ENVIRON

Northeast Texas Early Action Compact

TCEQ Modeling Summit

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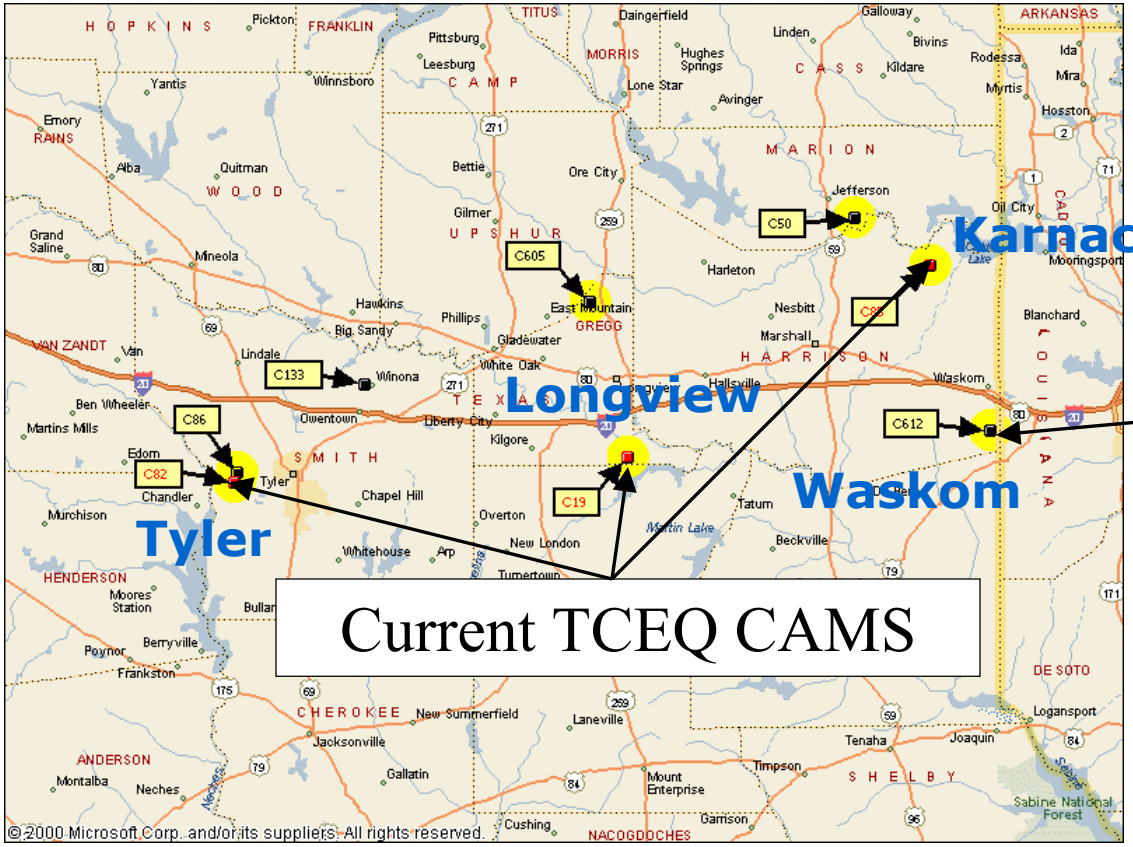
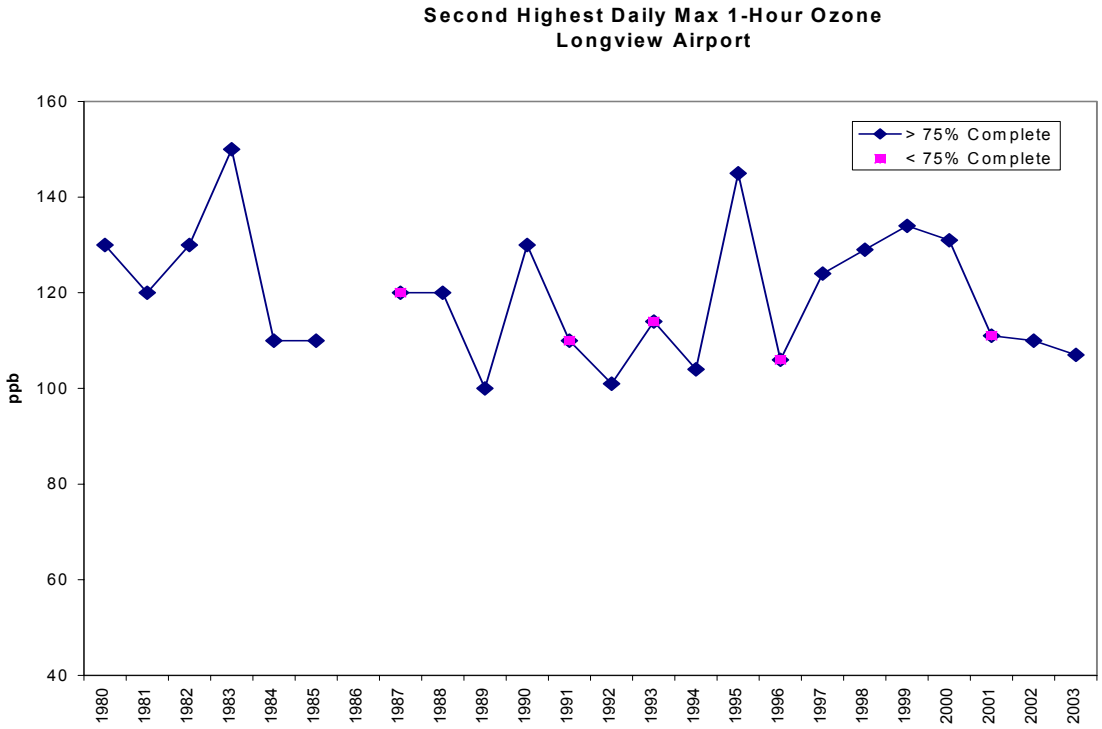
Outline

