A background image of a sunset over the ocean. The sun is low on the horizon, creating a bright orange and yellow glow that fades into a blue sky. The water is dark and calm, reflecting the light from the sun.

NOAA/EPA

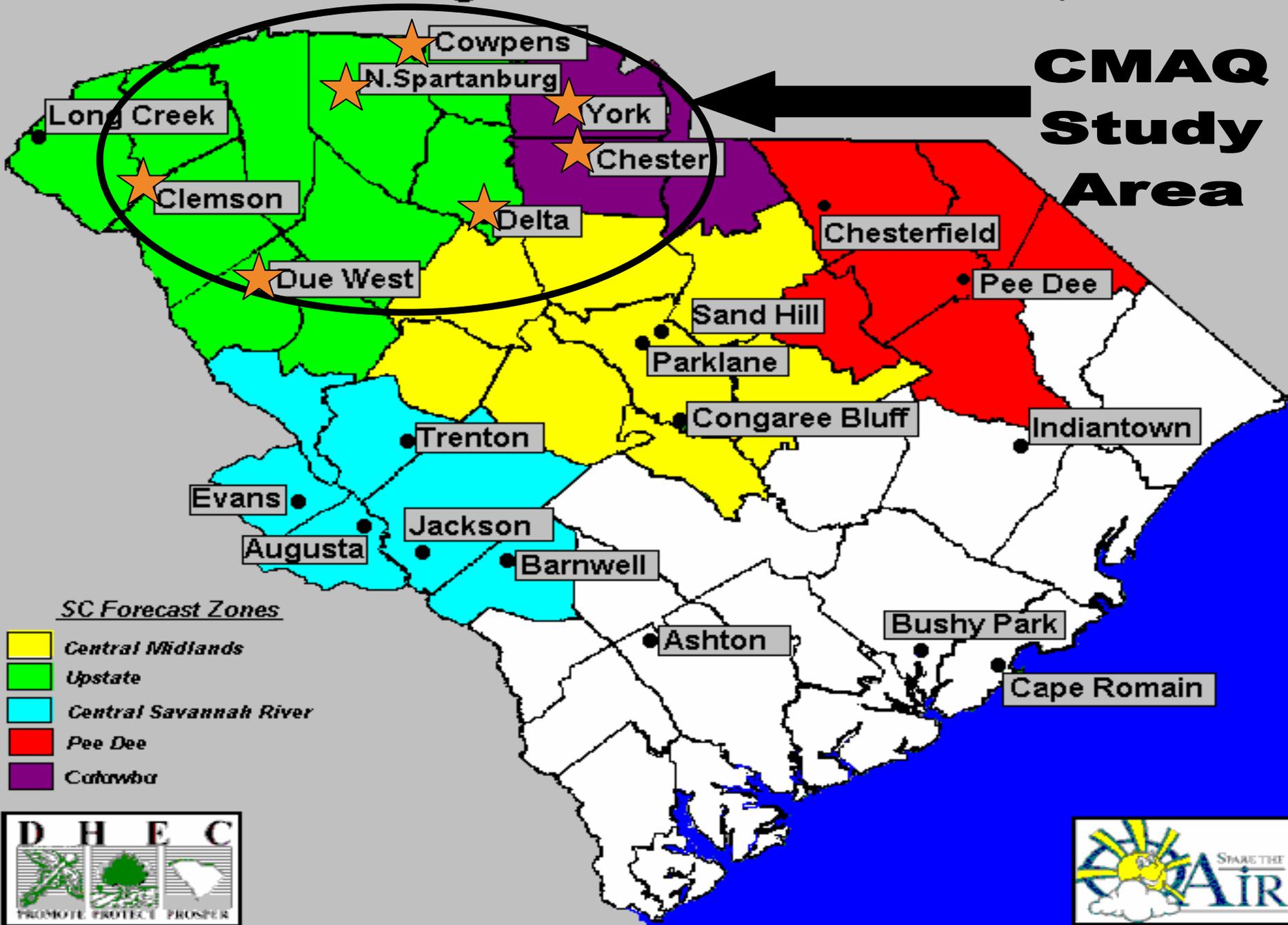
Air Quality Model Feedback: South Carolina

