Georgia Department of Natural Resources

Environmental Protection Division • Air Protection Branch
4244 International Parkway • Suite 120 • Atlanta • Georgia 30354
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Noel Holcomb, Commissioner
Carol A. Couch, Ph.D., Director

March 12, 2009

A. Stanley Meiburg
Acting Regional Administrator
U.S. EPA, Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-3104

Re: Recommended Designations of Ozone Non-Attainment Areas in Georgia

Dear Mr. Meiburg:

On March 12, 2008, the United States Environmental Protection Agency (U.S. EPA) promulgated a revised National Ambient Air Quality Standard for ozone. Section 107(d)(1) of the Clean Air Act requires each state to submit to the EPA no later than one year following promulgation of a new or revised NAAQS, its recommended designation of each area of the State as attainment, non-attainment, or unclassifiable under the standard. The Georgia Environmental Protection Division (EPD) has developed recommended designations in accordance with U.S. EPA's December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards."

The attached table provides EPD's recommendations for the designation status of each county in Georgia. It is recommended that all or parts of 27 counties in Georgia noted in the table be designated as non-attainment.

In developing the ozone non-attainment area recommendations, EPD based the boundary recommendations on the nine factors contained in Attachment 2 of EPA's Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards memorandum. The technical analyses of these factors will be sent separately.

EPD also considered the current boundary for the existing Atlanta ozone non-attainment area, designated as a result of the 1997 revision of the ozone standard, in establishing the recommended boundary for the recommended Atlanta ozone non-attainment area for the 2008 ozone standard.

Georgia EPD's recommended ozone non-attainment designations are as follows:

- Atlanta Ozone Nonattainment Area (21 counties): Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding, Walton, and a section of Heard County as defined below.

- Athens Ozone Nonattainment Area (1 county): Clarke County

- Augusta Ozone Nonattainment Area (1 county): Richmond County
- Columbus Ozone Nonattainment Area (1 county): Muscogee County
- Macon Ozone Nonattainment Area (2 counties): Bibb County and a section of Monroe County as defined below.
- Murray County Nonattainment Area (1 county): a section of Murray as defined below.

Definitions of Partial-County Areas

Heard County Partial Area: The northeast portion that extends north of 33 degrees 24 minutes (north) to the Carroll County border and east of 85 degrees 3 minutes (west) to the Coweta County border.

Monroe County Partial Area: From 150' west of the US Hwy 23/Georgia Hwy 87 centerline at 33 degrees, 04 minutes, 30 seconds, proceed westward to 83 degrees, 49 minutes, 45 seconds; proceed due south to 150' north of the Georgia Hwy 18 centerline, proceed eastward 150' north of and parallel to the Georgia Hwy 18 centerline to 150' west of the US Hwy 23/Georgia Hwy 87 centerline, proceed northward 150' west of and parallel to the US Hwy 23/Georgia Hwy 87 centerline to 33 degrees, 04 minutes, 30 seconds.

Murray County Partial Area: The area enclosed to the east by Murray County's eastern border, to the north by latitude of 34.9004 degrees, to the west by longitude 84.7200 degrees, and to the south by 34.7040 degrees. All mountain peaks within the Chattahoochee National Forest area of Murray County that have an elevation greater than or equal to 2,400 feet and that are enclosed by contour lines that close on themselves.

Georgia EPD recommends that all other counties and portions of counties be designated as unclassifiable/attainment for the 2008 ozone standard.

If you have any questions or need more information, please contact Jac Capp at (404) 363-7016.

Sincerely,

Carol A. Couch
Director

CAC:JJ:klc
Attachment

c: Dick Schutt, U.S. EPA Region 4
Jac Capp, Branch Chief, Air Protection Branch

RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Appling	Attainment/Unclassifiable
Atkinson	Attainment/Unclassifiable
Bacon	Attainment/Unclassifiable
Baker	Attainment/Unclassifiable
Baldwin	Attainment/Unclassifiable
Banks	Attainment/Unclassifiable
Barrow	**Nonattainment**
Bartow	**Nonattainment**
Ben Hill	Attainment/Unclassifiable
Berrien	Attainment/Unclassifiable
Bibb	**Nonattainment**
Bleckley	Attainment/Unclassifiable
Brantley	Attainment/Unclassifiable
Brooks	Attainment/Unclassifiable
Bryan	Attainment/Unclassifiable
Bulloch	Attainment/Unclassifiable
Burke	Attainment/Unclassifiable
Butts	Attainment/Unclassifiable
Calhoun	Attainment/Unclassifiable
Camden	Attainment/Unclassifiable
Candler	Attainment/Unclassifiable
Carroll	**Nonattainment**
Catoosa	Attainment/Unclassifiable
Charlton	Attainment/Unclassifiable
Chatham	Attainment/Unclassifiable
Chattahoochee	Attainment/Unclassifiable
Chattooga	Attainment/Unclassifiable
Cherokee	**Nonattainment**
Clarke	**Nonattainment**
Clay	Attainment/Unclassifiable
Clayton	**Nonattainment**
Clinch	Attainment/Unclassifiable
Cobb	**Nonattainment**
Coffee	Attainment/Unclassifiable
Colquitt	Attainment/Unclassifiable
Columbia	Attainment/Unclassifiable
Cook	Attainment/Unclassifiable
Coweta	**Nonattainment**
Crawford	Attainment/Unclassifiable
Crisp	Attainment/Unclassifiable
Dade	Attainment/Unclassifiable
Dawson	Attainment/Unclassifiable

RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Decatur	Attainment/Unclassifiable
DeKalb	**Nonattainment**
Dodge	Attainment/Unclassifiable
Dooly	Attainment/Unclassifiable
Doughtery	Attainment/Unclassifiable
Douglas	**Nonattainment**
Early	Attainment/Unclassifiable
Echols	Attainment/Unclassifiable
Effingham	Attainment/Unclassifiable
Elbert	Attainment/Unclassifiable
Emanuel	Attainment/Unclassifiable
Evans	Attainment/Unclassifiable
Fannin	Attainment/Unclassifiable
Fayette	**Nonattainment**
Floyd	Attainment/Unclassifiable
Forsyth	**Nonattainment**
Franklin	Attainment/Unclassifiable
Fulton	**Nonattainment**
Gilmer	Attainment/Unclassifiable
Glascock	Attainment/Unclassifiable
Glynn	Attainment/Unclassifiable
Gordon	Attainment/Unclassifiable
Grady	Attainment/Unclassifiable
Greene	Attainment/Unclassifiable
Gwinnett	**Nonattainment**
Habersham	Attainment/Unclassifiable
Hall	**Nonattainment**
Hancock	Attainment/Unclassifiable
Haralson	Attainment/Unclassifiable
Harris	Attainment/Unclassifiable
Hart	Attainment/Unclassifiable
Heard	**Partial Nonattainment**
Henry	**Nonattainment**
Houston	Attainment/Unclassifiable
Irwin	Attainment/Unclassifiable
Jackson	Attainment/Unclassifiable
Jasper	Attainment/Unclassifiable
Jeff Davis	Attainment/Unclassifiable
Jefferson	Attainment/Unclassifiable
Jenkins	Attainment/Unclassifiable
Johnson	Attainment/Unclassifiable
Jones	Attainment/Unclassifiable

RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Lamar	Attainment/Unclassifiable
Lanier	Attainment/Unclassifiable
Laurens	Attainment/Unclassifiable
Lee	Attainment/Unclassifiable
Liberty	Attainment/Unclassifiable
Lincoln	Attainment/Unclassifiable
Long	Attainment/Unclassifiable
Lowndes	Attainment/Unclassifiable
Lumpkin	Attainment/Unclassifiable
McDuffie	Attainment/Unclassifiable
McIntosh	Attainment/Unclassifiable
Macon	Attainment/Unclassifiable
Madison	Attainment/Unclassifiable
Marion	Attainment/Unclassifiable
Meriwether	Attainment/Unclassifiable
Miller	Attainment/Unclassifiable
Mitchell	Attainment/Unclassifiable
Monroe	**Partial Nonattainment**
Montgomery	Attainment/Unclassifiable
Morgan	Attainment/Unclassifiable
Murray	**Partial Nonattainment**
Muscogee	**Nonattainment**
Newton	**Nonattainment**
Oconee	Attainment/Unclassifiable
Oglethorpe	Attainment/Unclassifiable
Paulding	**Nonattainment**
Peach	Attainment/Unclassifiable
Pickens	Attainment/Unclassifiable
Pierce	Attainment/Unclassifiable
Pike	Attainment/Unclassifiable
Polk	Attainment/Unclassifiable
Pulaski	Attainment/Unclassifiable
Putnam	Attainment/Unclassifiable
Quitman	Attainment/Unclassifiable
Rabun	Attainment/Unclassifiable
Randolph	Attainment/Unclassifiable
Richmond	**Nonattainment**
Rockdale	**Nonattainment**
Schley	Attainment/Unclassifiable
Screven	Attainment/Unclassifiable
Seminole	Attainment/Unclassifiable
Spalding	**Nonattainment**

RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Stephens	Attainment/Unclassifiable
Stewart	Attainment/Unclassifiable
Sumter	Attainment/Unclassifiable
Talbot	Attainment/Unclassifiable
Taliaferro	Attainment/Unclassifiable
Tattnall	Attainment/Unclassifiable
Taylor	Attainment/Unclassifiable
Telfair	Attainment/Unclassifiable
Terrell	Attainment/Unclassifiable
Thomas	Attainment/Unclassifiable
Tift	Attainment/Unclassifiable
Toombs	Attainment/Unclassifiable
Towns	Attainment/Unclassifiable
Treutlen	Attainment/Unclassifiable
Troup	Attainment/Unclassifiable
Turner	Attainment/Unclassifiable
Twiggs	Attainment/Unclassifiable
Union	Attainment/Unclassifiable
Upson	Attainment/Unclassifiable
Walker	Attainment/Unclassifiable
Walton	**Nonattainment**
Ware	Attainment/Unclassifiable
Warren	Attainment/Unclassifiable
Washington	Attainment/Unclassifiable
Wayne	Attainment/Unclassifiable
Webster	Attainment/Unclassifiable
Wheeler	Attainment/Unclassifiable
White	Attainment/Unclassifiable
Whitfield	Attainment/Unclassifiable
Wilcox	Attainment/Unclassifiable
Wilkes	Attainment/Unclassifiable
Wilkinson	Attainment/Unclassifiable
Worth	Attainment/Unclassifiable

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Richard Schutt
Chief, Air Planning Branch
Air, Pesticides & Toxics Management Division
U.S. EPA, Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Re: Recommended Designations of Ozone Non-Attainment Areas in Georgia

Dear Mr. Schutt:

Our March 12, 2009, submittal contains Georgia EPD's recommendations for the designation status of each county in Georgia under the revised 8-hour ozone standard. As indicated in that letter, we have recommended the following 8-hour ozone nonattainment areas:

- Atlanta Ozone Nonattainment Area (21 counties): Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding, Walton, and a section of Heard County

- Athens Ozone Nonattainment Area (1 county): Clarke County

- Augusta Ozone Nonattainment Area (1 county): Richmond County

- Columbus Ozone Nonattainment Area (1 county): Muscogee County

- Macon Ozone Nonattainment Area (2 counties): Bibb County and a section of Monroe County

- Murray County Nonattainment Area (1 county): a section of Murray

With this letter we are supplying additional information regarding the selection methodology used to arrive at the aforementioned recommendations. These recommendations were developed in accordance with the boundary guidance provided by the U.S. EPA. The attached technical analysis document provides the background information on the nonattainment designation process, the selection criteria used to evaluate each area, and the application of those criteria in making the recommendations. It is our hope that this information will aid EPA in reviewing and approving EPD's recommendations for the designations.

If you have any questions or need more information, please contact me at (404) 363-7016.

Sincerely,

James A. Capp
Chief, Air Protection Branch

Attachment

c: Jimmy Johnston, Air Protection Branch

Nonattainment Area Designations for Georgia Under the 2008 Revised 8-Hour Ozone National Ambient Air Quality Standard Technical Analysis

This document contains the Georgia Environmental Protection Division's (EPD) technical analysis for designating nonattainment areas in Georgia under the 2008 revised primary and secondary ozone National Ambient Air Quality Standards (NAAQS). This analysis has been conducted in accordance with U.S. EPA's December 4, 2008, memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards." The 159 counties in Georgia have been evaluated and identified as attainment, nonattainment, or unclassifiable on the basis of available information.

Air Quality Data and Potential Nonattainment Areas

Federal Reference Method (FRM) measurements of ozone concentrations in Georgia, during the most recent three consecutive years (2006-2008), were analyzed and used to identify sites currently violating the revised 2008 ozone NAAQS. These quality-assured and certified ozone measurements are stored in EPA's Air Quality System (AQS) database. Design values (DV) were calculated for each monitor (Tabled 1 and Figure 1) by averaging the fourth-highest daily maximum 8-hour average ozone concentrations for three consecutive years. If the 2006-2008 DV for a monitor is greater than 0.075 ppm, the monitor is violating the standard. Among the 23 ozone monitors in Georgia, there are 17 violating monitors, which are located within six Core Based Statistical Areas (CBSAs) or Combined Statistical Areas (CSAs) (see Table 1). These CBSAs/CSAs are (1) Atlanta-Sandy Springs-Gainesville, GA-AL, (2) Athens-Clarke County, GA, (3) Augusta-Richmond County, GA-SC, (4) Columbus-Auburn-Opelika, GA-AL, (5) Dalton, GA, and (6) Macon-Warner Robins-Fort Valley, GA. DVs for monitors in counties of South Carolina for Augusta-Richmond County, GA-SC CBSA are also provided, as well as DVs for monitors in counties of Alabama for Columbus-Auburn-Opelika, GA-AL CSA (Table 1). Finally, 2006-2008 DVs for two monitors in Hamilton, TN (Chattanooga-Cleveland-Athens, TN-GA CSA) are also violating the revised 2008 ozone NAAQS.

The CAA specifically states that if an "ozone or carbon monoxide nonattainment area [is] located within a metropolitan statistical area or consolidated metropolitan statistical area" then the boundaries of the areas are "by operation of law to include the entire metropolitan statistical area or consolidated metropolitan statistical area." In addition, U.S. EPA's December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" recommends that:

--- "…the Core Based Statistical Area (CBSA) or Combined Statistical Area (which includes 2 or more adjacent CBSA's) associated with the violating monitor(s) serve as the starting point or "presumptive" boundary for evaluating the geographic boundaries of an ozone nonattainment area. CBSA is a collective term that refers to both metropolitan and micropolitan statistical areas, which are distinguished based on population size. Each CBSA consists of a county or counties containing at least one urban core plus adjacent counties that have a high degree of social and economic integration with the urban core as measured by commuting ties. EPA recommends starting with this presumption because the factors used to establish the CBSAs and

CSAs are similar to the factors EPA plans to consider in determining whether a nearby area is contributing to the violation(s) of the standard."