- History of NETAC
- Ozone trends
- Emission inventories
- Ozone modeling
- Attainment demonstration
- Additional Local Reductions for the EAC

Northeast Texas Ozone Monitoring Network



1-Hour Ozone at Longview



1-hour ozone trend at Longview from 1980 to 2003

From the Conceptual Model report, January 9, 2004

NETAC

- Northeast Texas Air Care
  - Formed in 1996
  - Gregg, Harrison, Rusk, Smith and Upshur Counties
  - Local stakeholder group with “power of persuasion”
- Flexible Attainment Region
  - FAR designation from 1996-2001 allowed NETAC to develop a 1-hour ozone plan
- SIP revision
  - Voluntary NOx reductions by NETAC members made enforceable in 2001 SIP submittal
- Early Action Compact extends the local process

NETAC Activities

- Leadership and coordination of local air quality planning
  - Emission reductions for the FAR, SIP and EAC
- Directing technical studies using Rider funding from the State Legislature
  - Monitoring, emissions inventory, modeling
- Public outreach
  - Ozone action days and public awareness
  - Web site: www.netac.org

NETAC Point Source NOx Reductions

Facility	Measure	Reduction	Implemented
Amercian Electric Power (AEP/CSW)			
Pirkey	LNB/OA	30%	2002
Welsh (1&2)	LNB/OA	45%	2001-2002
Wilkes (2&3)	LNB	45%	1999-2000
Knox Lee (5)	Burners	15%	2000
Texas Utlities (TXU)			
Martin Lake (1-3)	LNB/OA	40%	2001 - 2003
Monticello (1-3)	LNB/OA	30%	2000 - 2003
Stryker Creek (1)	LNB	7%	2003
Eastman Chemical Company			
Longview	Co-gen, other	40%	2000 - 2002

LNB = Low-NOx burner

OA = Over fire air

Eastman measures included co-generation boilers and other changes

Point Source NOx Reductions

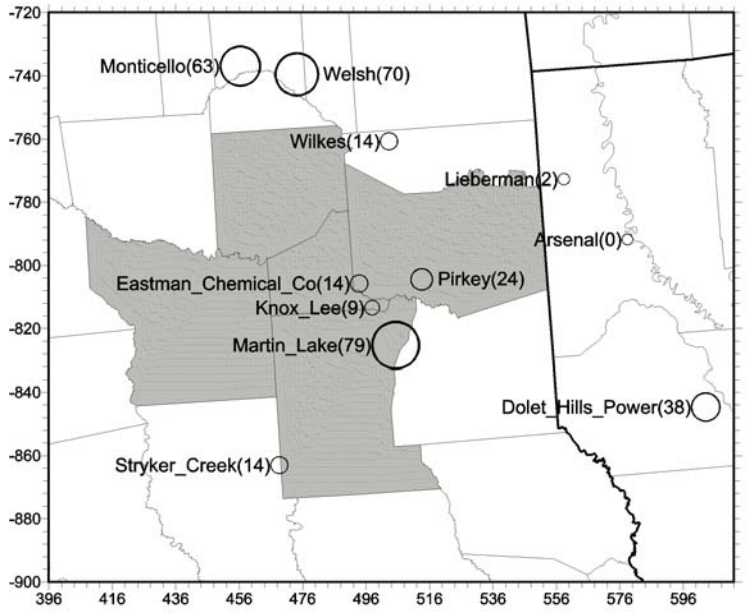


Figure 3-1. 1999 average episode day NOx for the facilities in Table 3-5. These represent elevated sources for all facilities with the exception of Eastman_Chemical which represents the total NOx from Table 3-6.

