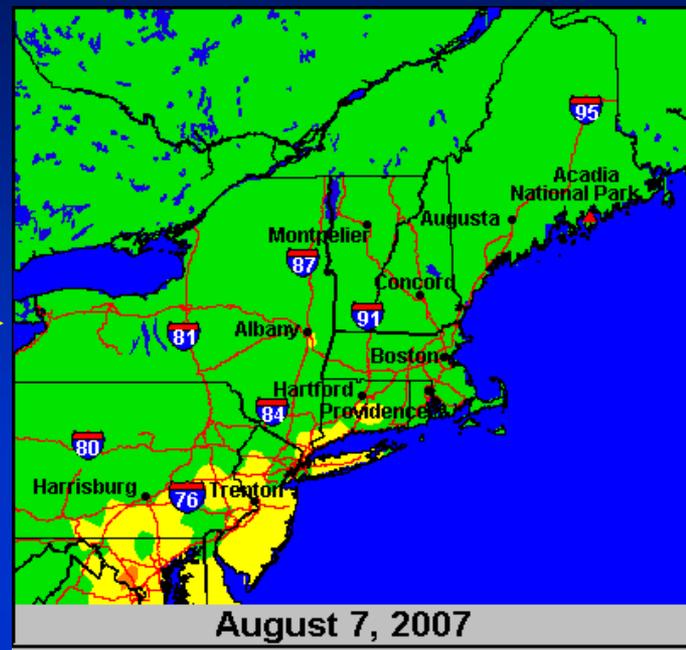
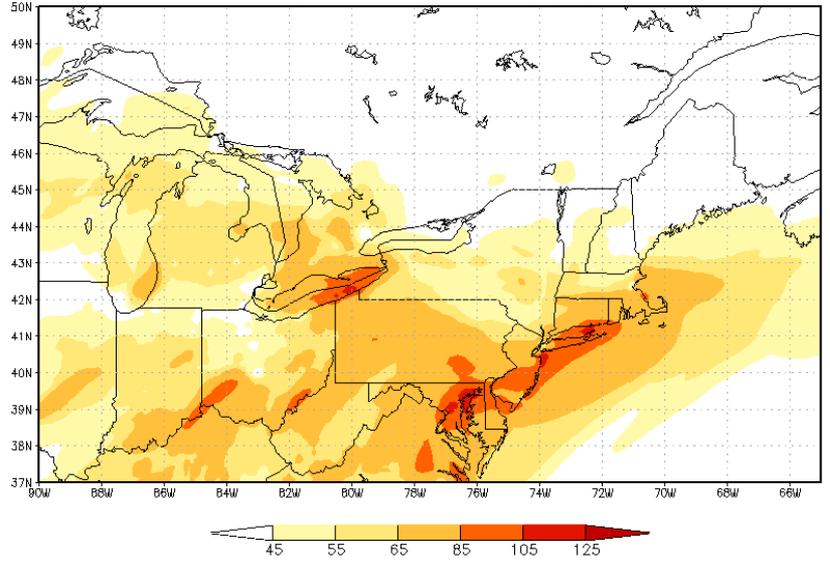
Trajectory Direction: Backward Duration: 24 hrs Meteo Data: EDAS40
Vertical Motion Calculation Method: Model Vertical Velocity
Produced with HYSPLIT from the NOAA ARL Website (<http://www.arl.noaa.gov/ready/>)

Trajectory analysis suggests that the near surface air parcels “scooped up” some polluted air from the coastal Connecticut I-95 corridor and deposited it on our monitor in Cornwall!