Part I: Overall Ozone Performance

Part II: August 14-16, 2007 Case Study

Ozone Monitoring Network & SC Forecast Zones, 2007

**CMAQ
Study
Area**

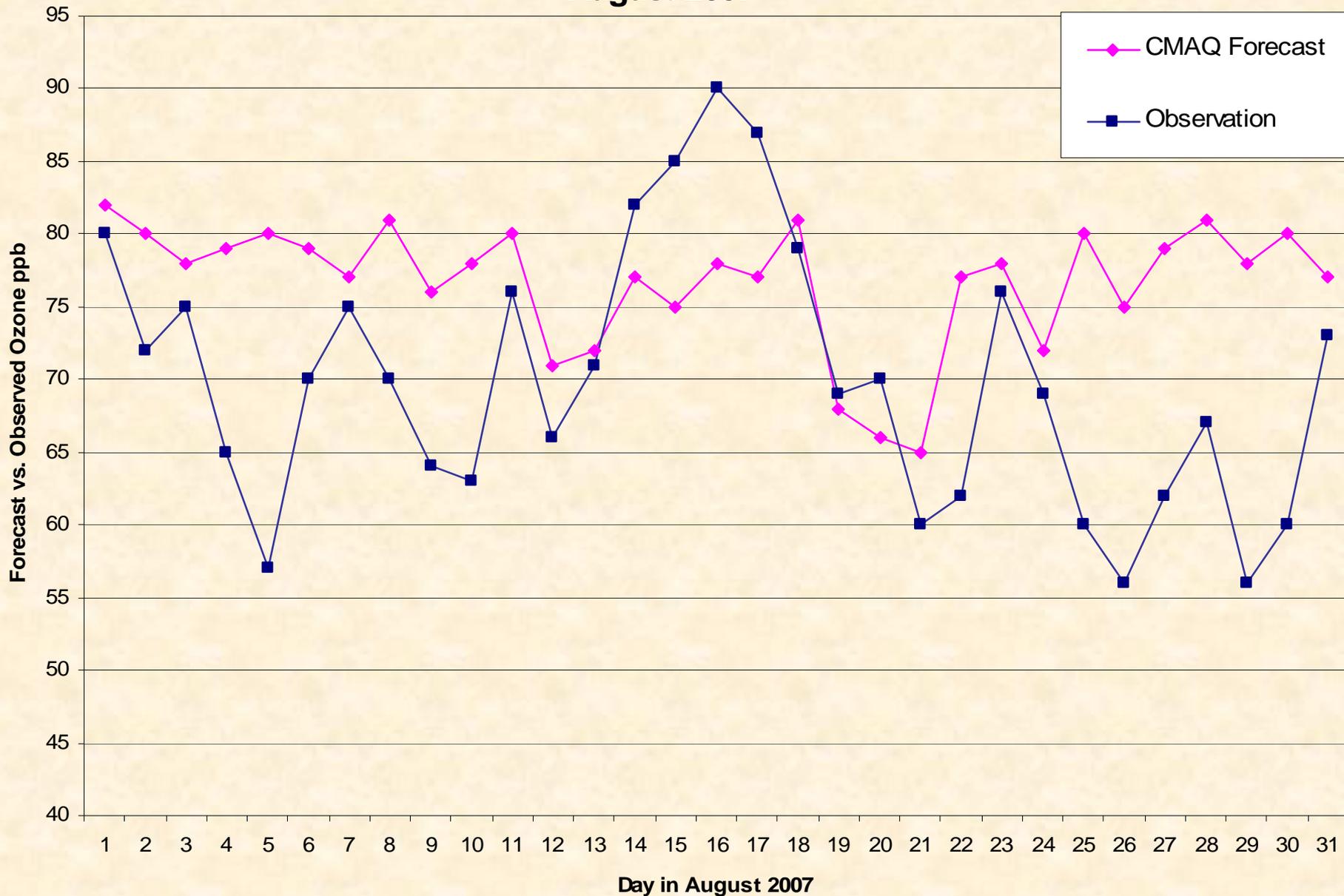


CMAQ Performance for Upstate/Catawba SC Using the Operational CMAQ Output August 2007

	Upstate SC Forecast Zone Peak		Catawba SC Forecast Zone Peak	
	Peak 1-hr	Peak 8-hr	Peak 1-hr	Peak 8-hr
Avg Forecast	81.1	76.7	79.6	74.2
Avg Observed	79.1	69.9	71.5	63.3
Absolute Error	9.35	9.48	13.0	12.3
Bias	+2.0	+6.8	+8.2	+10.9
Correlation	0.16	0.12	0.39	0.41

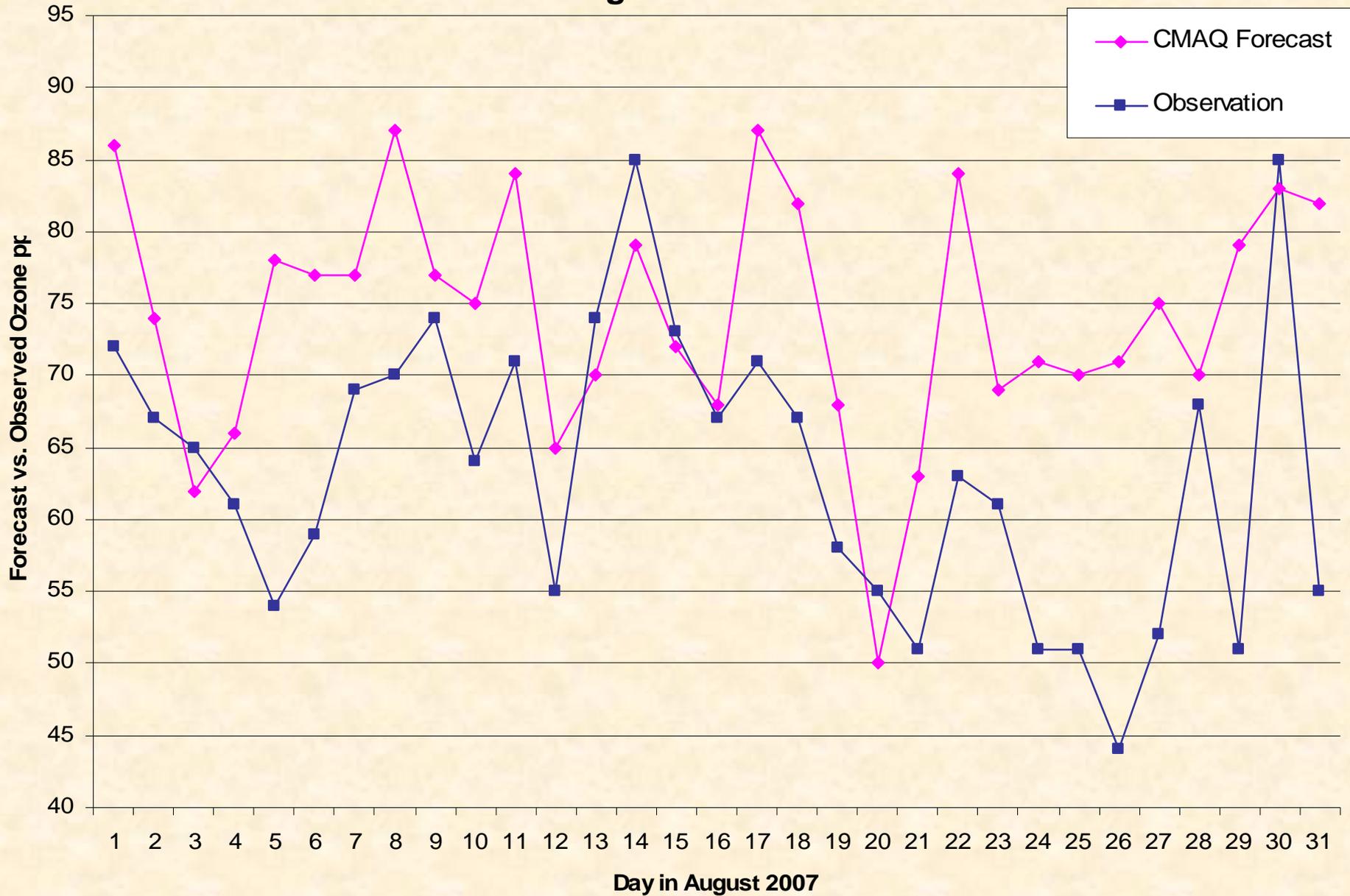
Upstate SC 8-hr Peak CMAQ Ozone Forecast vs. Observed