The following CBSAs/CSAs,[1] in which one or more violating monitors are located, will be evaluated as potential nonattainment areas. Counties with violating monitors are identified separately from other counties in the CBSAs/CSAs.

Atlanta-Sandy Springs-Gainesville, GA-AL (CSA, includes 33 counties)
Counties with violating monitors: *Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, Paulding, Rockdale*
Other Counties: *Barrow, Bartow, Butts, Carroll, Chambers (AL), Cherokee, Clayton, Forsyth, Hall, Haralson, Heard, Jasper, Lamar, Meriwether, Newton, Pickens, Pike, Polk, Spalding, Troup, Upson, Walton*

Athens-Clarke County, GA (CBSA, includes 4 counties)
County with violating monitor: *Clarke*
Other Counties: *Madison, Oconee, Oglethorpe*

Augusta-Richmond County, GA-SC (CBSA, includes 6 counties)
Counties with violating monitors: *Richmond, Aiken (SC)*
Other Counties: *Burke, Columbia, McDuffie, Edgefield(SC)*

Chattanooga-Cleveland-Athens, TN-GA (CSA, includes 9 counties)
County with violating monitors: *Hamilton (TN)*
Other Counties: *Catoosa, Dade, Walker, Bradley (TN), McMinn (TN), Marion (TN), Polk (TN), Sequatchie(TN)*

Columbus-Auburn-Opelika, GA-AL (CSA, includes 7 counties)
County with violating monitor: *Muscogee*
Other Counties: *Chattahoochee, Harris, Marion, Lee (AL), Macon (AL), Russell (AL)*

Dalton, GA (CBSA, includes 2 counties)
County with violating monitor: *Murray*
Other County: *Whitfield*

Macon-Warner Robins-Fort Valley, GA (CSA, includes 7 counties)
County with violating monitors: *Bibb*
Other Counties: *Crawford, Houston, Jones, Monroe, Peach, Twiggs*

[1] CSAs and CBSAs were obtained from the most recent update on statistical area definitions issued by the federal Office of Management and Budget, OMB Bulletin No. 08-01 issued November 20, 2007.

Nine-Factor Analysis for Nonattainment Area Boundaries

The nonattainment area boundaries are evaluated using nine factors, as described in U.S. EPA's December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards."

1) Air quality data;
2) Emissions data (location of sources and contribution to ozone concentrations);
3) Population density and degree of urbanization (including commercial development);
4) Traffic and commuting patterns;
5) Growth rates and patterns;
6) Meteorology (weather/transport patterns);
7) Geography/topography (mountain ranges or other air basin boundaries);
8) Jurisdictional boundaries [e.g., counties, air districts, existing nonattainment areas, reservations, metropolitan planning organizations (MPOs)]; and
9) Level of control of emission sources,

In this analysis, any county that is currently designated nonattainment or maintenance under the 1997 ozone NAAQS will automatically be recommended as a nonattainment county.

Next, the following quantitative data were used to evaluate Factors 2, 3, 4, and 5.

1) Emission data: 2005 National Emissions Inventory Data for counties in Georgia and Tennessee. Downloaded from http://www.epa.gov/ttn/chief/net/2005inventory.html. Updates for point source emissions in Hamilton County, Tennessee, were provided by the state. Emissions from counties in Alabama were provided by Alabama Department of Environmental Management. Emissions from counties in South Carolina were provided by South Carolina Department of Health and Environmental Control.
2) Population Density: Population density for 2000 from U.S. Census Bureau. Downloaded from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=people_1&_lang=en&_ts= .
3) Percent Urbanization: Percent urbanization for 2000 from U.S. Census Bureau. Downloaded from http://factfinder.census.gov/servlet/DatasetTableListServlet?_ds_name=DEC_2000_SF2_U&_type=table&_program=DEC&_lang=en&_ts=247507573134 .
4) Percent Population Growth: Estimated population growth (absolute) from 2000 to 2007. Population estimates for 2000 and 2007 are from the U.S. Census Bureau. Downloaded from http://www.census.gov/popest/counties/CO-EST2007-popchg2000_2007.html.
5) Traffic: 2007 Daily Vehicular Miles Traveled (VMT) by county based on HPMS data are provided by states.

Detailed data for each county in the potential nonattainment areas are listed in Table 2. The 25th percentile values of each factor for 16 counties in Georgia with violating monitors are used as the screening criteria (Table 3). If values are higher than the screening criteria, a score of one is assigned to that factor, except for "Emission NOx" which was assigned a value based on the magnitude of the NOx emissions in that county. The "Emission NOx" category was treated differently due to the importance of this category in the formation of ozone. Specifically, the

score for the "Emission NOx" category was calculated as the ratio of each county's NOx emissions to the NOx emissions screening criteria (Table 3) and rounded to the nearest whole number. If the total score of these factors for a county is greater than four, the county may be recommended as a nonattainment county after consideration of other factors, such as meteorology, geography, jurisdictional boundaries, and level of control of emissions, on a qualitative basis.

The 25th percentile values were used instead of the minimum values as screening criteria due to low emission levels and low anthropogenic activities in some counties with a violating monitor (e.g., Murray and Dawson counties). This is consistent with U.S. EPA guidelines, as described in the December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards":

"In addition to nearby areas with sources contributing to nonattainment, ozone concentrations in a local area may be affected by ***long-range transport*** *of ozone and its precursors (notably nitrogen oxides). In certain parts of the country, such as the eastern Untied States, ozone is a widespread problem.* ***Where this is the case, the CAA does not require that all contributing areas be designated nonattainment, only the nearby areas****. Regional strategies, such as those employed in the Ozone Transport Region and EPA's NOx SIP Call are needed to address the long-range transport component of ozone nonattainment, while the local component must be addressed through local planning in and around the designated nonattainment area."*

Atlanta-Sandy Springs-Gainesville, GA-AL

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 4. Scores are calculated for 33 counties in this area. The scores for the 20 counties currently designated as nonattainment for the 1997 ozone standard are ranked from high to low, showing a range of scores from zero (Spalding) to 15 (Fulton). Next, the remaining 12 counties in the Atlanta-Sandy Springs-Gainesville, GA-AL CSA were ranked and evaluated. Of these remaining counties, only Heard county (score of five) has a score exceeding the threshold of four.

Regarding the emissions data criteria, there are no power plants and no major point sources located in Dawson County. Nearly all ozone precursor emissions inventoried for Dawson County are from area- or transportation-related activity. Because of the low level of emissions, Dawson County receives no points for the emissions data criteria when conducting the quantitative analysis. Emissions originating in Dawson County both do not contribute to violations in either Dawson County or anywhere in the Atlanta-Sandy Springs-Gainesville, GA-AL CSA. Ozone violations recorded at the Dawsonville monitor are primarily the result of the transport of ozone or ozone precursors.

Meteorology – There are no meteorology factors identified that affect the area with the exception of Dawson County. Wind rose analysis in Appendix B demonstrates the correlation between wind direction and violations at the Dawsonville monitor. The wind rose correlates wind direction and all 1-hour average ozone monitor readings that are higher than 75 ppb. The illustration clearly demonstrates the association between violations of the standard and emissions originating from metro Atlanta located due south and power plants located due west of Dawsonville.

Geography/topography – There are no geographical factors identified that affect the area.

Jurisdictional – All counties in Atlanta-Sandy Springs-Gainesville, GA-AL CSA except Chambers County, Alabama, are within Georgia and fall within the jurisdiction of Georgia EPD. Though Chambers County has been included in the nine-factor analysis for nonattainment area boundaries, no attainment/nonattainment recommendation has been made for this county.

The Atlanta Regional Commission (ARC) is the federally designated MPO for all or portions of 18 counties within the 19-county Atlanta Urbanized Area: Barrow, Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, Spalding, and Walton. ARC is directly responsible for developing a long-range Regional Transportation Plan (RTP) and short-range Transportation Improvement Program that conform to the air quality goals established in the SIP, according to the guidelines outlined in the federal Metropolitan Planning and Transportation Conformity regulations. A small portion of the Atlanta Urbanized Area extends into Hall County. In February 2003, the Gainesville-Hall County MPO (GHMPO) was designated for the Gainesville Urbanized Area; the planning boundary for the GHMPO covers Hall County in its entirety. Hall County is included in Atlanta's existing ozone and PM2.5 nonattainment areas. The ARC performs the planning and technical work required by the Transportation Conformity Rule, including, by agreement with the GHMPO, the emissions modeling for all 20 counties that comprise the Atlanta Ozone Nonattainment area, including Hall County and Carroll County (which is not part of any MPO), and documents the analysis in a combined Conformity Determination Report.

Dawson County is not part of the Atlanta Urbanized Area or MPO. The inclusion of Dawson in the Atlanta nonattainment area would create significant regional planning problems, further complicating the metropolitan transportation planning process, including scheduling and conformity. Extensive technical work required to expand the transportation model would take at least two years.

The 33 counties in Atlanta-Sandy Springs-Gainesville, GA-AL CSA include 21 existing nonattainment whole or partial counties under the 1997 ozone standard and the 1997 annual PM2.5 standard. Twenty of these counties comprise the current Atlanta ozone nonattainment area. The same 20 counties and part of one other county in Atlanta-Sandy Springs-Gainesville, GA-AL CSA are part of the Atlanta PM2.5 nonattainment area. See Appendix G for maps of the existing nonattainment areas.

Level of Control of Emissions – All of the counties listed are either part of the Atlanta 8-hour ozone nonattainment area or have been designated as part of an area that contributes to the level of ozone in the Atlanta 8-hour ozone nonattainment area in accordance with Georgia Air Quality Control Rule 391-3-1-.03(8)(e). Therefore, the level of NOx and VOC emissions controls in these counties is more stringent than in other areas of the state. In addition to the existing rules, Georgia Power's Plants Bowen, Branch, Hammond, McDonough, Scherer, Wansley, and Yates contain affected units under the Clean Air Interstate Rule (CAIR) and the Georgia Multipollutant Rule.

As mentioned previously, there are no power plants and no major point sources located in Dawson County. Total annual NOx emissions are 851.7 tons (2005 inventory) of which 65% is from mobile sources, 19% is from non-road sources, and 15% is from area sources. Therefore, there are no large emission sources that can be controlled. The 2006-2008 design value is 77 ppb, which is only 2 ppb from meeting the standard. Therefore, the Dawson monitor should

meet the standard very soon and it would not be appropriate to link it to the rest of Atlanta.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following 21 Georgia counties are recommended to be designated nonattainment under the revised 2008 ozone NAAQS: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Heard (partial), Henry, Newton, Paulding, Rockdale, Spalding, and Walton. The recommended Heard County partial area is identical to the existing partial county boundary of the existing $PM_{2.5}$ nonattainment area (see appendix D for definition of partial-county boundaries).

Note that this list contains all counties that are currently designated as nonattainment under the 1997 ozone NAAQS and one partial county[2] designated as nonattainment under the 1997 PM2.5 NAAQS.

Athens-Clarke County, GA

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 5. Scores are calculated for four counties in this area. The score for Clarke County with a violating monitor is the highest (four). The scores for the other three counties in this area are ranked from high to low, and are all equal to or smaller than one. These three counties are recommended as attainment counties according to these quantitative criteria.

Geography/topography – Athens-Clarke County, GA CBSA is contiguous to Atlanta-Sandy Springs-Gainesville, GA-AL CSA.

Meteorology – There are no meteorology factors identified that affect the area.

Jurisdictional – All counties are within Georgia and fall within the jurisdiction of Georgia EPD. Madison-Athens-Clarke-Oconee Transportation Study is the MPO for Athens-Clarke County and includes all of Athens-Clarke County, the northern half of Oconee County, and the southern portion of Madison County. There are no other jurisdictional issues associated with this area.

Level of Control of Emissions – Clarke, Madison, and Oconee counties have been designated as part of an area that contributes to the level of ozone in the Atlanta 8-hour ozone nonattainment area in accordance with Georgia Air Quality Control Rule 391-3-1-.03(8)(e). Therefore, the level of NOx and VOC emissions controls in these counties is more stringent than in other areas of the state.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following Georgia county is recommended to be designated nonattainment under the revised 2008 ozone standard: Clarke.

Augusta-Richmond County, GA-SC

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 6. Scores are calculated for six counties in this area. The score for Richmond County with a violating monitor

[2] The Heard County partial area is part of the Atlanta $PM_{2.5}$ nonattainment area.

is seven. The scores for the other five counties in this area are ranked from high to low, showing no other Georgia counties with a score higher than the threshold value of four. Based on this analysis, no other counties in Georgia are recommended as nonattainment.

Meteorology – There are no meteorology factors identified that affect the area.

Geography/topography – There are no geographical factors identified that affect the area.

Jurisdictional – Burke, Columbia, McDuffie, and Richmond County in Augusta-Richmond County, GA-SC CBSA are within Georgia and fall within the jurisdiction of Georgia EPD. Though two other counties in this CBSA area (Aiken and Edgefield County in South Carolina) have been included in the nine-factor analysis for nonattainment area boundaries, no attainment/nonattainment recommendation has been made for these counties.

The Augusta-Richmond County Planning Commission, the MPO for this bi-state area, includes the urbanized portions of Aiken County, South Carolina, and Columbia and Richmond Counties in Georgia. In cooperation with the Georgia Department of Transportation (GDOT) and the South Carolina Department of Transportation, the MPO is responsible for carrying out the transportation planning process. Georgia agencies take the lead for the Augusta area, coordinating all of the planning/modeling work with the adjacent state and member cities/counties.

Level of Control of Emissions – Richmond and Columbia Counties are part of an Early Action Compact Area for the 1997 ozone standard. As a result, additional open burning restrictions (which is both a NOx and a VOC control measure) apply in both counties and Stage I vapor recovery at gas stations (a VOC control measure) applies in Richmond County.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following Georgia county is recommended to be designated nonattainment under the revised 2008 ozone standard: Richmond.

Chattanooga-Cleveland-Athens, TN-GA

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 7. Scores are calculated for nine counties in this area, as well as one adjacent county with high emissions from point sources (Jackson County in AL). The score for Hamilton County in Tennessee with a violating monitor is the highest (nine). The scores for the other eight counties in this area are ranked from high to low, showing no other Georgia counties with a score higher than the threshold value of four. Based on this analysis, no counties in Georgia are recommended as nonattainment in this area.

Meteorology – There are no meteorology factors identified that affect the area.

Geography/topography – Jackson County in Alabama is contiguous to the Chattanooga-Cleveland-Athens, TN-GA CSA. Due to a large EGU and a large non-EGU source in this county, this county has been included in the nine-factor analysis for this CSA.

Jurisdictional – Catoosa, Dade and Walker County in Chattanooga-Cleveland-Athens, TN-GA CSA are within Georgia and fall within the jurisdiction of Georgia EPD. Though six other

counties in this CSA (Bradley, Hamilton, McMinn, Marion, Polk, and Sequatchie County in Tennessee) have been included in the nine-factor analysis for nonattainment area boundaries, no attainment/nonattainment recommendation has been made for these counties.