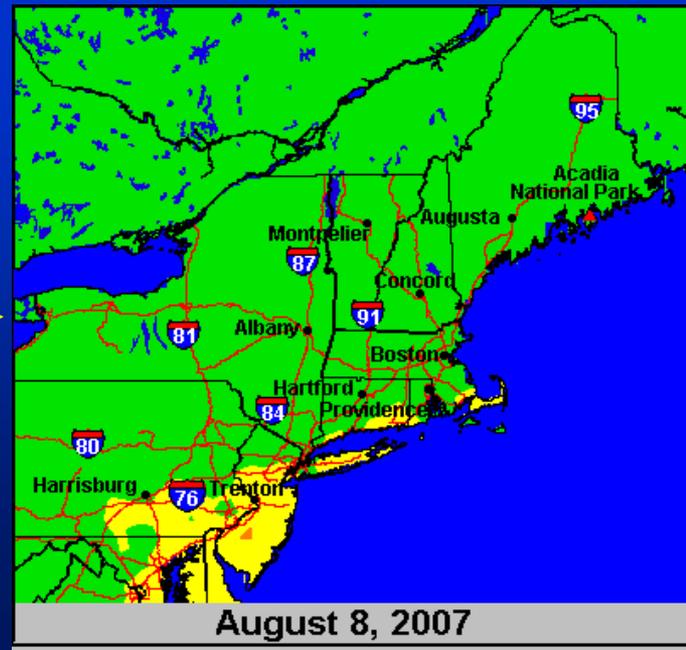
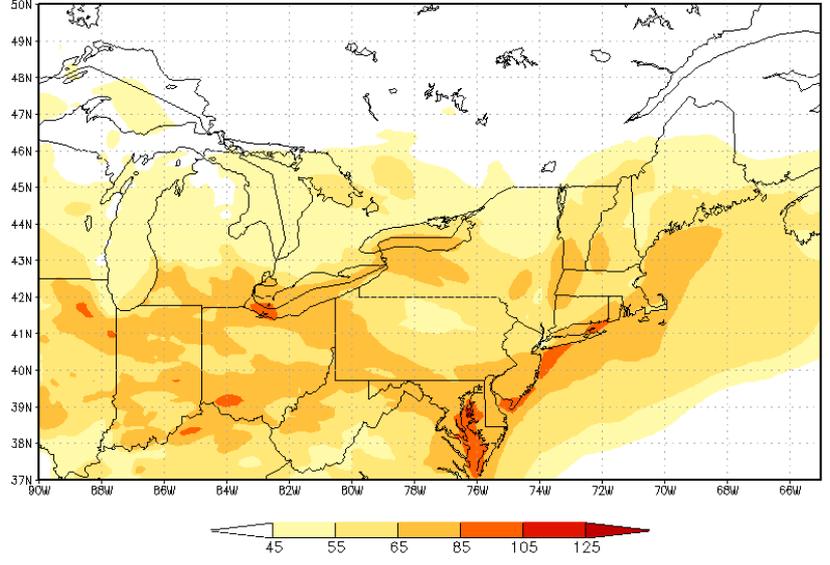


The Developmental Model had 4 “USG” false alarms

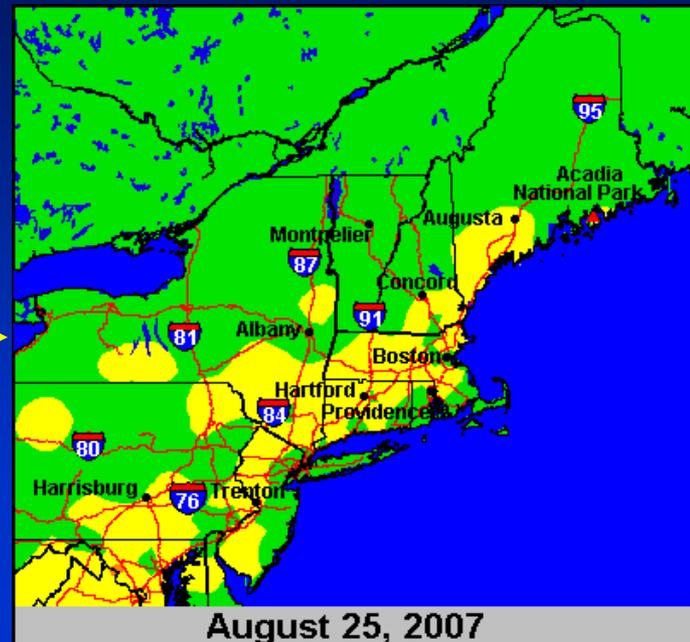
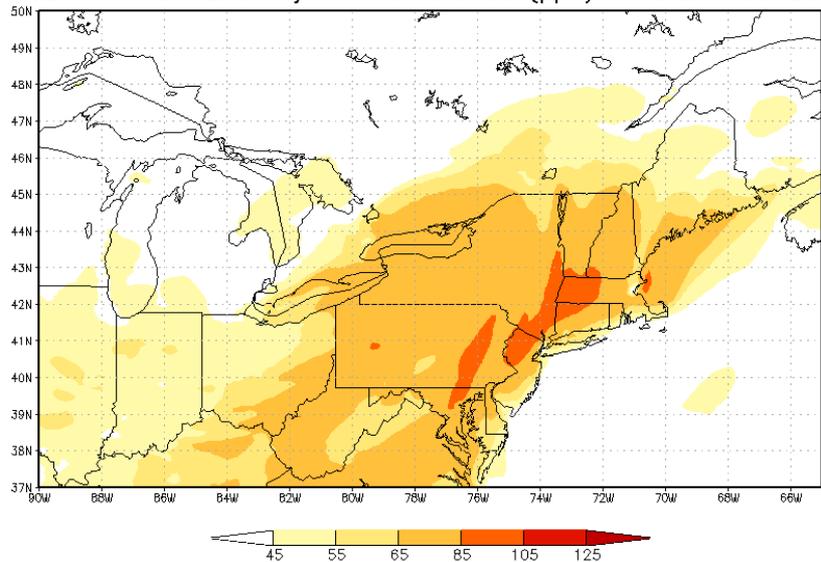
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 08 AUG 2007