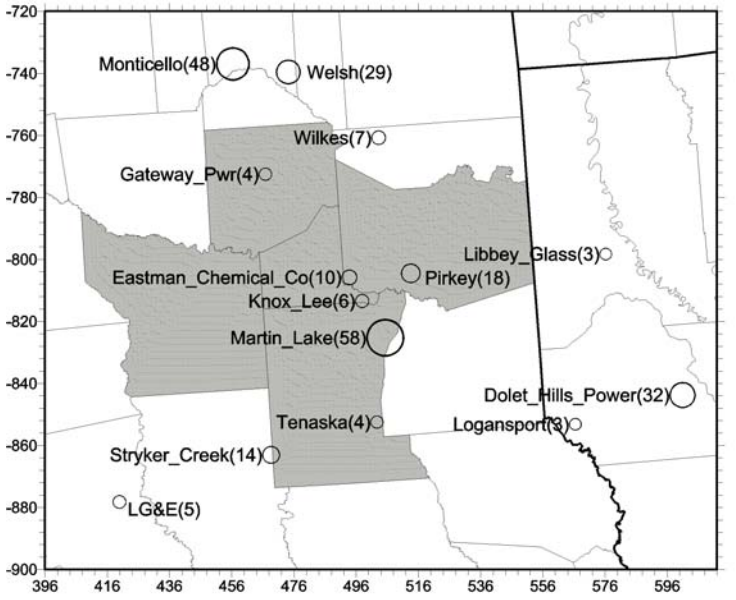
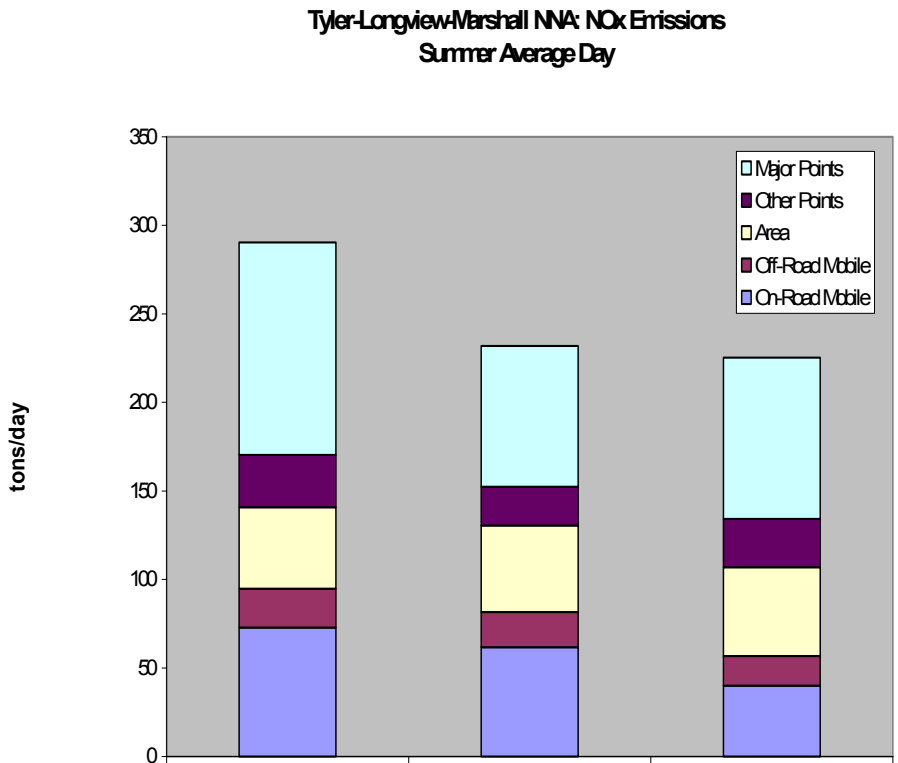


Figure 3-3. 2007 average episode day NOx for the facilities in Table 3-22. These represent elevated sources for all facilities with the exception of Eastman_Chemical which represents the total NOx from Table 3-23.