For the Chattanooga area's transportation planning and conformity processes, Tennessee agencies take the lead role. The Chattanooga-Hamilton County/North Georgia Transportation Planning Organization (TPO), located in Chattanooga, is the MPO for Hamilton County in Tennessee and the northern portions of Dade, Walker, and Catoosa Counties in Georgia. The TPO coordinates with GDOT and with Georgia's member cities/counties, and manages the travel demand modeling for the bi-state planning area. Georgia DOT prepares the emissions analyses and required documentation for transportation conformity in Walker and Catoosa, the Georgia counties designated nonattainment under the 1997 annual PM2.5 standard, and provides them to the TPO for inclusion in the conformity determinations.

The three Georgia counties in Chattanooga-Cleveland-Athens, TN-GA CSA include two existing nonattainment counties under the 1997 annual PM2.5 NAAQS.

Level of Control of Emissions – Catoosa, Walker, and Hamilton (TN) Counties are part of an Early Action Compact Area for the 1997 ozone standard. As a result additional VOC and NOx control measures are required in these counties. For the Georgia counties, the additional control measures are open burning restrictions (which is both a NOx and a VOC control measure) and Stage I vapor recovery at gas stations (a VOC control measure).

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, no Georgia counties are recommended to be designated nonattainment under the revised 2008 ozone standard.

Columbus-Auburn-Opelika, GA-AL

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 8. Scores are calculated for seven counties in this area. The score for Muscogee County, with a violating monitor, is the highest (5). The scores for the other six counties in this area are ranked from high to low, showing all Georgia counties with scores equal to or smaller than one.

Meteorology – There are no meteorology factors identified that affect the area.

Geography/topography – There are no geographical factors identified that affect the area.

Jurisdictional – Chattahoochee, Harris, Marion, and Muscogee in Columbus-Auburn-Opelika, GA-AL CSA are within Georgia and fall within the jurisdiction of Georgia EPD. Though three other counties in this CSA (Lee, Macon and Russell County in Alabama) have been included in the nine-factor analysis for nonattainment area boundaries, no attainment/nonattainment recommendation has been made for these counties.

The Columbus-Phenix City Metropolitan Planning Organization is the MPO for the Columbus region, and includes the counties of Muscogee and Chattahoochee in Georgia and parts of Russell and Lee in Alabama. All of the local governments within the Columbus MSA (Chattahoochee, Harris, Marion, Muscogee in Georgia and Russell in Alabama) are eligible to participate in the MPO process. As with the Augusta-Richmond County, GA-SC area, Georgia

agencies take the lead for this bi-state area, coordinating the planning/modeling work with the adjacent state and member cities/counties.

Level of Control of Emissions – There are no factors regarding level of control of emissions identified that affect this area.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following Georgia county is recommended to be designated nonattainment under the revised 2008 ozone standard: Muscogee.

Macon-Warner Robins-Fort Valley, GA

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 9. Scores are calculated for seven counties in this area. The score for Bibb County, with a violating monitor, is six. The scores for the other six counties in this area are ranked from high to low, showing two Georgia counties (Houston and Monroe) with scores higher than the threshold value of four.

Meteorology – There are no meteorology factors identified that affect the area.

Geography/topography – There are no geographical factors identified that affect the area.

Jurisdictional – All counties are within Georgia and fall within the jurisdiction of Georgia EPD. Bibb and part of Monroe County were originally designated as nonattainment under the 1997 ozone standard. They now form the Macon ozone maintenance area.

This area falls under the transportation planning jurisdictions of two independent MPOs and, for non-urbanized areas, GDOT. The Macon MPO handles the transportation planning requirements for Bibb County and part of Jones County. With GDOT, they also are responsible for the existing Macon transportation conformity requirements. Warner Robins is an independent MPO that handles the transportation planning requirements for Houston County and part of Peach County.

Of the seven Georgia counties in the Macon-Warner Robins-Fort Valley CSA, Bibb and part of Monroe form the Macon ozone maintenance area under the 1997 ozone standard and the Macon nonattainment area under the 1997 annual PM2.5 NAAQS.

Level of Control of Emissions – In response to the 1997 ozone standard, all seven of the counties and seven cities within the CSA formed the Middle Georgia Clean Air Coalition (MGCAC). As a result of MGCAC activities, ozone season open burning restrictions (a NOx and VOC control measure) were adopted into Georgia's air quality regulations. MGCAC also adopted a number of voluntary measures including public education initiatives, school bus retrofits, commuter strategies, a resolution supporting anti-idling measures, and alternative fuel policies. A summary of the major initiatives of MGCAC is shown in Appendix A. Also, Jones and Monroe counties have been designated as part of an area that contributes to the level of ozone in the Atlanta 8-hour ozone nonattainment area in accordance with Georgia Air Quality Control Rule 391-3-1-.03(8)(e). Therefore, the level of NOx and VOC emissions controls in these counties is more stringent than in other areas of the state.

Of the 6894 tons/year of NOx emissions from Houston County, 3608 tons/year are from on-road mobile sources and 1894 tons/year are from major point sources. Interstate 75 runs through a

major portion of Houston County and thirty-four percent of the vehicle miles traveled (VMT) is attributable to interstate traffic. Since on-road mobile source emissions are generally proportional to VMT, 36% of the on-road mobile NOx emissions (about 1227 tons/year) are from interstate traffic which could not be reduced as part of an attainment SIP. As a measure to reduce mobile emissions, Robins Air Force Base, the largest employer in Houston County, has been working closely with the Georgia DOT and Clean Air Campaign to provide commuter option services in order to reduce vehicle emissions.

Of the 1894 tons/year of point source emissions, all but 21 tons per year are emitted by two industrial facilities (Cemex in Clinchfield - 1184 tons/year and Anchor Glass in Warner Robins – 689 tons/year). All of the 1184 tons/yr from Cemex is emitted by the facility's cement kiln. Cemex burns tires in the cement kiln as a method of reducing NOx emissions. This NOx control measure was determined to constitute RACT for LaFarge Building Materials in Atlanta (the only other portland cement facility in Georgia) as part of the Atlanta 1-hour ozone attainment SIP. All of the 689 tons/year of NOx from Anchor Glass is emitted by the facilities two glass melting furnaces. Glass melting furnace No. 1 is equipped with oxy-firing, a control measure to reduce NOx, that has been recognized as RACT for ozone in other states. Thus, two of the three significant point sources within Houston County are already equipped with emission reduction measures that have been recognized as RACT.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following Georgia counties are recommended to be designated nonattainment under the revised 2008 ozone standard: Bibb and Monroe (partial). The Division has determined that, due to the significant level of control of both mobile and point source NOx emissions and the various jurisdictional issues (not in existing ozone nonattainment area, separate MPO), Houston County is not included in the recommended nonattainment area even though the quantitative score for this county (six) is above the presumptive threshold level (greater than four). The recommended Monroe County partial area is slightly different than the existing partial county boundary of the existing ozone maintenance area and PM2.5 nonattainment area (see Appendix D).

Dalton, GA

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 10. Scores are calculated for two counties in this area. The score for Murray County, with a violating monitor, is zero. The score for the other county in this area (Whitfield) is five, which is higher than the threshold value of four.

Meteorology –In Georgia, high ozone days occur under the influence of several meteorological conditions, including air stagnation events and "leftover" ozone buildup in an air layer close to the earth's surface. The violations of the ozone national air quality standard at Fort Mountain (located in Murray County) appear to occur for different reasons. The Fort Mountain site is located at 2400 feet and experiences different weather condition than the other ozone monitors throughout the state. EPD has evaluated the conditions when an exceedance occurs and finds that the violations at Fort Mountain have largely been due to long-range transport of ozone from out of state, typically from the Tennessee Valley. Pollution from these out-of-state sources is carried long distances by the upper level winds, which impact on the Fort Mountain monitoring site. The impact of any local sources of ozone or ozone precursor pollution on the Fort Mountain site is very minimal. For more details see Appendix F.

Geography/topography – The monitor in Murray County is located at Fort Mountain in the Cohutta Wilderness Area (a Federal Class I area). This high elevation monitor is especially susceptible to impacts from long-range transport; therefore, only the portion of Murray County that forms the current Murray County ozone maintenance area should be included in the nonattainment area.

Jurisdictional – Murray and Whitfield Counties are within Georgia and fall within the jurisdiction of Georgia EPD. A portion of Murray County was originally designated as nonattainment under the 1997 ozone standard. This portion of Murray County now forms the Murray County ozone maintenance area.

The Dalton-Whitfield County MPO, housed within the North Georgia Regional Development Center (RDC), does the transportation planning for Whitfield County. Georgia DOT does the transportation planning for the existing Murray County ozone nonatttainment area.

Level of Control of Emissions – There are no factors regarding level of control of emissions identified that affect this area.

Conclusion –Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following Georgia county is recommended to be designated nonattainment under the revised 2008 ozone NAAQS: Murray (partial). The recommended Murray County partial area is identical to the existing Murray County ozone nonattainment area (see Appendix D for definition of partial county boundaries).

RECOMMENDATIONS

Georgia EPD recommends the following areas in Georgia be designated nonattainment under the revised 2008 ozone standard:

- Atlanta Ozone Nonattainment Area (21 counties): Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Heard (partial), Henry, Newton, Paulding, Rockdale, Spalding, and Walton.
- Athens Ozone Nonattainment Area (1 county): Clarke.
- Augusta Ozone Nonattainment Area (1 county): Richmond.
- Columbus Ozone Nonattainment Area (1 county): Muscogee.
- Macon Ozone Nonattainment Area: Bibb and Monroe (partial).
- Murray County Ozone Nonattainment Area: Murray (partial).

References

U.S. EPA (2008) Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards. December 4, 2008 memorandum.

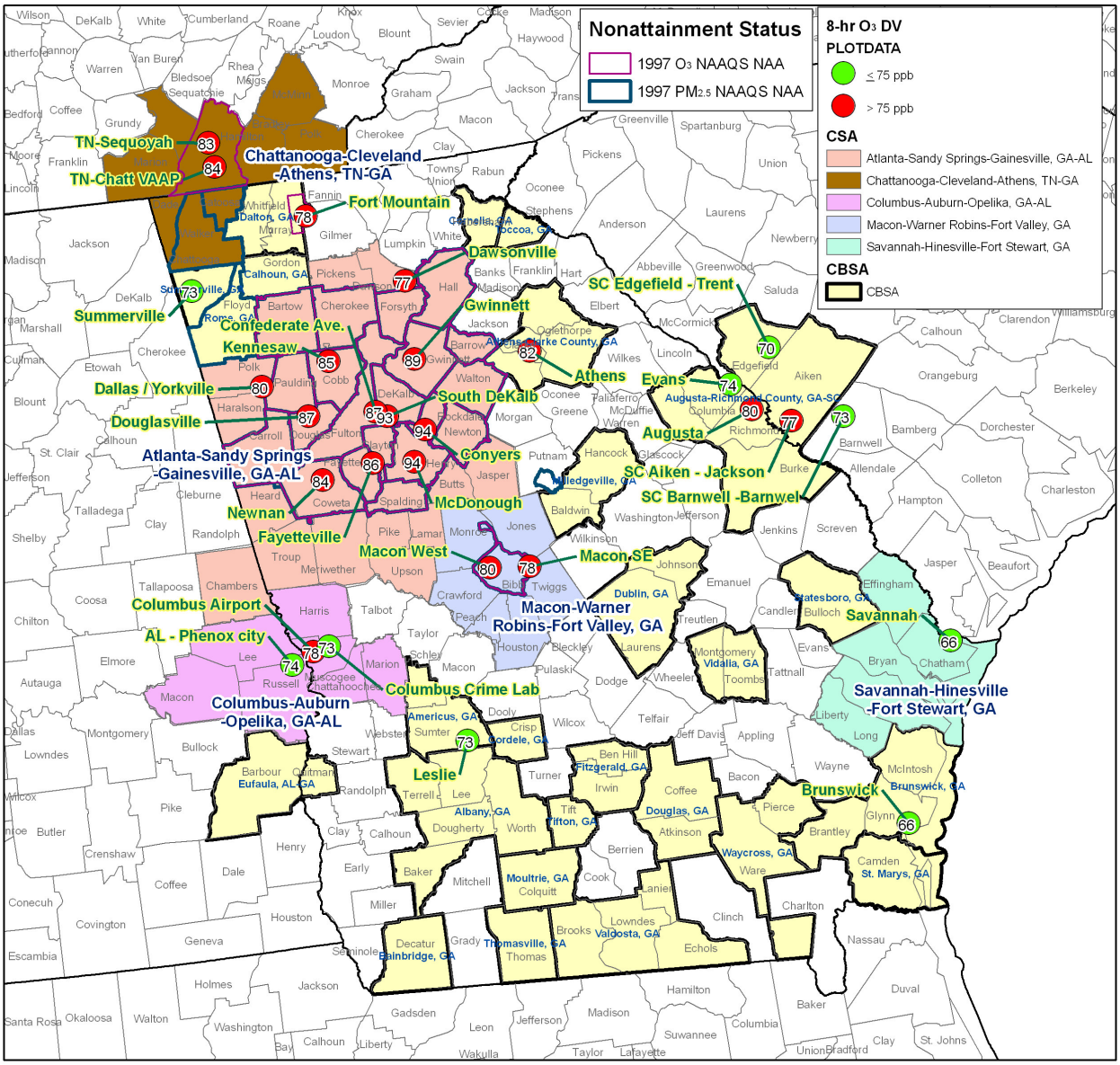


Figure 1. Ozone monitors and CSA/CBSA boundaries associated with potential nonattainment areas in Georgia under the 2008 ozone NAAQS. Ozone design values are based on 2006-2008 ozone data (except monitors in South Carolina which are based on 2005-2007 ozone data). Nonattainment area boundaries under the 1997 ozone NAAQS are outlined in red, and nonattainment area boundaries under the 1997 PM2.5 NAAQS are outlined in blue.

Table 1. 2006-2008 DVs and 2005-2007 DVs of 8-hr ozone at FRM monitors.