August 2007



Catawba SC Peak 8-hr CMAQ Ozone Forecast vs. Observed

August 2007

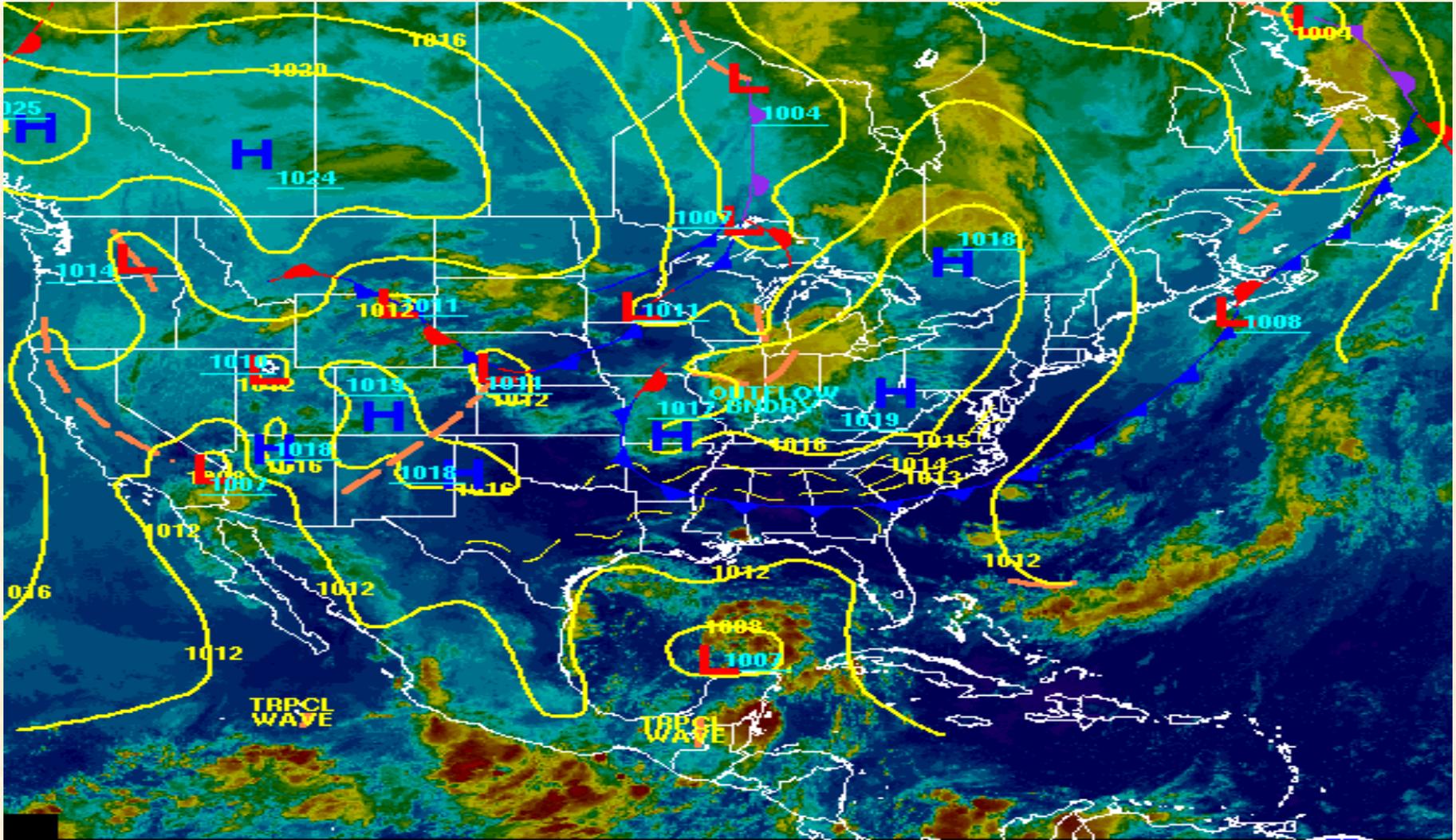


Case Study:

August 14-16 Episode Synopsis

- Frontal boundary moves through South Carolina early morning August 14th.
- Charlotte's urban plume affects Catawba on August 14th under good ozone production conditions.
- CLT plume is trapped and re-circulated through the Savannah River valley (GA/SC state line) Aug 15th.
- SW'ly flow and ATL plume continues to transport **ORANGE** ozone in Due West, SC through August 17th.