1999 2002

Emission inventories from the EAC ozone modeling

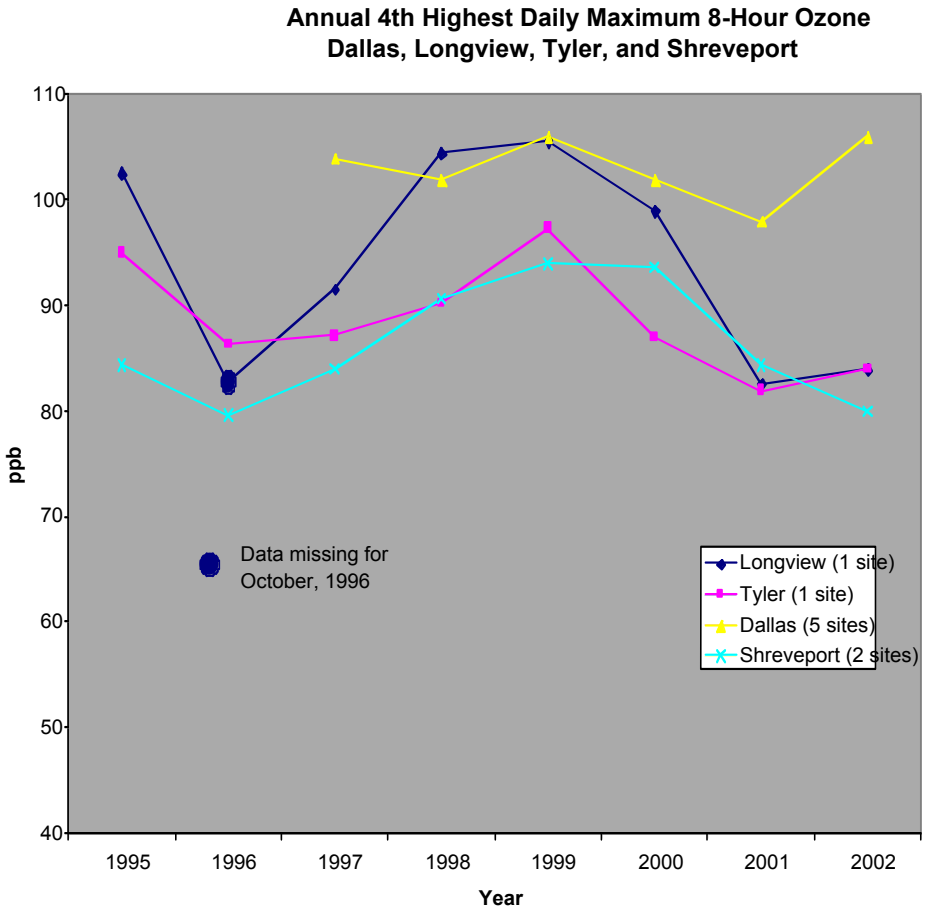
Emission Trends 1999 to 2007



	1999	2002	2007
Major Points	120.1	79.4	91.1
Other Points	29.5	21.8	27.4
Area	46.0	49.0	50.1
Off-Road Mobile	21.9	19.9	16.8
On-Road Mobile	72.9	61.6	40.0

- From the EAC modeling
- NOx reductions from major point sources
- Reductions for on-road (light and heavy-duty) and off-road mobile sources
- Small compressors in gas production impact area source NOx and are not controlled

Trends in 8-hour Ozone



- Annual design value trends 1996-2002
- Longview, Tyler and Shreveport all declined 1999 to 2002
- No clear decrease for Dallas (over 5 sites)
- Largest decrease 1999 to 2002 at Longview

Preliminary 2003 Design Values

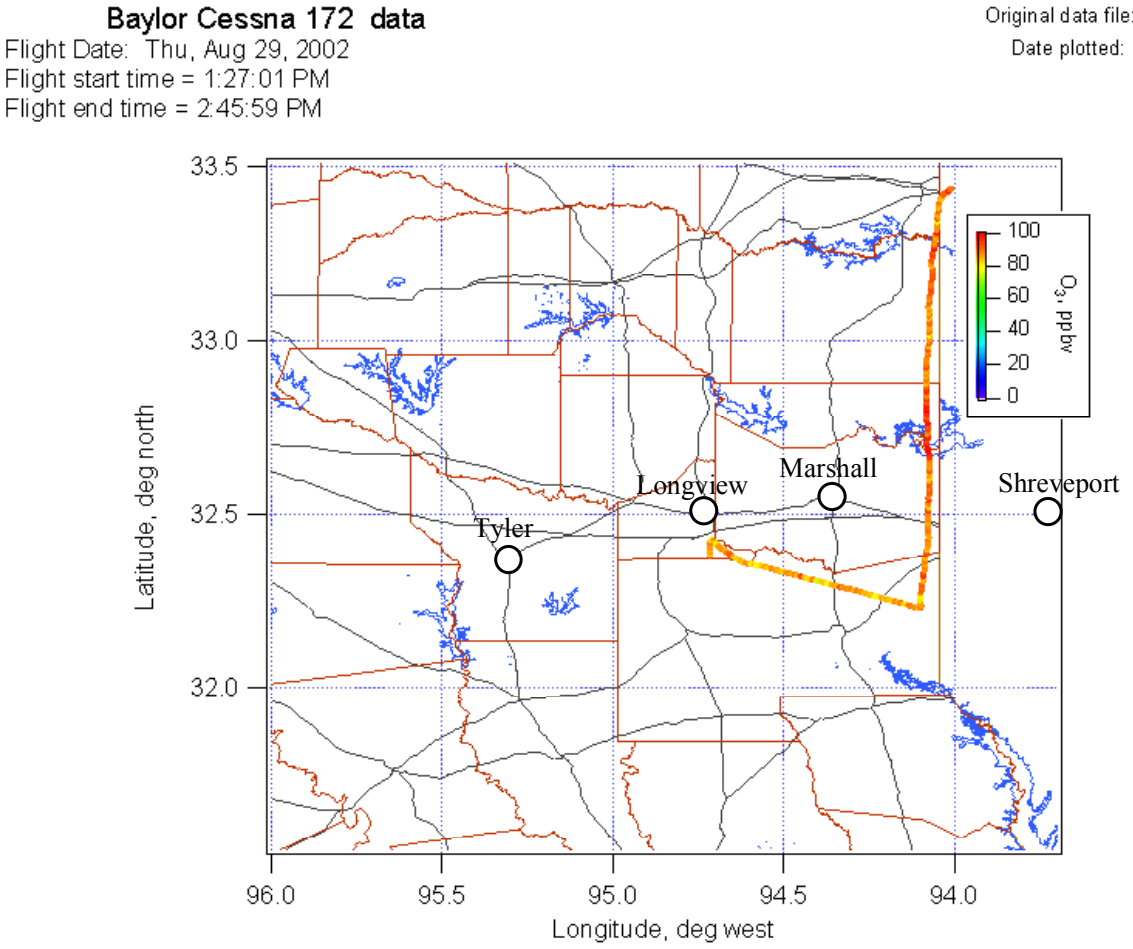
Year	Longview	Tyler	Karnack	Waskom
2001	82	82	Partial season	Not Operating
2002	84	84	88	86
2003	82	79	80	82
Design Value	**82**	**81**	(84)	(84)