AIRS_ID	County	Station Name	2006-2008 DV	2005-2007 DV
Atlanta-Sandy Springs-Gainesville, GA-AL				
13-067-0003	Cobb, GA	Kennesaw	0.085	0.087
13-077-0002	Coweta, GA	Newnan	0.084	0.085
13-085-0001	Dawson, GA	Dawsonville	0.077	0.079
13-089-0002	De Kalb, GA	South DeKalb	0.093	0.093
13-097-0004	Douglas, GA	Douglasville	0.087	0.090
13-113-0001	Fayette, GA	Fayetteville	0.086	0.089
13-121-0055	Fulton, GA	Confederate Ave.	0.087	0.090
13-135-0002	Gwinnett, GA	Gwinnett	0.089	0.090
13-151-0002	Henry, GA	McDonough	0.094	0.095
13-223-0003	Paulding, GA	Dallas / Yorkville	0.080	0.083
13-247-0001	Rockdale, GA	Conyers	0.094	0.094
Athens-Clarke County, GA				
13-059-0002	Clarke, GA	Athens	0.082	0.083
Augusta-Richmond County, GA-SC				
13-245-0091	Richmond, GA	Augusta	0.080	0.081
13-073-0001	Columbia, GA	Evans	0.074	0.074
45-003-0003	Aiken, SC	SC Aiken - Jackson		0.077
45-011-0001	Barnwell, SC	SC Barnwell -Barnwell		0.073
45-037-0001	Edgefield, SC	SC Edgefield - Trenton		0.070
Chattanooga-Cleveland-Athens, TN-GA				
47-065-4003	Hamilton, TN	TN-Chatt VAAP	0.084	0.084
47-065-1011	Hamilton, TN	TN-Sequoyah	0.083	0.083
Columbus-Auburn-Opelika, GA-AL				
13-215-0008	Muscogee, GA	Columbus Airport	0.078	0.080
13-215-1003	Muscogee, GA	Columbus Crime Lab	0.073	0.073
01-113-0002	Russell, AL	AL - Phenix city	0.074	
01-113-0001	Russell, AL	AL - Russell Co		0.075
Macon-Warner Robins-Fort Valley, GA				
13-021-0013	Bibb, GA	Macon West	0.080	0.081
13-021-0012	Bibb, GA	Macon SE	0.078	0.079
Dalton, GA				
13-213-0003	Murray, GA	Fort Mountain	0.078	0.079
Other area				
13-055-0001	Chattooga, GA	Summerville	0.073	0.076
13-261-1001	Sumter, GA	Leslie	0.073	0.074
13-127-0006	Glynn, GA	Brunswick	0.066	0.065
13-051-0021	Chatham, GA	Savannah	0.066	0.067

Table 2. Quantitative factors for all counties of interest by CSA/CBSA area. County names in bold represent counties with violating monitors.

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles^2)	Urbanization (%)	Absolute Population Growth	VMT(miles/day)
Atlanta-Sandy Springs-Gainesville, GA-AL (CSA, include 33 counties)							
13067	**Cobb**	26,157	26,539	1,786.7	99	79,173	17,869,685
13077	**Coweta**	16,936	5,513	201.6	54	28,781	3,895,843
13085	**Dawson**	852	1,325	75.8	0	5,184	656,417
13089	**DeKalb**	22,646	32,119	2,482.7	100	68,136	20,381,808
13097	**Douglas**	4,174	4,766	462.5	80	31,796	4,191,150
13113	**Fayette**	3,535	4,530	463.1	78	14,058	2,848,500
13121	**Fulton**	38,376	41,618	1,543.5	98	174,887	31,292,202
13135	**Gwinnett**	22,824	29,558	1,359.9	97	179,945	18,766,956
13151	**Henry**	8,842	7,167	369.8	73	64,453	6,221,939
13223	**Paulding**	3,204	5,185	260.6	60	44,900	3,081,957
13247	**Rockdale**	3,147	4,086	536.7	85	11,485	2,759,090
13013	Barrow	2,802	3,299	284.5	47	20,572	1,851,387
13015	Bartow	34,036	7,273	165.5	58	16,133	4,901,274
13035	Butts	1,639	1,398	104.6	21	4,030	982,899
13045	Carroll	4,695	6,445	174.9	48	23,947	3,426,503
13057	Cherokee	5,992	8,679	334.9	75	60,608	5,235,049
13063	Clayton	13,030	9,649	1,658.4	99	33,825	7,294,490
13117	Forsyth	4,641	6,778	435.8	65	58,398	3,968,912
13139	Hall	7,481	10,885	353.8	67	39,262	4,868,071
13143	Haralson	1,545	3,239	91.1	17	2,882	1,126,045
13149	Heard	15,906	1,325	37.2	0	300	373,826
13159	Jasper	804	1,255	30.8	0	2,172	487,126
13171	Lamar	897	1,199	86.1	42	991	761,968
13199	Meriwether	1,765	2,013	44.8	16	219	930,936
13217	Newton	3,680	4,588	224.3	56	33,135	2,906,994
13227	Pickens	1,192	1,701	99.0	22	7,128	1,021,360
13231	Pike	583	831	62.7	0	3,404	516,717
13233	Polk	1,933	2,819	122.5	48	3,211	1,157,612
13255	Spalding	2,482	3,856	295.1	59	4,337	1,874,590
13285	Troup	3,857	6,075	142.0	56	4,609	2,684,391
13293	Upson	1,134	1,907	84.8	56	-53	758,642
13297	Walton	2,886	3,943	184.4	41	21,584	2,178,455
01017	AL-Chambers	1,855	3,134	61.3	50	-1,799	1,277,477
Athens-Clarke County, GA (CBSA, include 4 counties)							
13059	**Clarke**	4,421	6,970	840.2	91	12,098	2,731,323
13195	Madison	3,332	1,848	90.6	4	2,150	900,547
13219	Oconee	1,643	2,041	141.2	49	4,992	1,285,949
13221	Oglethorpe	642	1,053	28.6	0	1,253	452,002

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles^2)	Urbanization (%)	Absolute Population Growth	VMT(miles/day)
Augusta-Richmond County, GA-SC (CBSA, includes 6 counties)							
13245	**Richmond**	14,184	16,388	616.5	92	-2,278	5,123,371
45003	**SC-Aiken**	12,155	11,369	132.9	61	9,575	4,682,448
13033	Burke	1,593	2,124	26.8	25	477	959,189
13073	Columbia	3,869	6,415	307.9	74	19,315	2,558,186
13189	McDuffie	1,511	2,175	81.7	39	300	948,394
45037	SC-Edgefield	1,218	2,004	49.0	21	894	620,070
Chattanooga-Cleveland-Athens, TN-GA (CSA, include 9 counties)							
47065	**TN-Hamilton**	17,534	19,880	567.6	90	22,070	9,986,801
13047	Catoosa	3,239	3,737	328.4	71	8,610	2,206,657
13083	Dade	1,702	1,335	87.1	21	921	1,004,519
13295	Walker	2,363	3,962	136.7	56	3,433	1,595,362
47011	TN-Bradley	4,989	6,191	267.6	66	7,240	2,915,936
47107	TN-McMinn	8,567	4,869	113.9	41	2,960	2,108,025
47115	TN-Marion	5,503	2,239	55.7	21	368	1,892,547
47139	TN-Polk	829	948	36.9	0	-429	555,269
47153	TN-Sequatchie	630	712	42.8	0	1,947	392,886
01071	AL-Jackson	23,166	6,492	50.0	23	-1,000	2,317,981
Columbus-Auburn-Opelika, GA-AL (CSA, include 7 counties)							
13215	**Muscogee**	6,540	12,385	861.4	97	544	4,288,796
13053	Chattahoochee	576	1,246	59.8	79	-5,563	250,927
13145	Harris	1,593	2,246	51.1	3	5,277	1,182,016
13197	Marion	435	901	19.5	0	-155	259,748
01081	AL-Lee	4,490	6,650	189.1	67	14,976	3,640,079
01087	AL-Macon	1,740	4,186	39.5	50	-1,740	1,755,993
01113	AL-Russell	4,977	8,552	77.6	64	520	2,204,989
Macon-Warner Robins-Fort Valley, GA							
13021	**Bibb**	9,689	14,348	615.6	85	851	5,730,948
13079	Crawford	598	782	38.4	0	53	398,811
13153	Houston	6,894	8,051	294.0	85	19,760	3,673,648
13169	Jones	1,562	1,815	60.0	19	3,526	885,206
13207	Monroe	21,537	3,221	55.0	24	3,307	2,655,916
13225	Peach	1,957	2,071	156.7	64	1,834	1,478,725
13289	Twiggs	1,044	1,111	29.4	0	-292	866,520
Dalton, GA							
13213	**Murray**	1,894	2,024	106.0	28	3,890	898,487
13313	**Whitfield**	7,761	8,415	288.0	68	9,273	3,817,277

Table 3. Criteria of quantitative factors based on information for counties in Georgia with violating monitors. 25th percentile values of each factor for the 16 counties are used as the screening criteria.

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles^2)	Urbanization (%)	Absolute Population Growth	VMT(miles/day)
13151	Henry	8,842	7,167	369.8	73	64,453	6,221,939
13247	Rockdale	3,147	4,086	536.7	85	11,485	2,759,090
13089	DeKalb	22,646	32,119	2,482.7	100	68,136	20,381,808
13135	Gwinnett	22,824	29,558	1,359.9	97	179,945	18,766,956
13121	Fulton	38,376	41,618	1,543.5	98	174,887	31,292,202
13067	Cobb	26,157	26,539	1,786.7	99	79,173	17,869,685
13097	Douglas	4,174	4,766	462.5	80	31,796	4,191,150
13113	Fayette	3,535	4,530	463.1	78	14,058	2,848,500
13077	Coweta	16,936	5,513	201.6	54	28,781	3,895,843
13059	Clarke	4,421	6,970	840.2	91	12,098	2,731,323
13021	Bibb	9,689	14,348	615.6	85	851	5,730,948
13223	Paulding	3,204	5,185	260.6	60	44,900	3,081,957
13245	Richmond	14,184	16,388	616.5	92	-2,278	5,123,371
13215	Muscogee	6,540	12,385	861.4	97	544	4,288,796
13213	Murray	1,894	2,024	106.0	28	3,890	898,487
13085	Dawson	852	1,325	75.8	0	5,184	656,417
25th		**3,452**	**4,707**	**343**	**69**	**4,861**	**2,826,147**

Data are ranked by 2006-2008 DVs in each county from high to low.

Table 4. Evaluation of quantitative factors for Atlanta-Sandy Springs-Gainesville, GA-AL CSA.

FIPS	County	1997 Ozone Nonattainment	1997 PM2.5 Nonattainment	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
				Ratio	1	1	1	1		
13121	Fulton	Y	Y	11	1	1	1	1		15
13067	Cobb	Y	Y	8	1	1	1	1		12
13089	DeKalb	Y	Y	7	1	1	1	1		11
13135	Gwinnett	Y	Y	7	1	1	1	1		11
13077	Coweta	Y	Y	5	1		1	1		8
13151	Henry	Y	Y	3	1	1	1	1		7
13097	Douglas	Y	Y	1	1	1	1	1		5
13113	Fayette	Y	Y	1		1	1	1		4
13223	Paulding	Y	Y		1		1	1		3
13247	Rockdale	Y	Y			1	1			2
13015	Bartow	Y	Y	10	1		1	1		13
13063	Clayton	Y	Y	4	1	1	1	1		8
13057	Cherokee	Y	Y	2	1	1	1	1		6
13139	Hall	Y	Y	2	1	1	1	1		6
13117	Forsyth	Y	Y	1	1	1	1	1		5
13045	Carroll	Y	Y	1	1		1	1		4
13217	Newton	Y	Y	1			1	1		3
13013	Barrow	Y	Y				1			1
13297	Walton	Y	Y				1			1
13255	Spalding	Y	Y							0
13149	Heard		Y	5						5
13285	Troup			1	1					2
13227	Pickens						1			1
13085	Dawson						1			1
13035	Butts									0
13143	Haralson									0
13159	Jasper									0
13171	Lamar									0
13199	Meriwether									0
13231	Pike									0
13233	Polk									0
13293	Upson									0
01017	AL-Chambers									0

Table 5. Evaluation of quantitative factors for Athens-Clarke County, GA CBSA.

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles^2) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
		Ratio	1	1	1	1		
13059	Clarke	1	1	1	1			4
13219	Oconee				1			1
13195	Madison							0
13221	Oglethorpe							0

Table 6. Evaluation of quantitative factors for Augusta-Richmond County, GA-SC CBSA.

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles^2) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
		Ratio	1	1	1	1		
13245	Richmond	4	1	1		1		7
45003	SC-Aiken	4	1		1	1		7
13073	Columbia	1	1	1	1			4
13033	Burke							0
13189	McDuffie							0
45037	SC-Edgefield							0

Table 7. Evaluation of quantitative factors for Chattanooga-Cleveland-Athens, TN-GA CSA.

FIPS	County	1997 Ozone Nonatt	1997 PM2.5 Nonatt	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
				Ratio	1	1	1	1		
47065	TN-Hamilton		Y	5	1	1	1	1		9
01071	AL-Jackson		Y	7	1					8
47011	TN-Bradley			1	1		1	1		4
47107	TN-McMinn			2	1					3
47115	TN-Marion			2						2
13047	Catoosa		Y			1	1			2
47153	TN-Sequatchie									0
13295	Walker		Y							0
13083	Dade									0
47139	TN-Polk									0

Table 8. Evaluation of quantitative factors for Columbus-Auburn-Opelika, GA-AL CSA.

FIPS	County	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
		Ratio	1	1	1	1		
13215	Muscogee	2	1	1		1		5
01081	AL-Lee	1	1		1	1		4
01113	AL-Russell	1	1					2
13053	Chattahoochee			1				1
13145	Harris				1			1
13197	Marion							0
01087	AL-Macon							0

Table 9. Evaluation of quantitative factors for Macon-Warner Robins-Fort Valley, GA CSA.

FIPS	County	1997 Ozone Nonatt or Maintenance	1997 PM2.5 Nonattainment	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
				Ratio	1	1	1	1		
13021	Bibb	Y	Y	3	1	1		1		6
13153	Houston			2	1	1	1	1		6
13207	Monroe		Y	6						6
13079	Crawford									0
13169	Jones									0
13225	Peach									0
13289	Twiggs									0

Table 10. Evaluation of quantitative factors for Dalton, GA CBSA.