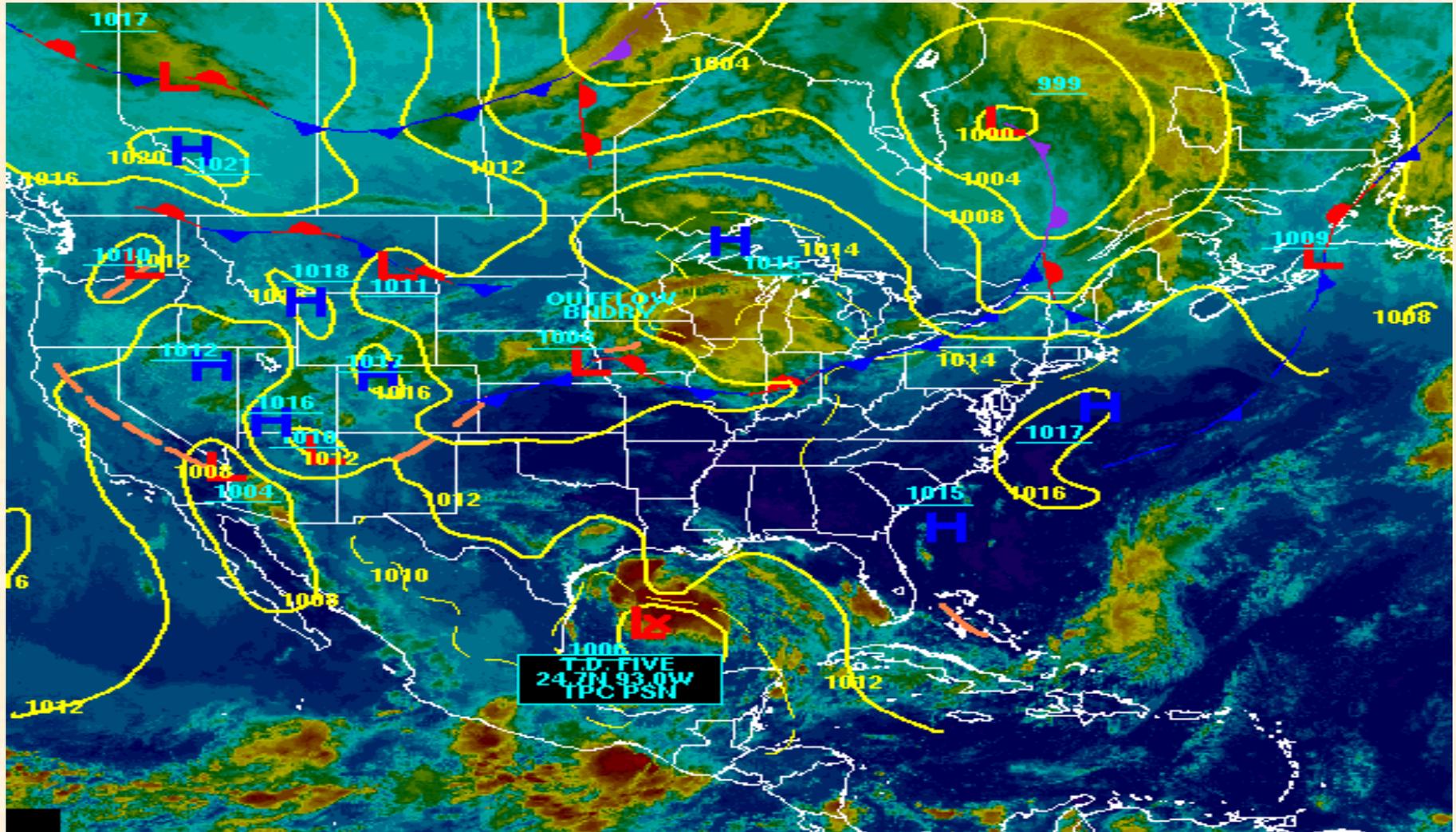
12Z Tuesday August 14, 2007



0814_1326Z GOES-E/W MOSAIC SAT IMAGE



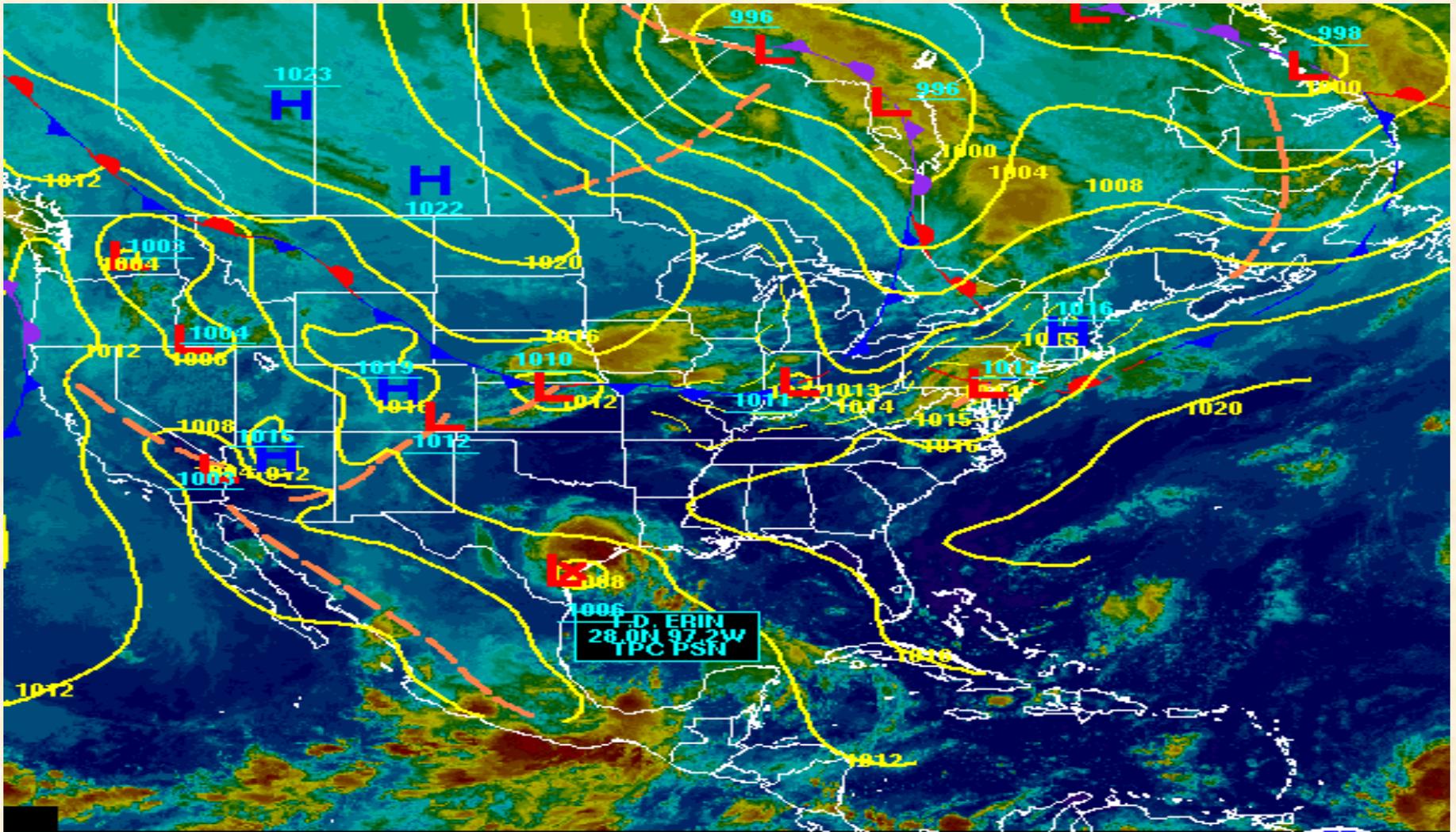
12Z Wednesday August 15, 2007



1815_1326Z GOES-E/W MOSAIC SAT IMAGE



12Z Thursday August 16, 2007



0816_1330Z GOES-E/W MOSAIC SAT IMAGE



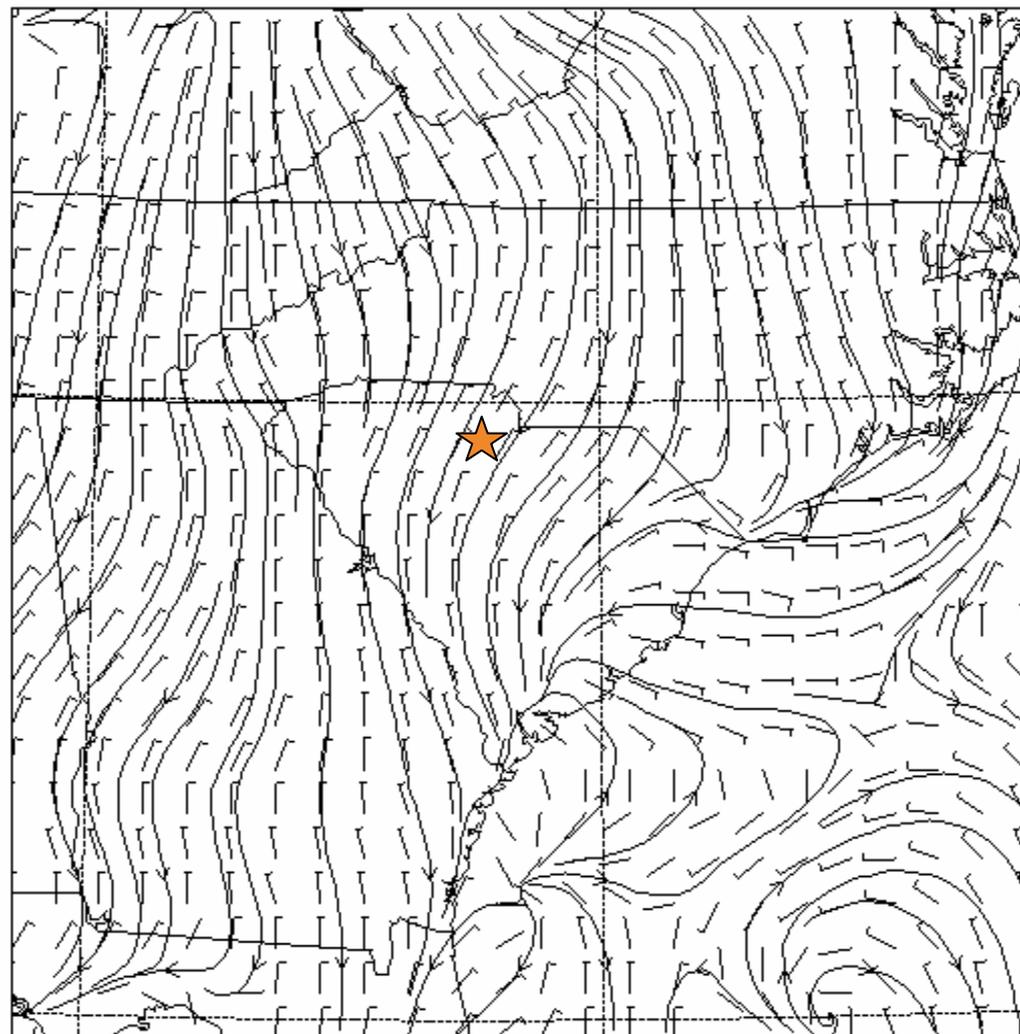


Tuesday, Aug 14

- Ozone action day issued for Catawba due to transport of Charlotte's urban plume.
- Chester monitor verified 85ppb.