2 year design values for Karnack and Waskom do not determine attainment status but are used in modeling

Preliminary 2003 Attainment Status

- Longview and Tyler are monitoring attainment for 8-hr (and 1-hr) ozone in 2003
- Highest design values likely to be at Karnack
  - tends to be upwind of major Texas sources on high ozone days
  - Karnack influenced by transport
- Reducing regional ozone transport will play a role in continued attainment

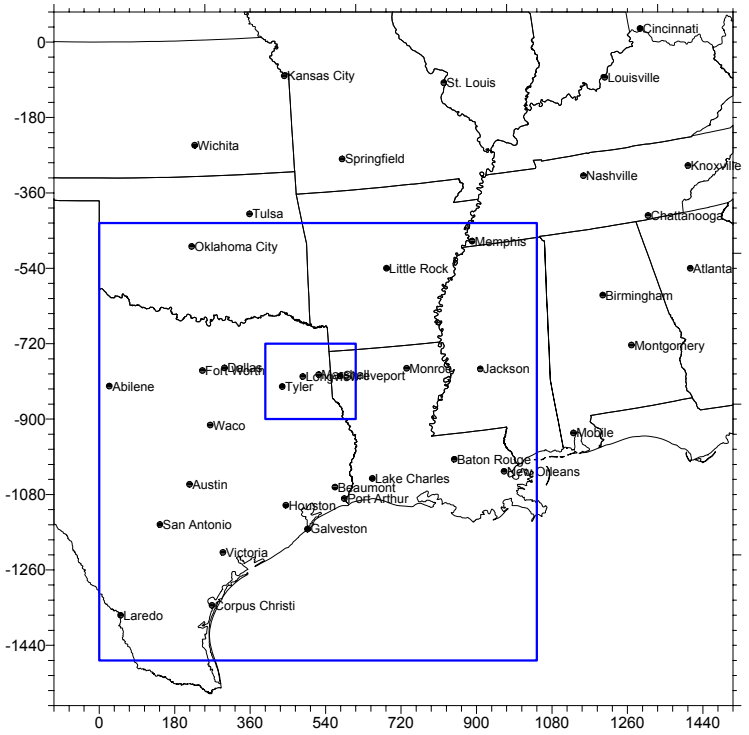
Impact of Ozone Transport



- NETAC sponsored Baylor Aircraft study
- August 29, 2002
- Easterly winds
- 80 to 90 ppb of ozone transported into Northeast Texas over a wide area

Ozone Modeling for the EAC

- August 13-22, 1999
- CAMx version 4.03
- MM5 version 3
- Emissions
  - MOBILE6
  - NONROAD2002
  - NETAC/TCEQ/EPA data
  - GloBEIS3 biogenics



CAMx GRID DIMENSIONS
LCP Grid with reference origin at (40 N, 100 W)

36 km Grid: 45 x 46 cells from (-108, -1584) to (1512, 72)
12 km Grid: 87 x 87 cells from (0, -1476) to (1044, -432)
4 km Grid: 54 x 45 cells from (396, -900) to (612, -720)