FIPS	County	1997 Ozone Nonatt or Maintenance	1997 PM2.5 Nonattainment	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²) and Urbanization (%)	Absolute Population Growth	VMT(miles/day)		Total
				Ratio	1	1	1	1		
13313	Whitfield			2	1		1	1		5
13213	Murray	Y		0						0

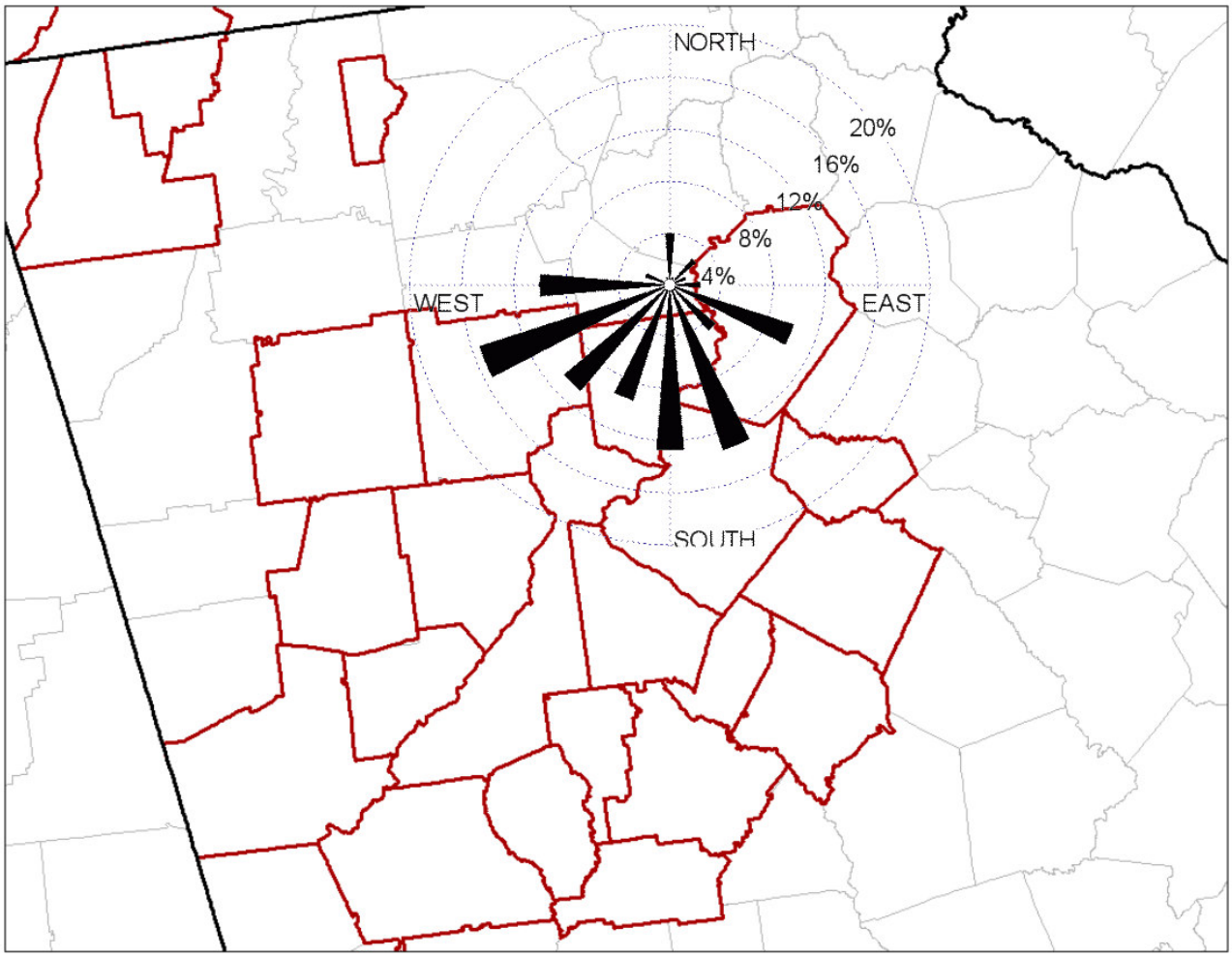
APPENDIX A

Major Initiatives of the Middle Georgia Clean Air Coalition

Category	Initiative(s)
Burn Ban	Lobbied Georgia DNR to initiate a seasonal burn ban for all MGCAC counties each May through October.
Public Education	Created a web page and sponsored Earth Day celebrations. Middle Georgia CAN! (Clean Air Network) worked to educate the community on new rulings through television, printed collateral material and email marketing
School Buses	School bus study served as basis for award of a 2005 US EPA grant for $225,000 to retrofit 18 Bibb, Houston, and Monroe County buses with particulate filters. Eleven Bibb County buses have been retrofitted thus far. Additional Federal funding that may be available for additional retrofits is awaiting approval by the Georgia Dept. of Transportation (GDOT).
Commuter Strategies	Partnered with GDOT and Middle Georgia Clean Cities Coalition (MGCCC) to perform a survey of commuter programs with area employers. Survey is now serving as the basis for the implementation of commuter strategies. Middle Georgia CAN! is an initiative of the MGCAC administered by MGCCC. Middle Georgia CAN! partnered with the Macon Transit Authority on its Customer Appreciation Day. Worked to educate the public on the environmental benefits of using public transit.
Truck Stop Electrification	Pursuing funding options for implementing Truck Stop Electrification (TSE) at a truck stop in Middle Georgia.
Strategy For The Future	MGCAC has published a comprehensive strategy as a guide to achieve and maintain attainment.
Anti-Idling Resolution	The MGCAC counties and cities have passed a resolution supporting anti-idling by all residents.
Alternative Fuels Resolution	The MGCAC approved a resolution for the development of policies in each city and county to support the purchase and use of alternative fuels in government fleets and school buses and to require request-for-purchase decisions to favor suppliers meeting alternative fuel standards.
Other Initiatives	MGCAC is currently working to implement Landfill Gas to Energy Generation, Energy Savings Performance Contracts, Energy Star Programs, and the adoption of “green” Municipal Procurement Policies.

APPENDIX B

Wind rose data from the Dawsonville Ozone Ambient Monitoring Station (2006-2008).
The percentages of each direction refer to the percent of occurrence when ozone concentrations are higher than 75 ppbv



APPENDIX C

NOx Control Measures

The following is a list of the NOx control measures that are required in the Georgia counties contained in this technical analysis and are not required state-wide.

FIPS	County	391-3-1-.02(2)(yy) – Emissions of Nitrogen Oxides from Major Sources	391-3-1-.02(2)(bbb) – Gasoline Marketing	391-3-1-.02(2)(jjj) – NOx Emissions form Electric Utility Steam Generating Units	391-3-1-,02(2)(lll) – NOx Emissions from Fuel-burning Equipment	391-3-1-.02(2)(mmm) – Nox Emissions from Stationary Gas Turbines and Stationary Engines used to Geneate Electricity	391-3-1-.02(2)(nnn) – NOx Emissions from Large Stationary Gas Turbines	391-3-1-.02(2)(rrr) – NOx Emissions from Small Fuel-Burning Equipment	391-3-1-.02(2)(sss) – Multipollutant Control for Electric Utility Steam Generating Units	391-3-1-.02(5)(b)1 &2 – Open Burning (May-Sept. restrictions)	391-3-1-.03(8) – Permit Requirements (Nonattainment NSR and additional – Additional Requirements for Electrical Generating Units ...)
Atlanta-Sandy Springs-Gainesville, GA-AL CSA											
13013	Barrow	X	X		X	X	X	X		X	X
13015	Bartow	X	X	X	X	X	X	X	X	X	X
13035	Butts		X		X	X	X			X	X
13045	Carroll	X	X		X	X	X	X		X	X
13057	Cherokee	X	X	X	X	X	X	X		X	X
13063	Clayton	X	X	X	X	X	X	X		X	X
13067	Cobb	X	X	X	X	X	X	X	X	X	X
13077	Coweta	X	X	X	X	X	X	X	X	X	X
13085	Dawson		X		X	X	X			X	X
13089	DeKalb	X	X	X	X	X	X	X		X	X
13097	Douglas	X	X	X	X	X	X	X		X	X
13113	Fayette	X	X	X	X	X	X	X		X	X
13117	Forsyth	X	X	X	X	X	X	X		X	X
13121	Fulton	X	X	X	X	X	X	X		X	X
13135	Gwinnett	X	X	X	X	X	X	X		X	X
13139	Hall	X	X		X	X	X	X		X	X
13143	Haralson		X		X	X	X			X	X
13149	Heard		X	X	X	X	X		X	X	X
13151	Henry	X	X	X	X	X	X	X		X	X
13159	Jasper		X		X	X	X			X	X
13171	Lamar		X		X	X	X			X	X
13199	Meriwether		X		X	X	X			X	X
13217	Newton	X	X		X	X	X	X		X	X
13223	Paulding	X	X	X	X	X	X	X		X	X
13227	Pickens		X		X	X	X			X	X
13231	Pike		X		X	X	X			X	X
13233	Polk		X		X	X	X			X	X
13247	Rockdale	X	X	X	X	X	X	X		X	X
13255	Spalding	X	X		X	X	X	X		X	X

FIPS	County	391-3-1-.02(2)(yy) – Emissions of Nitrogen Oxides from Major Sources	391-3-1-.02(2)(bbb) – Gasoline Marketing	391-3-1-.02(2)(jjj) – NOx Emissions form Electric Utility Steam Generating Units	391-3-1-,02(2)(lll) – NOx Emissions from Fuel-burning Equipment	391-3-1-.02(2)(mmm) – Nox Emissions from Stationary Gas Turbines and Stationary Engines used to Geneate Electricity	391-3-1-.02(2)(nnn) – NOx Emissions from Large Stationary Gas Turbines	391-3-1-.02(2)(rrr) – NOx Emissions from Small Fuel-Burning Equipment	391-3-1-.02(2)(sss) – Multipollutant Control for Electric Utility Steam Generating Units	391-3-1-.02(5)(b)1 &2 – Open Burning (May-Sept. restrictions)	391-3-1-.03(8) – Permit Requirements (Nonattainment NSR and additional – Additional Requirements for Electrical Generating Units ...)
13285	Troup		X		X	X	X			X	X
13293	Upson		X		X	X	X			X	X
13297	Walton	X	X		X	X	X	X		X	X
Athens-Clarke County, GA CBSA											
13059	Clarke		X		X	X	X			X	X
13195	Madison		X		X	X	X			X	X
13219	Oconee		X		X	X	X			X	X
13221	Oglethorpe										
Chattanooga-Cleveland-Athens, TN-GA CSA											
13033	Burke										
13073	Columbia									X	
13189	McDuffie										
13245	Richmond									X	
Chattanooga-Cleveland-Athens, TN-GA CSA											
13047	Catoosa									X	
13083	Dade										
13295	Walker									X	
Columbus-Auburn-Opelika, GA-AL CSA											
13053	Chattahoochee										
13145	Harris										
13197	Marion										
13215	Muscogee										
Macon-Warner Robins-Fort Valley, GA CSA											
13021	Bibb									X	
13079	Crawford									X	
13153	Houston									X	
13169	Jones		X		X	X	X			X	X
13207	Monroe		X	X	X	X	X		X	X	X
13225	Peach									X	
13289	Twiggs									X	
Dalton, GA CBSA											
13213	Murray										
13313	Whitfield										

APPENDIX D

Definitions of Partial-County Areas

Heard County Partial Area: The northeast portion that extends north of 33 degrees 24 minutes (north) to the Carroll County border and east of 85 degrees 3 minutes (west) to the Coweta County border.

Monroe County Partial Area: From 150' west of the US Hwy 23/Georgia Hwy 87 centerline at 33 degrees, 04 minutes, 30 seconds, proceed westward to 83 degrees, 49 minutes, 45 seconds; proceed due south to 150' north of the Georgia Hwy 18 centerline, proceed eastward 150' north of and parallel to the Georgia Hwy 18 centerline to 150' west of the US Hwy 23/Georgia Hwy 87 centerline, proceed northward 150' west of and parallel to the US Hwy 23/Georgia Hwy 87 centerline to 33 degrees, 04 minutes, 30 seconds.

Murray County Partial Area: The area enclosed to the east by Murray County's eastern border, to the north by latitude of 34.9004 degrees, to the west by longitude 84.7200 degrees, and to the south by 34.7040 degrees. All mountain peaks within the Chattahoochee National Forest area of Murray County that have an elevation greater than or equal to 2,400 feet and that are enclosed by contour lines that close on themselves.

APPENDIX E

Figure E-1: Map of Atlanta nonattainment area recommendations for the revised 2008 ozone NAAQS.

Figure E-2: Map of Athens nonattainment area recommendations for the revised 2008 ozone NAAQS.

Figure E-3: Map of Augusta nonattainment area recommendations for the revised 2008 ozone NAAQS.