- Plume is transported into Savannah River Valley during the evening.

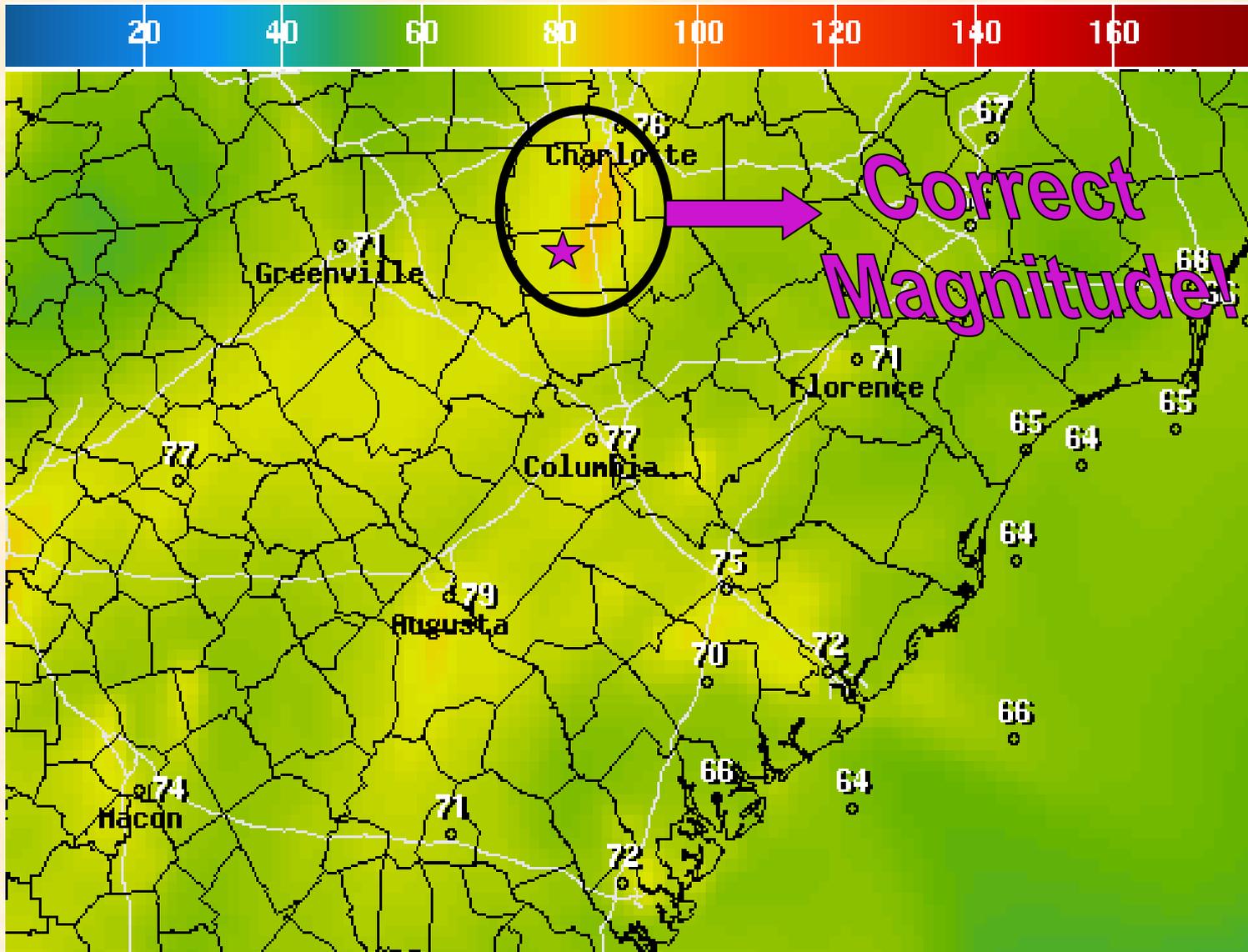
EDAS40 Archive

METEOROLOGICAL DATASET INFORMATION
Initialization time: 18 UTC 14 AUG 2007



STREAMLINES
WIND FLAGS

STRM (KNTS), LVL= SFC , 18 UTC 14 AUG 2007 (+ 00 H)
FLAG (KNTS), LVL= SFC , 18 UTC 14 AUG 2007 (+ 00 H)



CHESTER

 Observed - 85
 12Z CMAQ - 79
 SC Fcst - 85

8Hr Avg Ozone Concentration(PPE) Ending Tue Aug 14 2007 7PM EDT

(Tue Aug 14 2007 23Z)