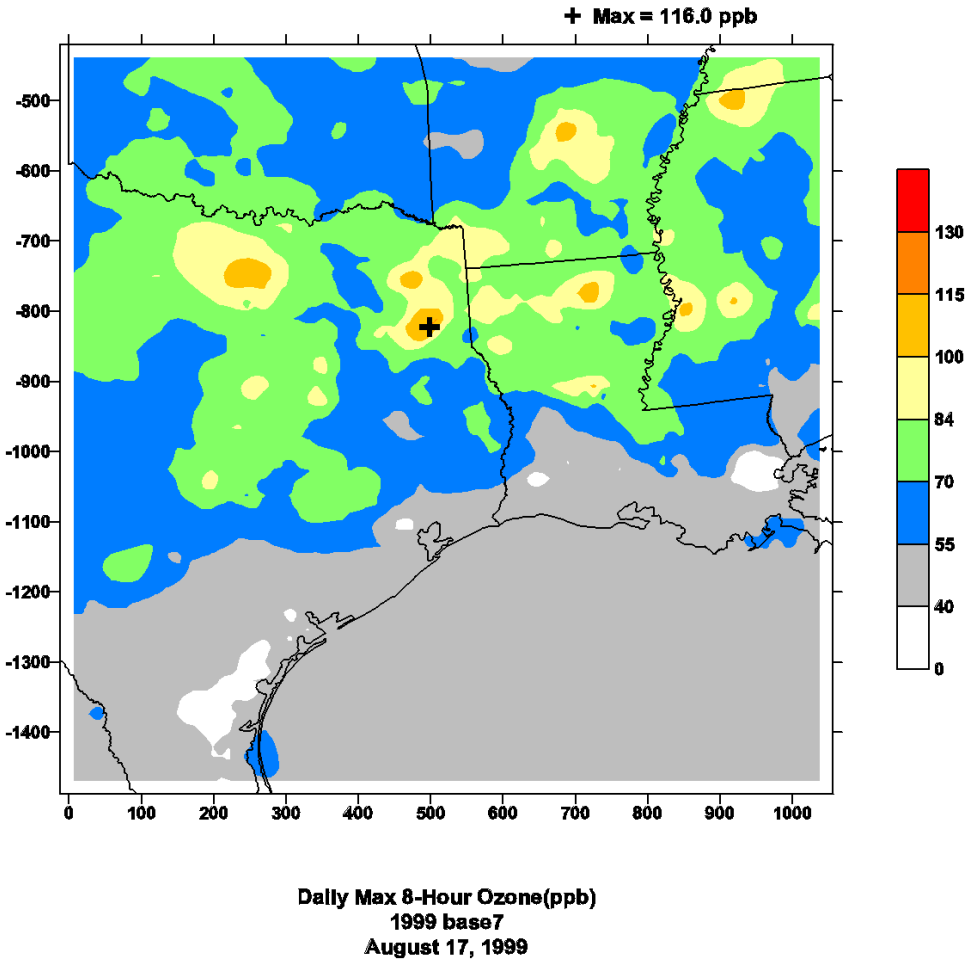
(nested grid dimensions do not include buffer cells)

Model Performance Evaluation

- EPA's 1999 draft modeling guidance for 8-hour ozone
  - Performance objectives, not criteria
  - Seek good performance for right reasons
  - Evaluate against the conceptual model
  - Include statistical and graphical methods used previously for 1-hour ozone
  - New comparisons for 8-hour maximums at each monitor: correspond to DV scaling

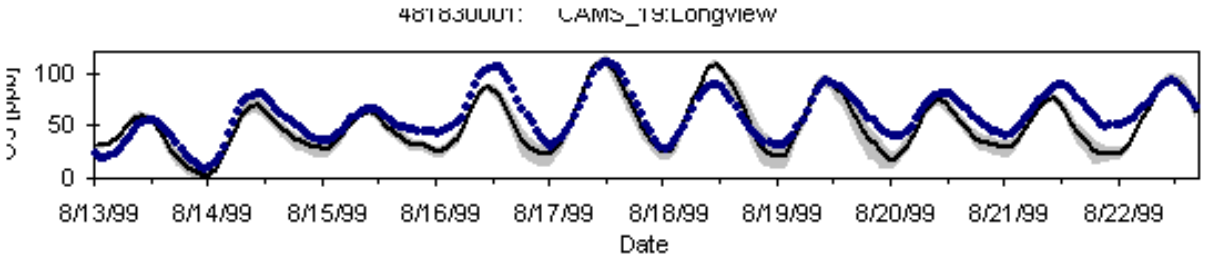
8-hr Daily Max Isopleths

- August 17th, 1999
- High regional ozone due to stagnation
- Highest levels are in NE Texas near center of stagnation
- Local and regional ozone contributions