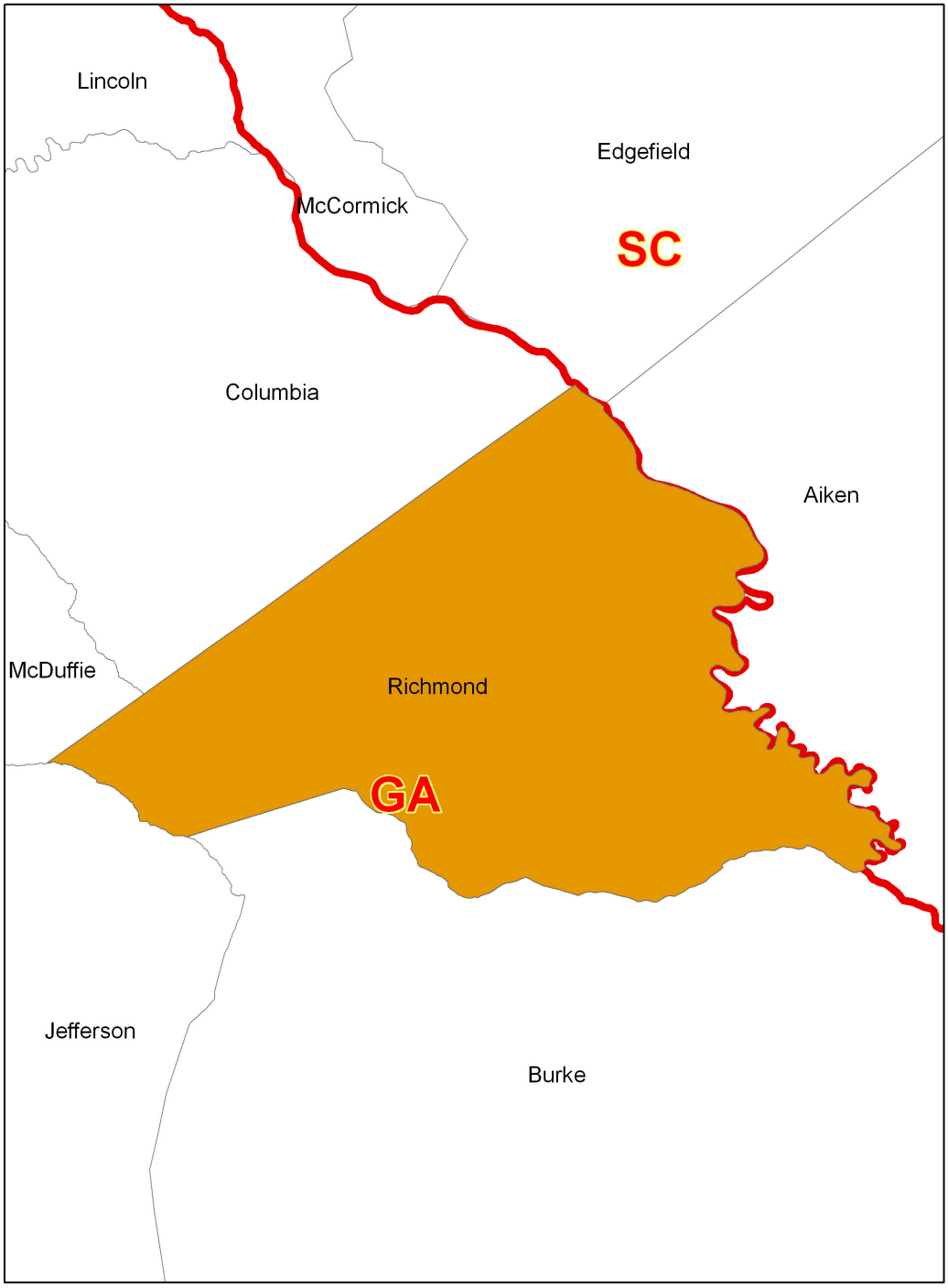
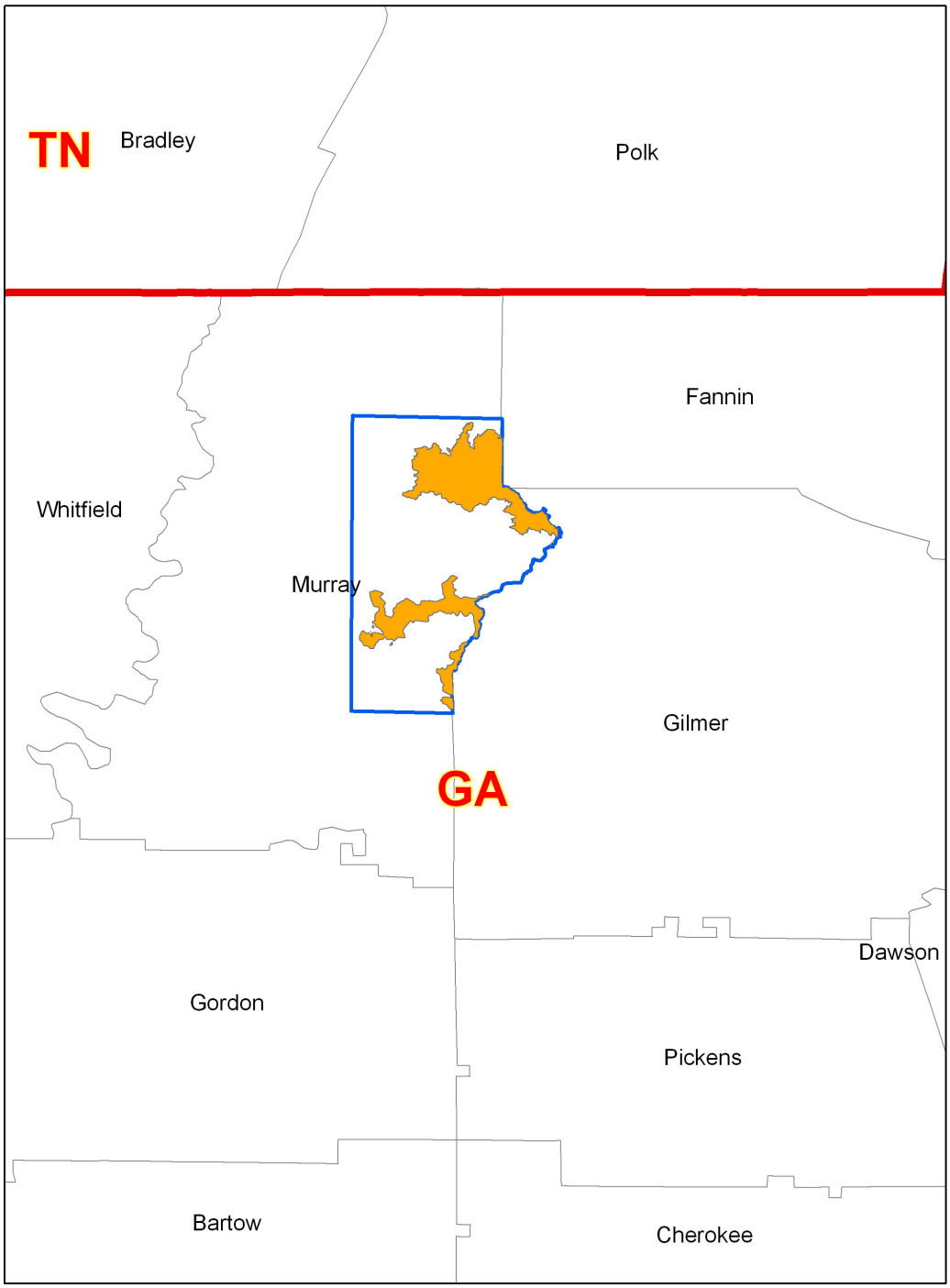


Figure E-4: Map of Columbus nonattainment area recommendations for the revised 2008 ozone NAAQS.

Figure E-5: Map of Macon nonattainment area recommendations for the revised 2008 ozone NAAQS.

Figure E-6: Map of Murray County nonattainment area recommendations for the revised 2008 ozone NAAQS.



APPENDIX F

Meteorological Discussion of Fort Mountain Ozone Episodes

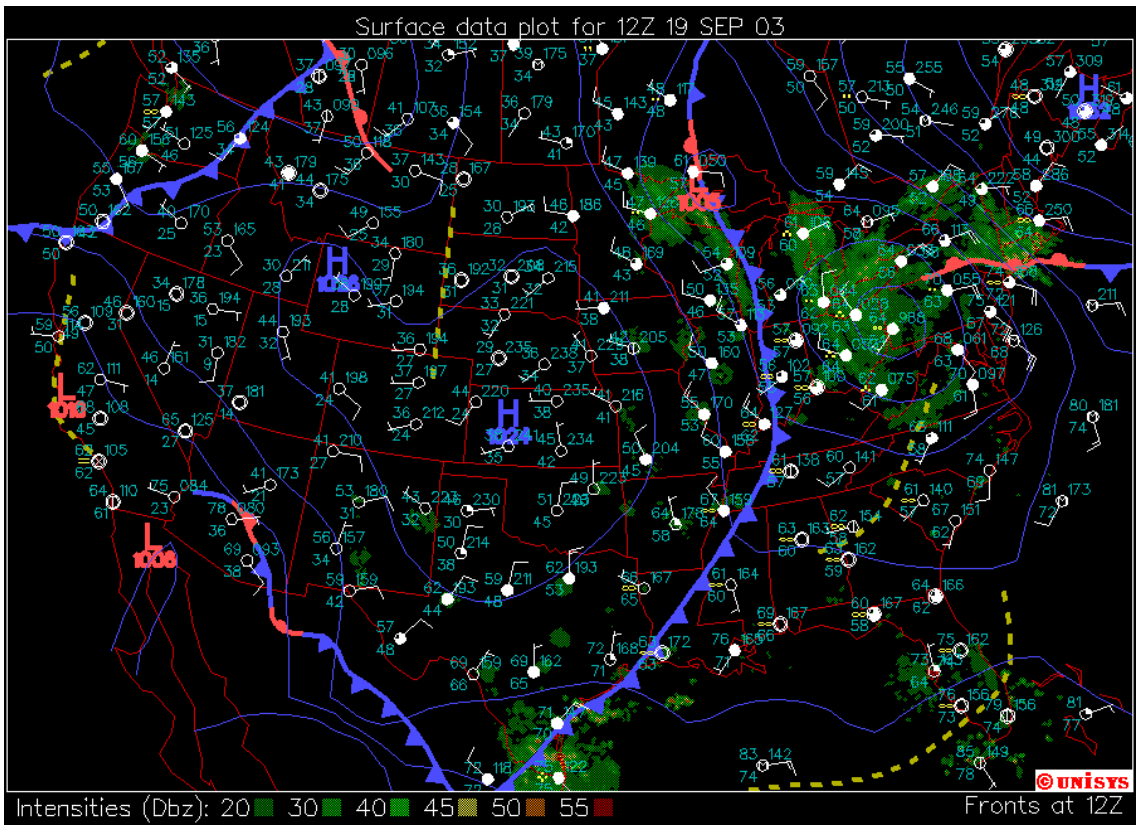
Fort Mountain is an interesting air quality site since the mountaintop is well exposed to different meteorological conditions throughout the year. These conditions affect ozone measurements during the summertime. Some possible meteorological influences that can affect ozone concentrations at Fort Mountain are buildup of residual ozone due to the rising and lowering of the mixing height during highly stable conditions and air stagnation events. The residual ozone is ozone that is mixed above the top of the mixed layer from the previous day's concentration and trapped aloft, and transported by low-level jet within that layer. Fort Mountain is better exposed to the residual ozone than urban sites around metro Atlanta, since it typically stays above the top of the mixing height during nighttime hours. Another meteorological influence that can affect ozone concentrations at Fort Mountain is transport from other high ozone regions or forest fire smoke areas. A third, but rare meteorological factor that can affect ozone levels at Fort Mountain is by stratospheric intrusion through a cutoff low tropopause fold mechanism. These episodes are rare this far south in latitude, since the jet stream position is typically further north, except during the transition seasons. The synoptic description of a transport episode, which could have contributed to the ozone violation at Fort Mountain on September 20, 2003, is given below.

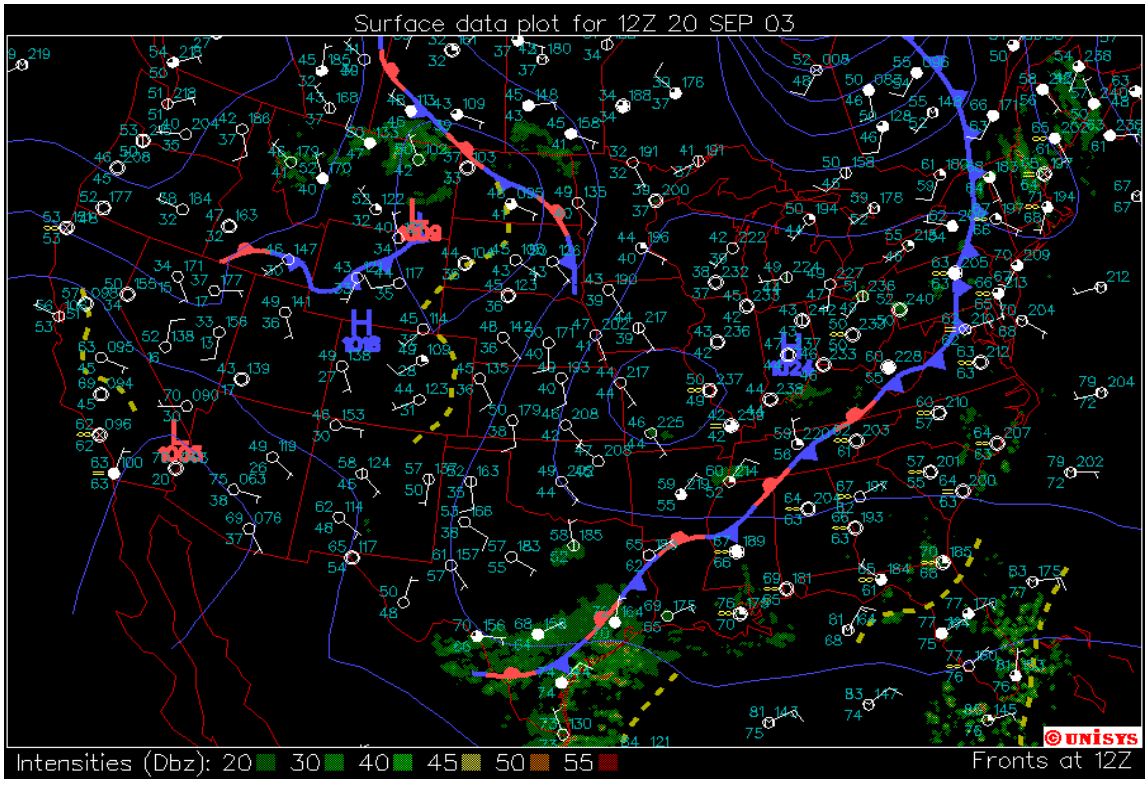
On September 19, 2003, Fort Mountain was situated on the leading edge of an approaching cold front with a weak surface trough over north Georgia. The front became occluded over the Southeast and began to pull a warm front northward. It is common in the Southeast for strong cold fronts to drag a surface low and warm front high in boundary layer Gulf moisture northward. A warm frontal passage typically occurs several hours ahead of the actual cold front passage, especially during the transition months when jet stream dynamics is strongest. On September 20, the occluded front was positioned just north of Fort Mountain, leaving the site in the warm-air sector. On September 21, the occluded front drifted to the south of Fort Mountain with strong high-pressure building to the north. The progression of this front is shown in the synoptic surface charts given in the Appendix. A much stronger Canadian cold front and associated trailing deep upper level trough approached Fort Mountain from the northwest on September 22. This frontal passage was accompanied by heavy precipitation on September 22.

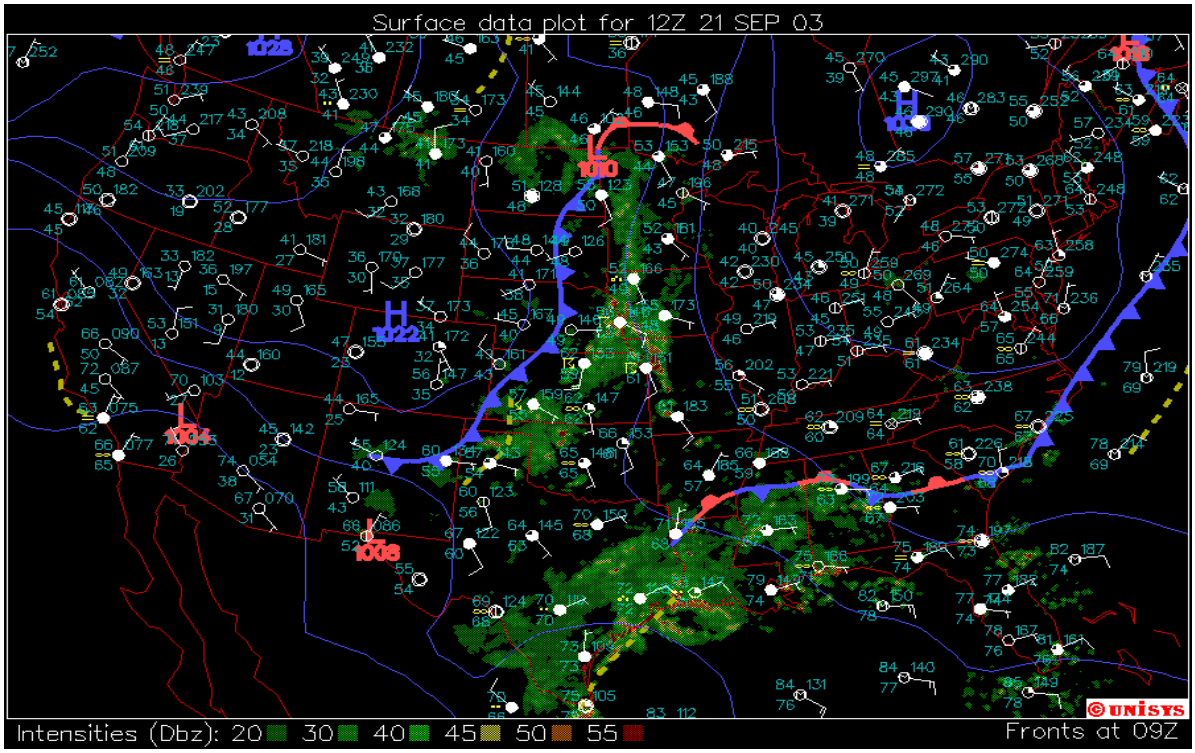
The 12Z sounding for September 19 shows good drying and NW flow at 850mb, which is due to subsidence. Wind rose data verified the NW flow to be the dominant direction for September 19 (see Appendix). Vertical motion back trajectories were run from Fort Mountain back 12 and 24 hours duration preceding the frontal passage. These trajectories indicated possible transport from the Tennessee Valley towards the Fort Mountain region late on September 19 and early on September 20. On September 21, the frontal passage occurred and winds shifted to a more easterly component, which brought in cleaner Atlantic air. This easterly component is verified by the 12Z sounding on Sept 21, and 12 -and 24-hour back trajectory analysis for 800Z on September 21. Wind rose data on September 20 and 21 shows a predominant SSE wind component. From this transport and wind analysis it seems reasonable that at least some transport from the Tennessee Valley occurred and contributed to elevated ozone levels at Fort Mountain. The gradual ozone buildup that occurred on September 19 and September 20 could be attributed to the pooling up and transport of higher concentration ozone ahead of the approaching cold front. Of particular interest was the observation that several locations in the Tennessee Valley reported elevated ozone levels on September 17 and 18. On September 18, one-hour average peak concentration values of 80-90 ppbv were observed just NW of Chattanooga.