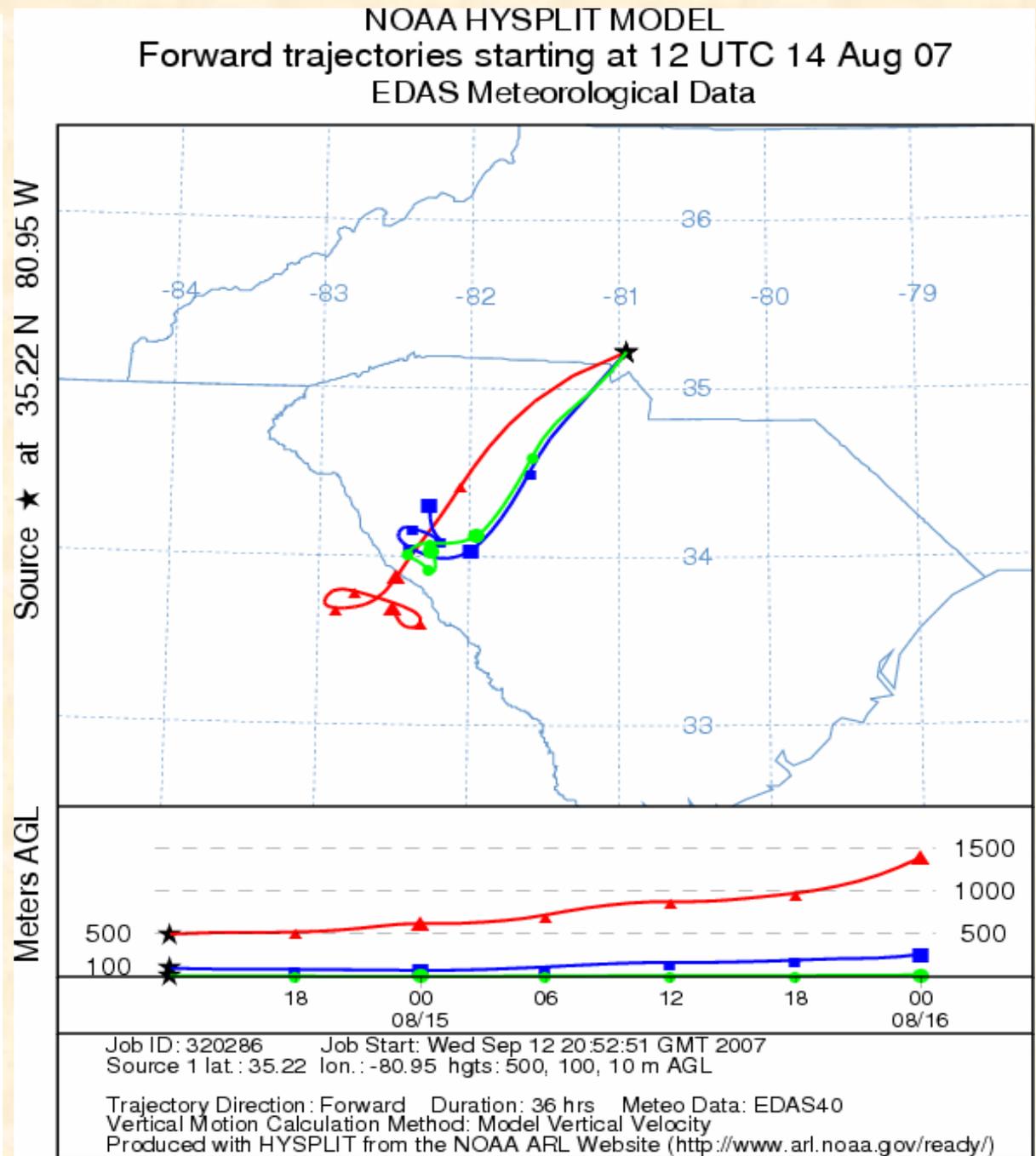
National Digital Guidance Database

12z model run Graphic created-Aug 13 1:22PM EDT



Wednesday, Aug 15

- No ozone action days issued
- Augusta monitor observed 91 ppb and Due West observed 85 ppb 8-hr average.
- CLT observes purple and ATL observes red.
- Previous day CLT plume stagnates over the Savannah River Valley.

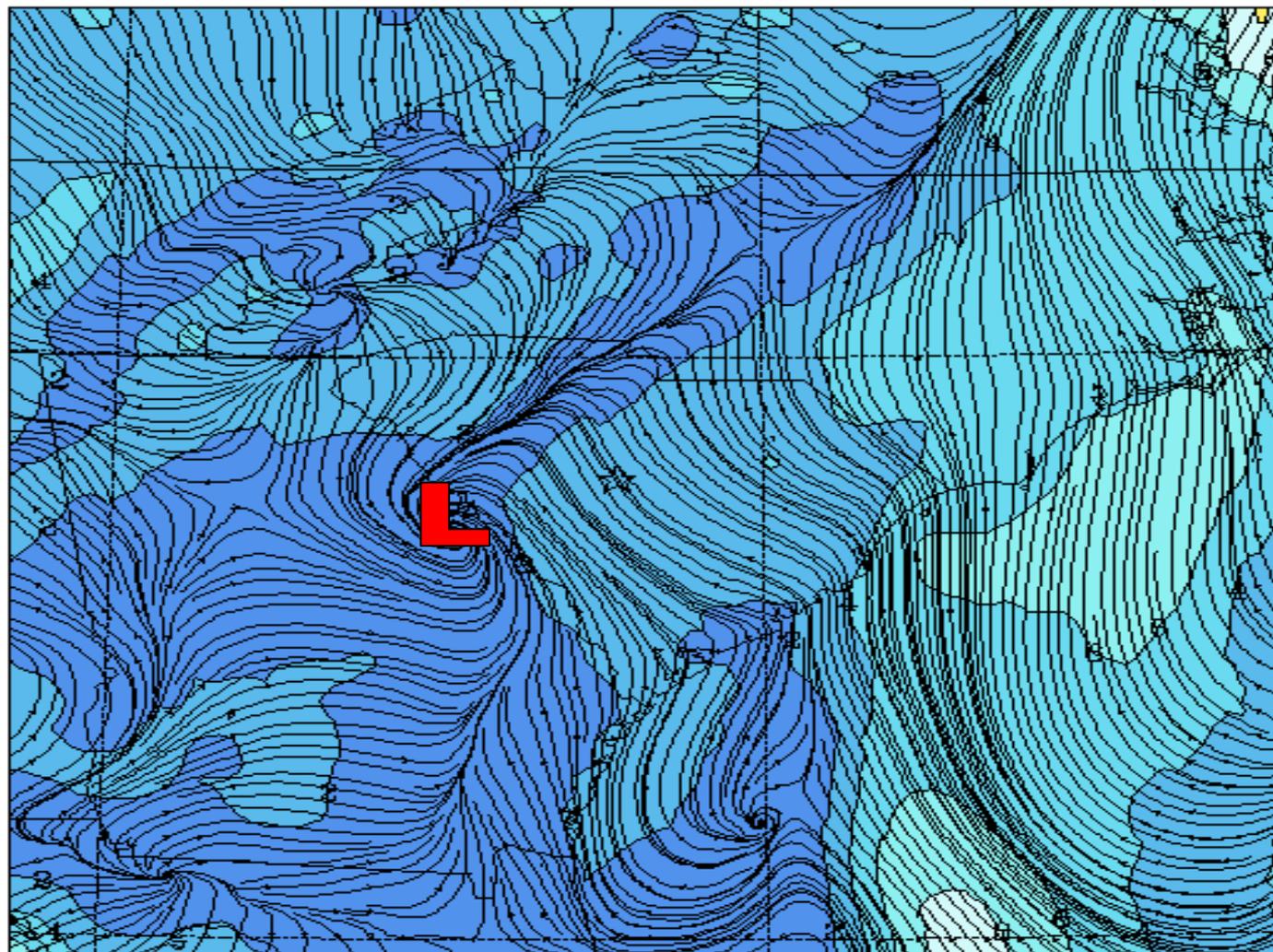




NAM12 Archive

METEOROLOGICAL DATASET INFORMATION

Initialization time: 12 UTC 15 AUG 2007



STREAMLINES
WIND SPEED

STRM (KNTS), LVL= SFC , 12 UTC 15 AUG 2007 (+ 00 H)
 WSPD (KNTS), LVL= SFC , 12 UTC 15 AUG 2007 (+ 00 H)