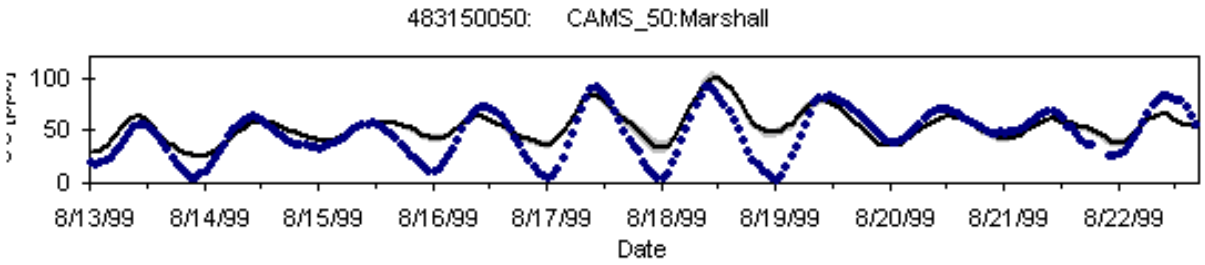


8-hr Ozone Time Series

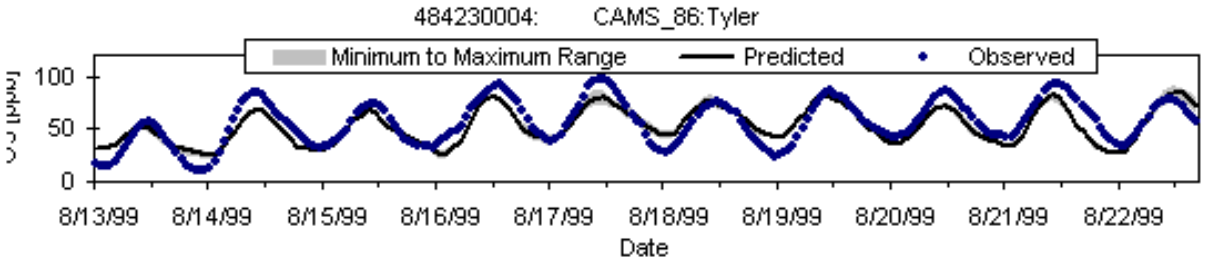
Longview



Marshall



Tyler

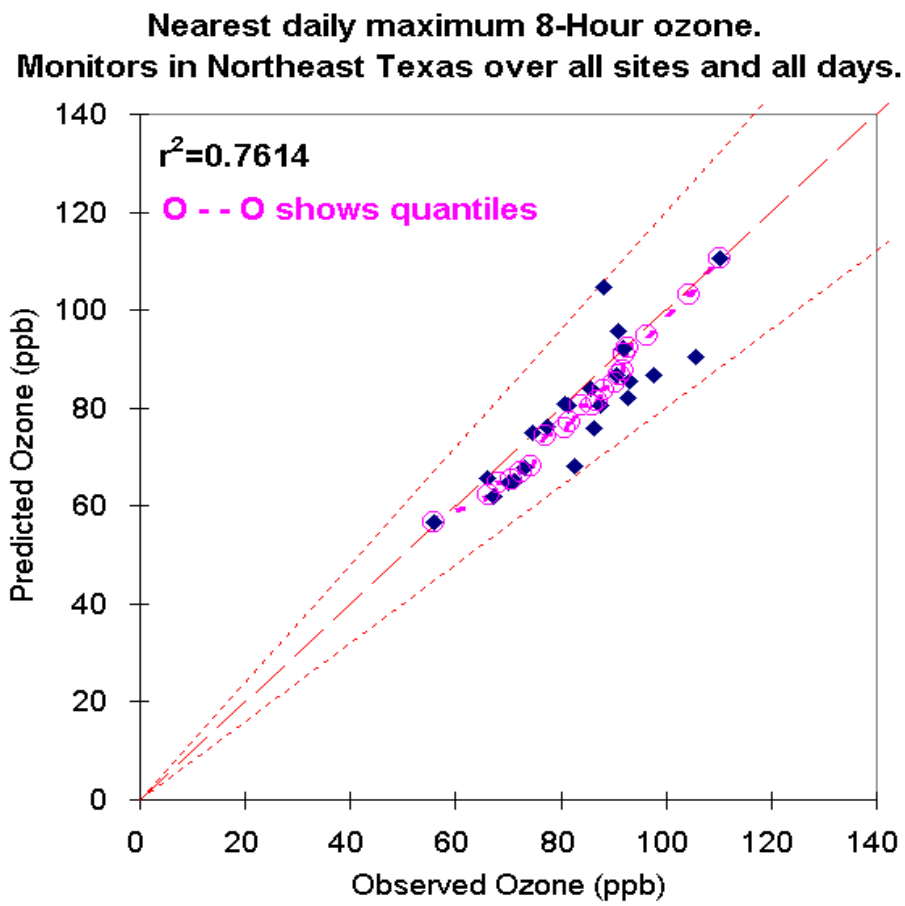


Statistical Measures

CAMx 8-Hour O3 Summary Statistics		Run = base7						Cutoff = 60 ppb	
	EPA Goal	8/15	8/16	8/17	8/18	8/19	8/20	8/21	8/22
Number of valid pairs		13	33	35	28	36	32	34	33
Normalized Bias (%)	< +/-15	-8.6	-18.5	-6.4	14.0	-5.2	-13.3	-20.4	-3.9
Normalized Gross Error (%)	< 35	8.6	18.5	10.0	14.2	8.9	13.3	20.4	10.8
Average Accuracy of Peak (%)		-4.0	-13.3	-7.9	10.3	-1.4	-9.2	-9.9	-1.9
Peak Observed (ppb)		73.0	105.6	110.1	91.0	91.9	86.1	92.9	91.9
Peak Pred (ppb)		78.1	90.5	120.8	121.3	117.9	98.2	90.9	102.9
Accuracy of Peak (%)	< +/-20	6.9	-14.3	9.7	33.3	28.3	14.0	-2.1	12.0