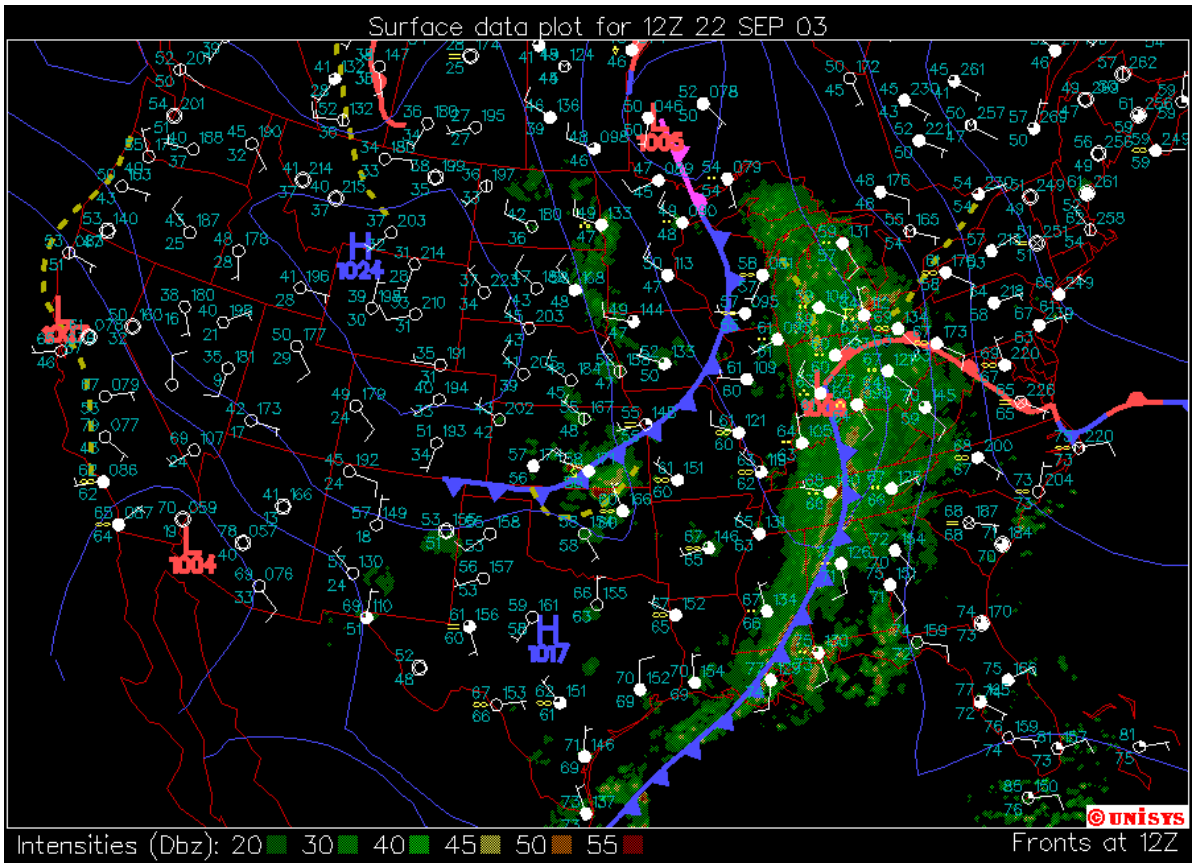
Two other regional ozone episodes were observed and analyzed which gave Fort Mountain 8-hour ozone violations. The reason these two particular cases were chosen is because six other high elevation stations (five in the Great Smokey Mountains and 1 in upstate South Carolina) experienced 8-hour violations on the same days (June 10, 2000 and September 10, 2002) and under different synoptic regimes. These episodes had different synoptic features, which illustrate how Fort Mountain can experience elevated ozone levels under different meteorological conditions. One episode (June 10, 2000) had a strong upper level ridge over the Southeast with the Atlantic High positioned of the South Carolina coast. The second episode (September 10, 2002) had a developing tropical low off the South Carolina coast and an associated Atlantic subtropical ridge. Upper air and surface meteorological charts for the June 10, 2000 and September 10, 2002 regional ozone episodes are presented in the Appendix. Balloon rawinsonde data and satellite imagery show both cases had a strong upper level high-pressure ridge as the dominant synoptic feature with good surface and mid-level drying.

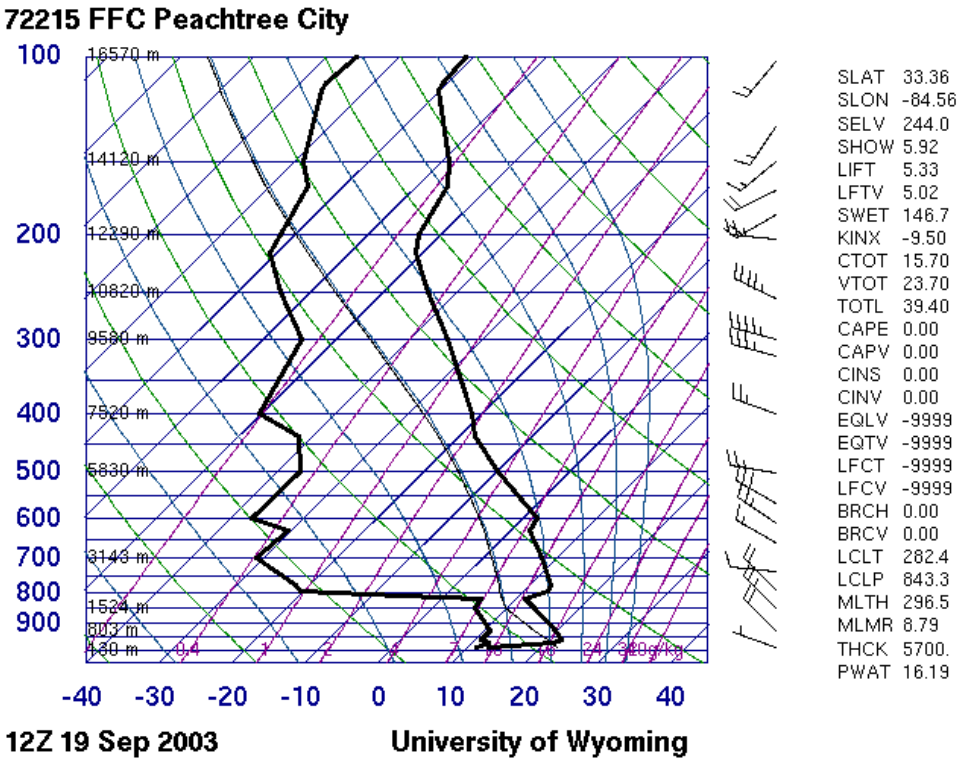
A strong surface and upper level ridge situated just off the east coast dominated the meteorology for the Southeast from June 9-11, 2000. GOES infrared images show very little clouds, other than a few fair weather cumulus, with strong drying in the lower and middle levels. The 12Z sounding on June 10 also shows a fairly strong inversion at the 800mb level and good subsidence with light and variable winds aloft. Upper-level charts indicated a ridge axis extended over north Georgia. Low-level winds were predominantly light, associated with a weak pressure gradient, and southeasterly, as part of the return flow off the east coast high. The synoptic conditions for the time period of September 9-11, 2002, were similar to the above in regards to a very dry atmosphere and light/variable winds. However, the southeast region was wedged between an area of low pressure moving up the east coast and a ridge of high pressure in the Midwest. The tropical low is shown just off the North Carolina coast in the 850mb level height and isotherm chart. The 12Z sounding on September 10 shows a good pocket of dry air near 500mb with light winds aloft. There is some high-level moisture near 300mb, which could be indicative of the cirrus outflow from the tropical system to the east. Satellite imagery shows a few clouds associated with scattered convection from Alabama westward, but little in Georgia with a pocket of dry air settled in place. Both of these cases show that residual buildup of ozone can occur at Fort Mountain under highly stable and subsident conditions during regional air stagnation episodes, even though the synoptic regimes can be different.