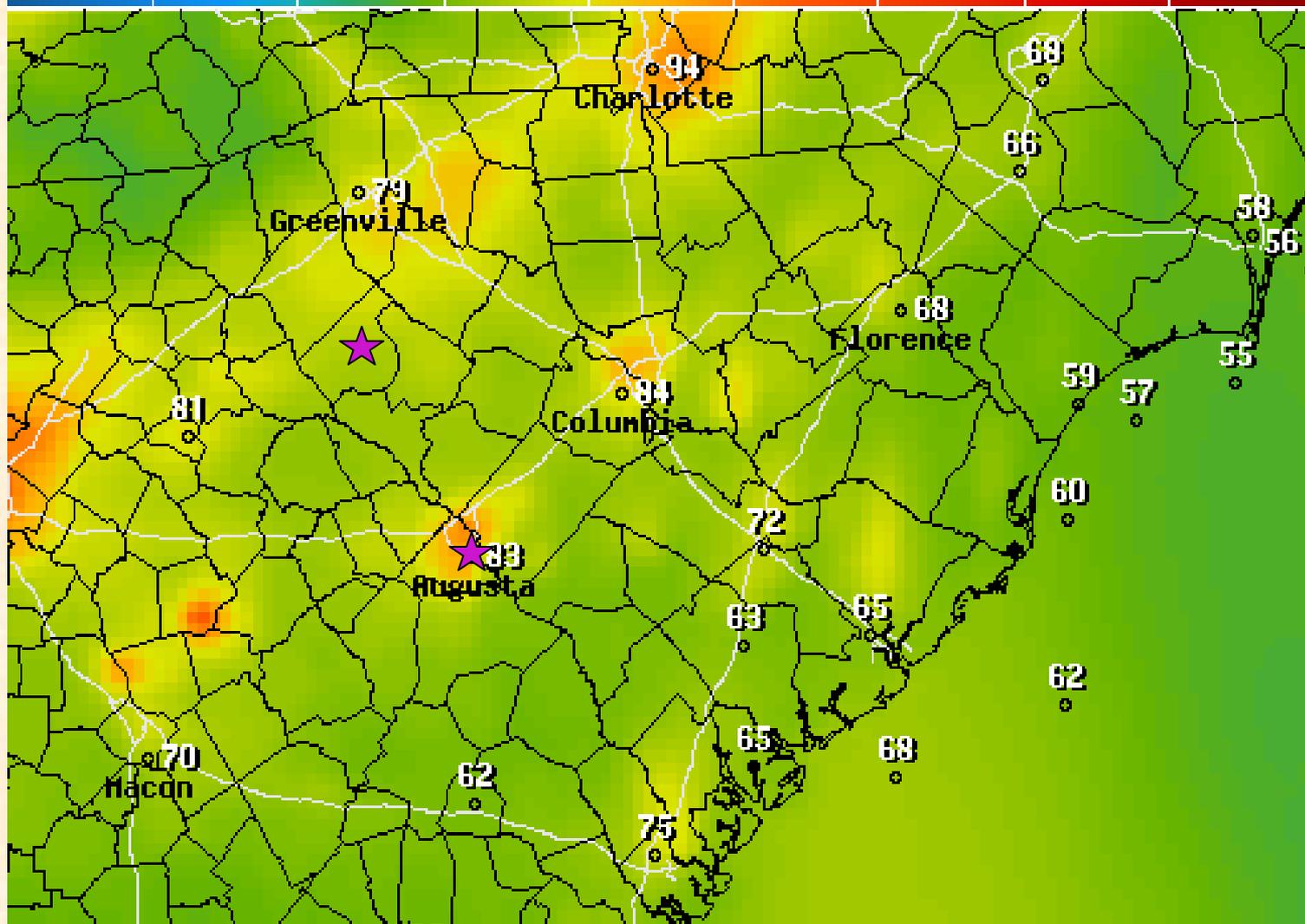
20 40 60 80 100 120 140 160

DUE WEST

Observed - 85
6Z CMAQ - 75
SC Fcst - 81

AUGUSTA

Observed - 91
6Z CMAQ - 95
SC Fcst - 69



8Hr Avg Ozone Concentration(PPB) Ending Wed Aug 15 2007 7PM EDT
(Wed Aug 15 2007 23Z)