Monitors in Northeast Texas

8-Hour Max "Near" Monitors



EPA 8-hr guidance

- Compare max ozone in 7 by 7 of cells around monitor
- Corresponds to use of model for DV scaling
- Bias in 8-hr daily max "near" each monitor should be within 20%
- High correlation (r^2)
- Compare quantiles of modeled and observed distributions

Attainment Demonstration Methodology

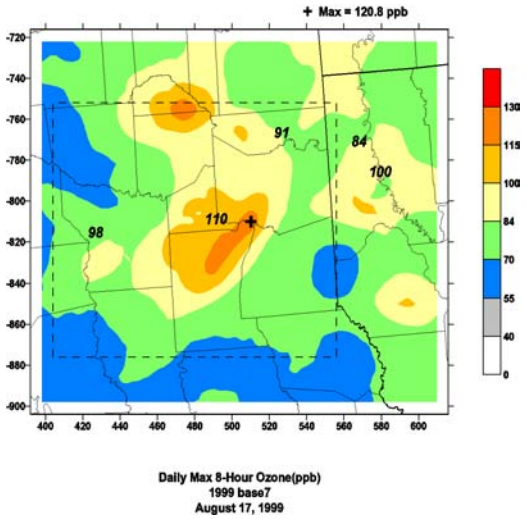
- Model 1999 and establish model performance
- Model 2002 and 2007
- Project 2007 8-hour ozone design value (DV)
  - 2007 DV = 2003 DV x RRF
  - RRF = 2007 modeled ozone / 2002 modeled ozone
- Based on 2002 modeling because:
  - Large emission reductions from 1999 to 2002
  - 2002 matches the 2003 DV (2001 to 2003 data)

2007 Emission Reductions

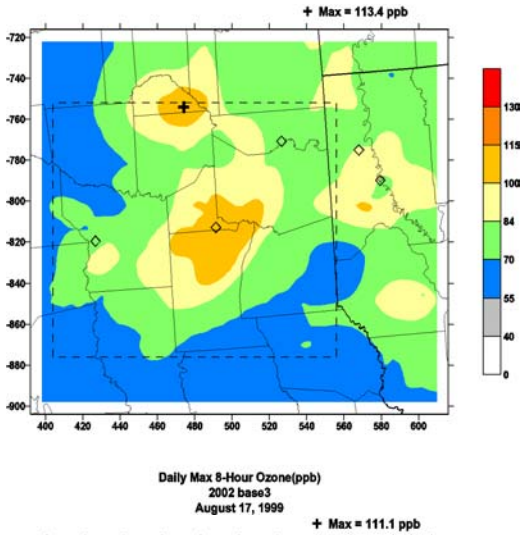
- Local NETAC reductions already made enforceable
- Enforceable measures from Texas SIP
  - DFW, HG, BPA, regional rules
  - Additional reductions expected (e.g., HG)
- EPA reductions
  - NOx SIP call
  - Mobile sources (MOBILE6, NONROAD2002)

8-hr Max Ozone for August 17th

1999

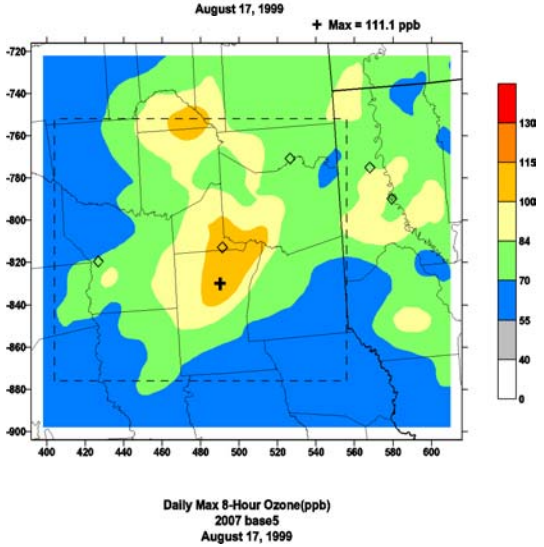


2002



- Substantial decreases from 1999 to 2002
- Further reductions from 2002 to 2007

2007



2007 Attainment Demonstration

Monitor	Preliminary 2001-2003 DV	Modeled RRF	Scaled 2007 DV
Longview	82	0.981	80
Tyler	81	0.954	77
Karnack	84	0.966	81
Waskom	84	0.974	82

Additional Local Reductions for EAC

- HRVOC reductions
  - Enhanced LDAR at chemical plants
- TCEQ rules for large gas compressors
- TERP funding for small gas compressors
  - TERP funding available
  - Applicability to gas compressors?
  - NETAC plans a pilot program
  - Public outreach to encourage participation