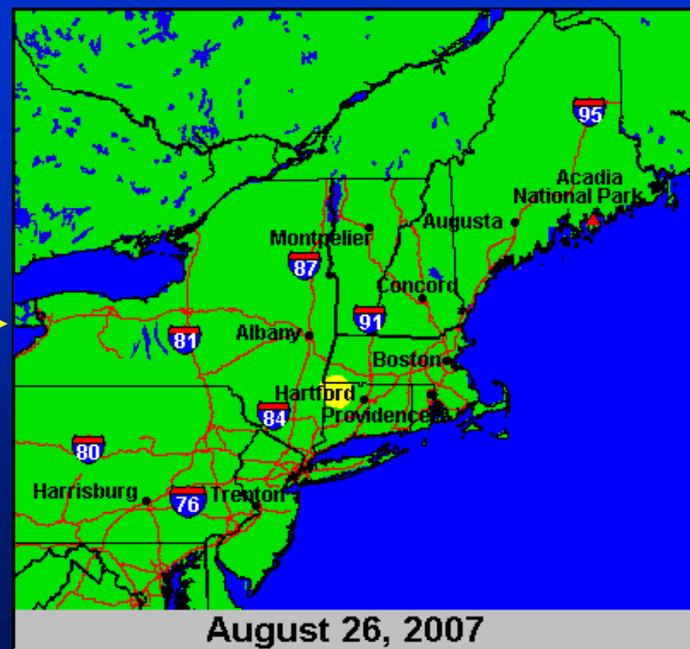
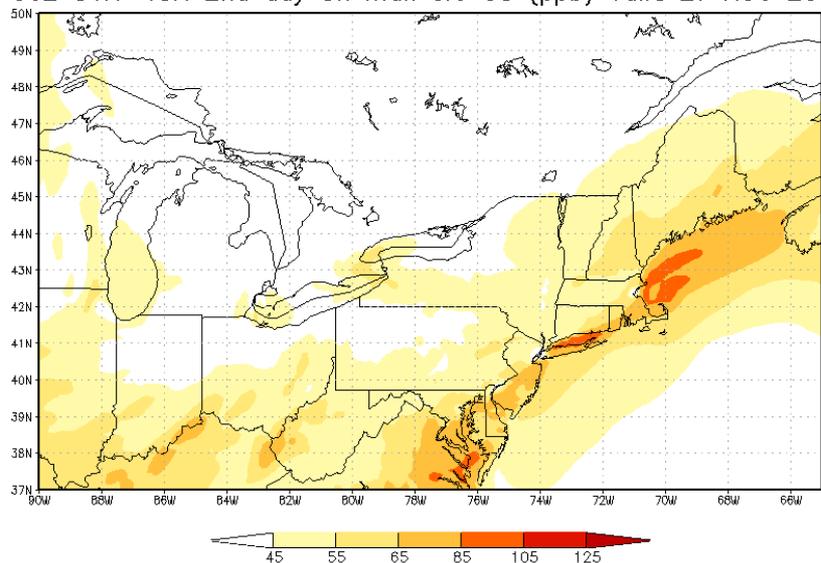
06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 09 AUG 2007



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 26 AUG 2007



06Z 31H-48H 2nd day 8h max sfc O3 (ppb) Valid 27 AUG 2007



Conclusions

- Connecticut experienced 3 more exceedance days than last year (23% increase).
- The Operational Model has improved its performance since last year. It correctly predicted USG or above for 62.5% of the days, compared to 53.8% in 2006.
- The Developmental Model has now significantly improved for Connecticut. It correctly predicted USG or above for 75% of the days!
- The Developmental Model only had 4 false exceedances (25% of actually exceedance days).