National Digital Guidance Database

06z model run Graphic created-Aug 14 7:22AM EDT

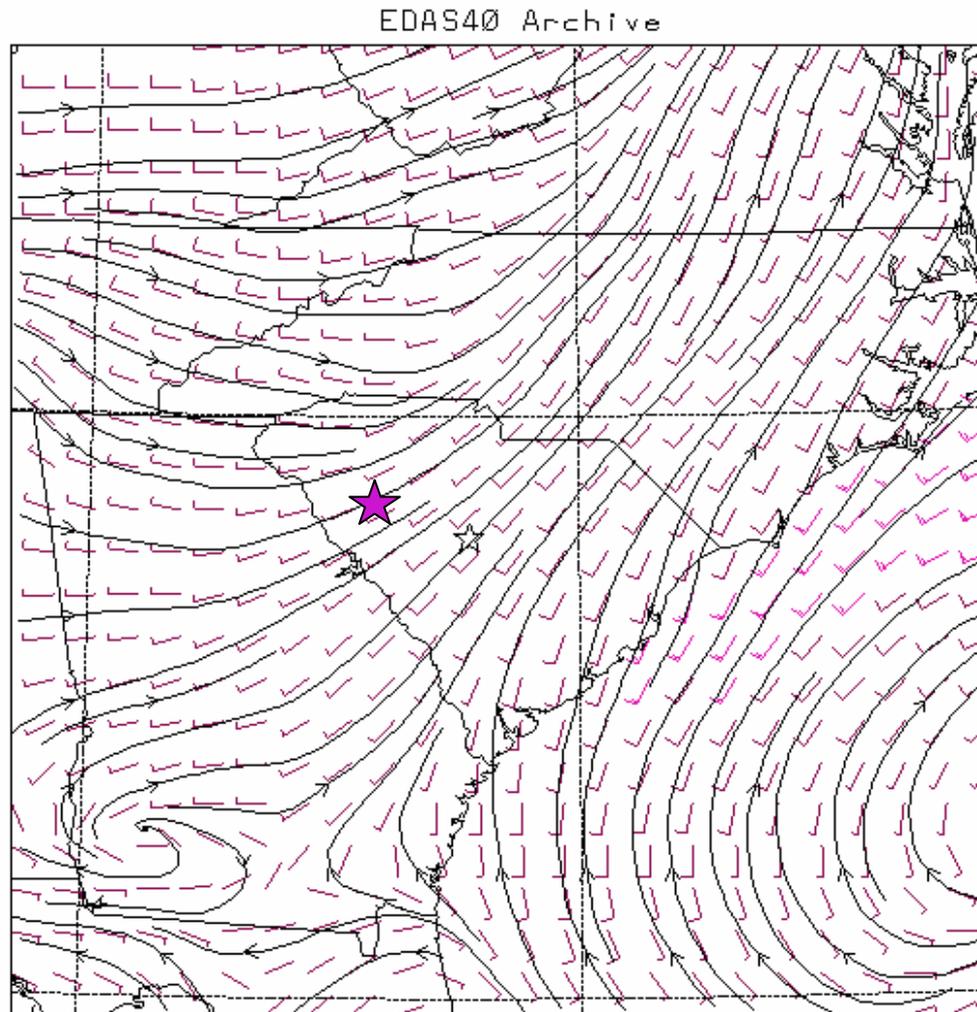


Thursday, Aug 16



- Action Day issued for Upstate
- Due West monitor observed 90 ppb 8-hr average.
- ATL plume is transported into the Piedmont

METEOROLOGICAL DATASET INFORMATION
Initialization time: 18 UTC 16 AUG 2007

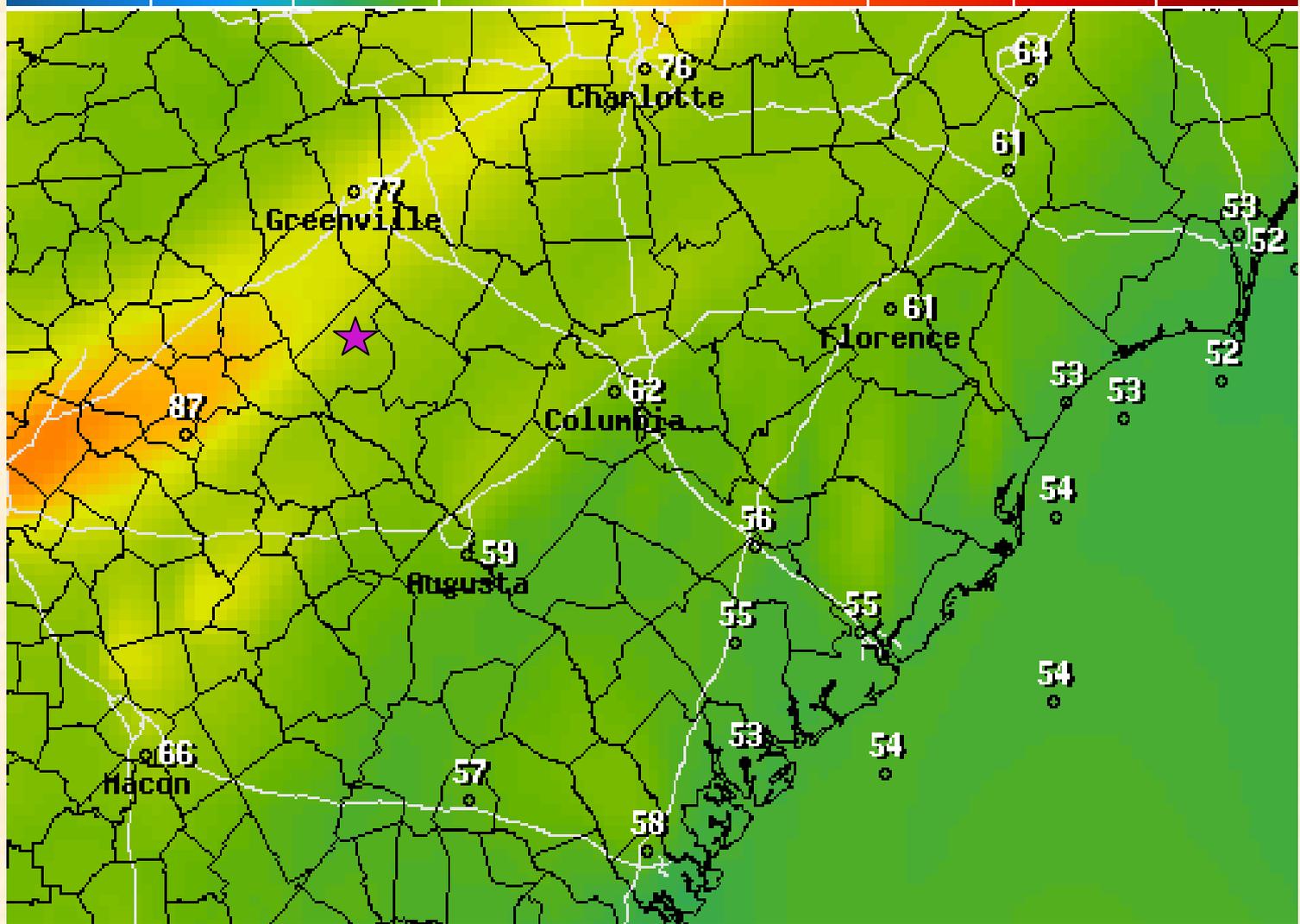


STREAMLINES
WIND FLAGS
STRM (KNTS), LVL= SFC , 18 UTC 16 AUG 2007 (+ 00 H)
FLAG (KNTS), LVL= SFC , 18 UTC 16 AUG 2007 (+ 00 H)

20 40 60 80 100 120 140 160

DUE WEST

Observed - 90
12Z CMAQ - 59
SC Fcst - 85



8Hr Avg Ozone Concentration(PPB) Ending Thu Aug 16 2007 7PM EDT

(Thu Aug 16 2007 23Z)



National Digital Guidance Database

12z model run Graphic created-Aug 15 1:23PM EDT



Summary of SC Comments on NOAA Operational CMAQ Guidance

- CMAQ forecasts generally under-predicted ozone concentrations during Spring and early Summer 2007.
- CMAQ forecasts generally over-predicted observed ozone concentrations (especially in the Piedmont) during August 2007.
- The Charlotte urban plume was depicted fairly realistically in magnitude and spatial coverage on August 14th.
- The model presumably depleted the Charlotte urban plume too quickly overnight August 14-15. The Atlanta urban plume was depleted too quickly August 16th.
- Operational CMAQ output is excellent guidance!! Thanks!