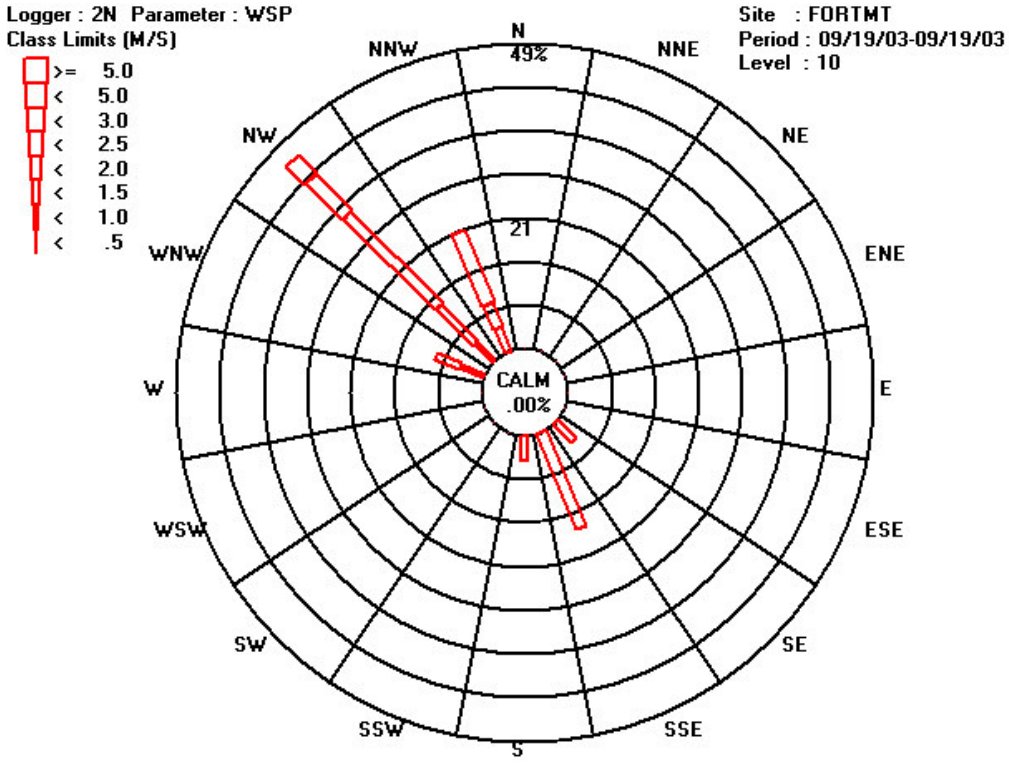




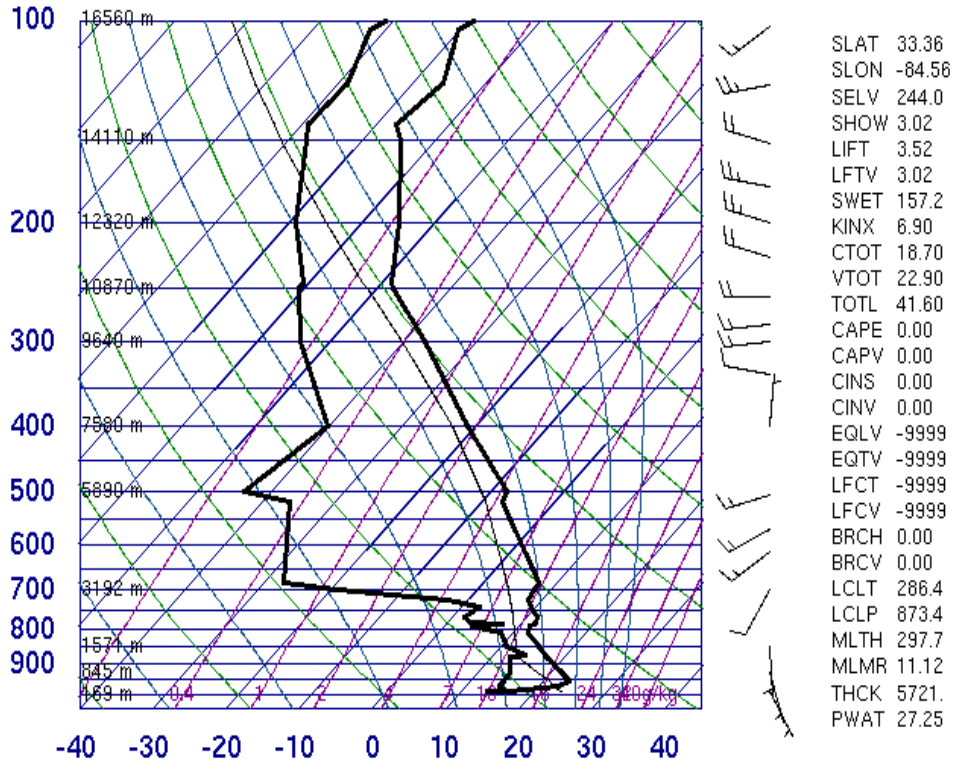




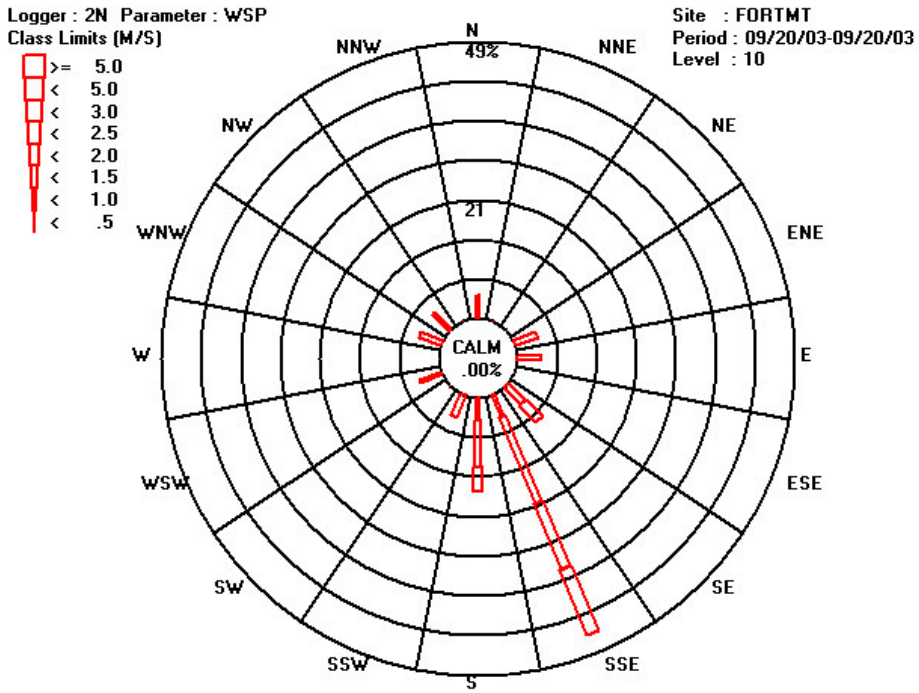


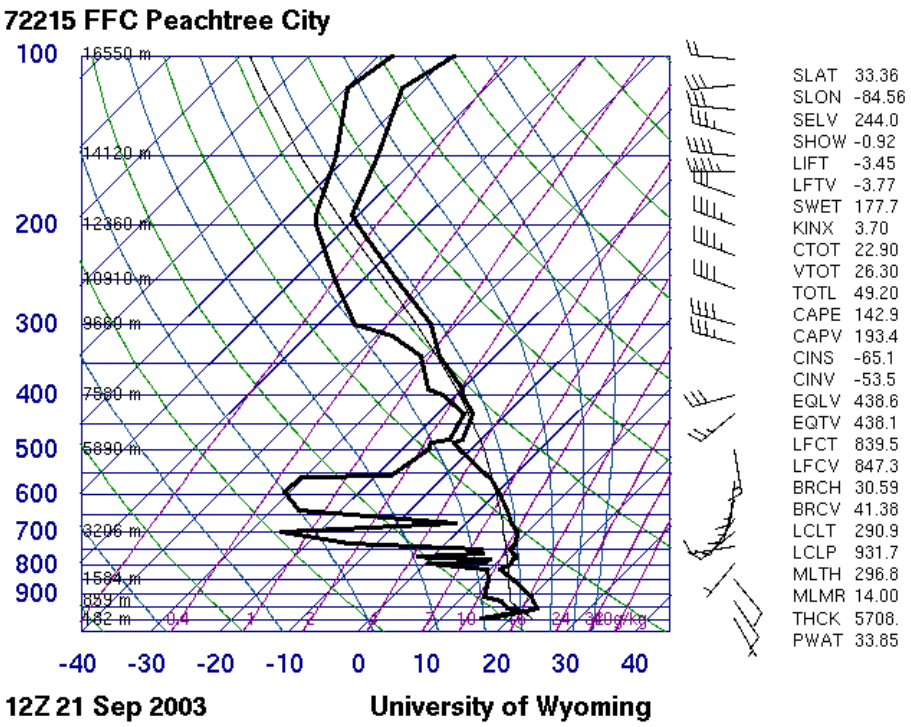


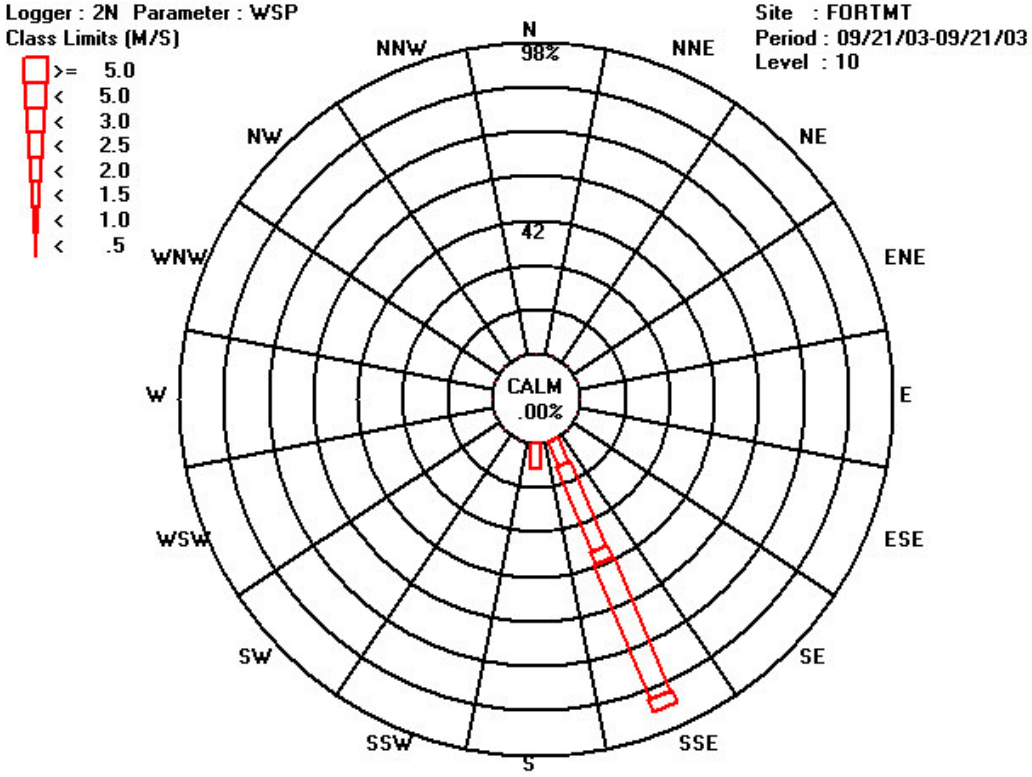
72215 FFC Peachtree City



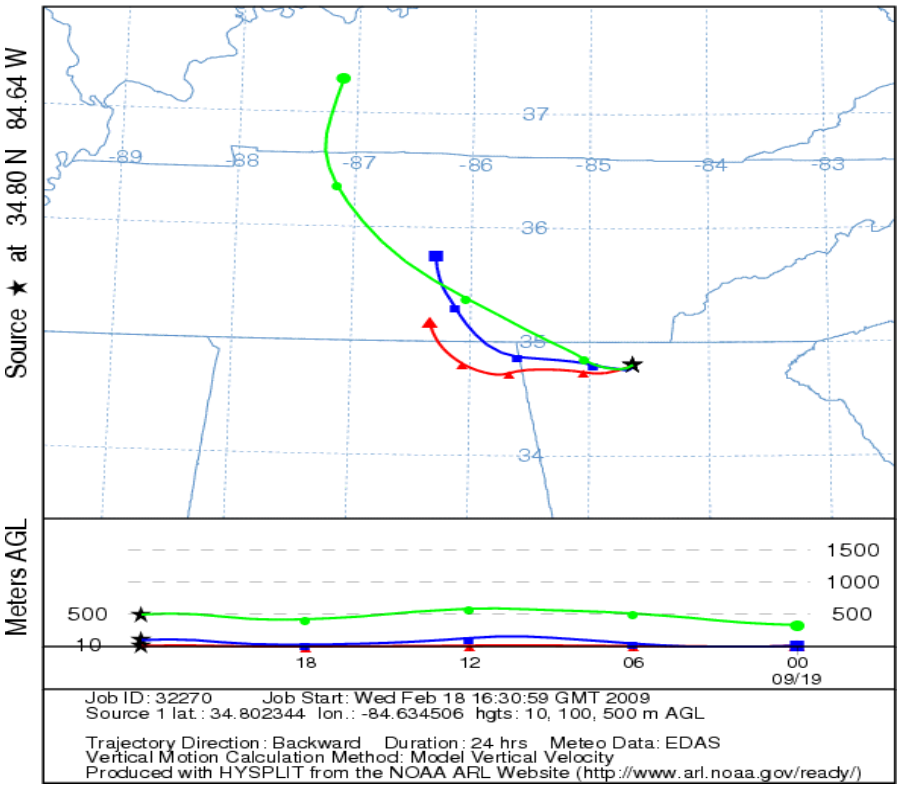
12Z 20 Sep 2003 **University of Wyoming**







NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 20 Sep 03
EDAS Meteorological Data



NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 20 Sep 03
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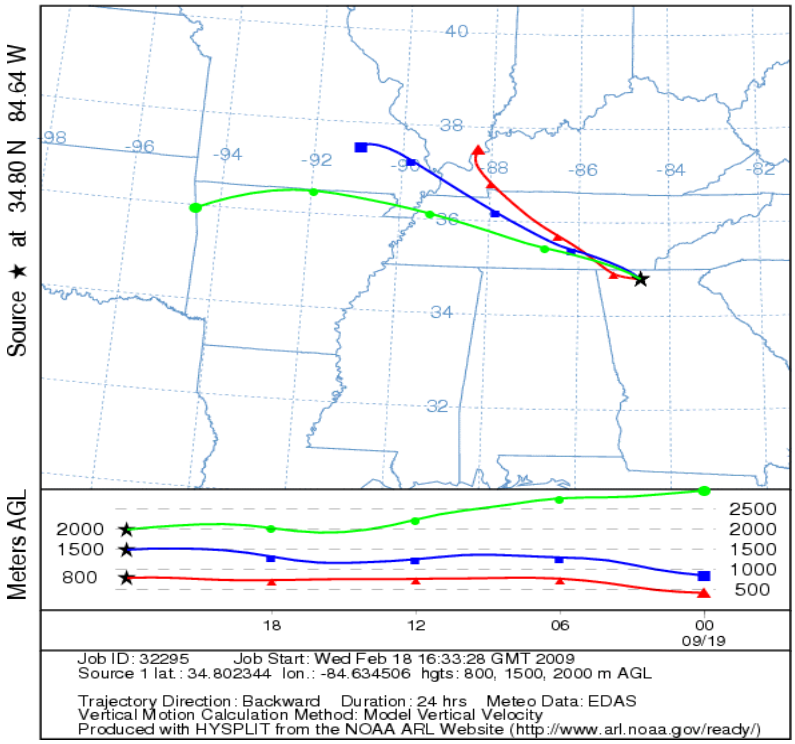

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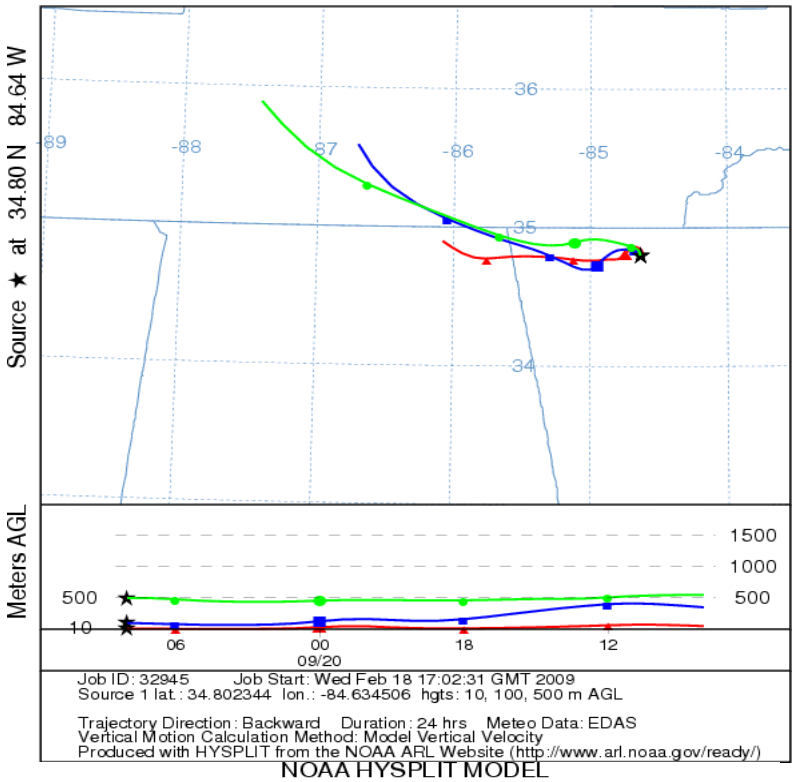
EDAS Meteorological Data



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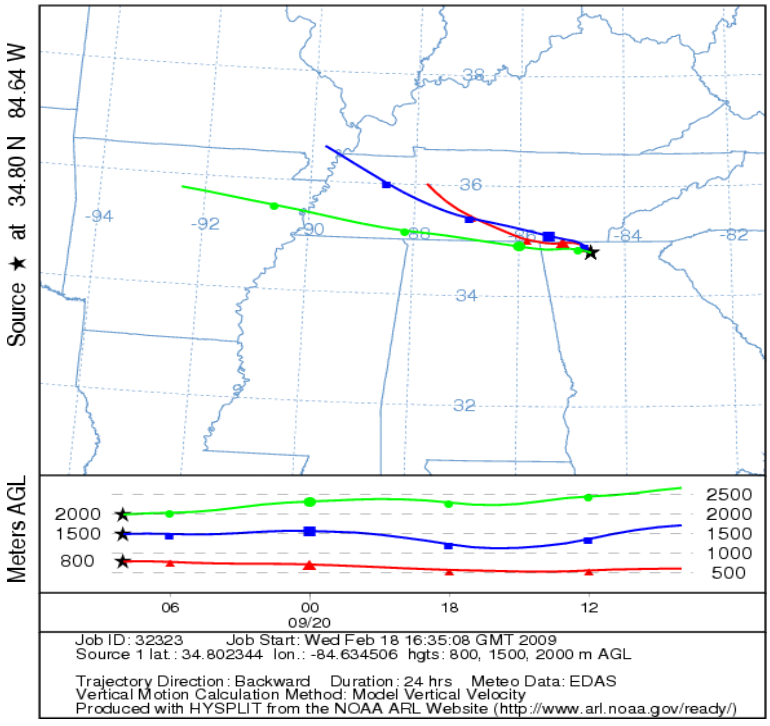
Trajectory Direction: Backward Duration: 24 hrs Meteo Data: EDAS
Vertical Motion Calculation Method: Model Vertical Velocity
Produced with HYSPLIT from the NOAA ARL Website (http://www.arl.noaa.gov/ready/)

NOAA HYSPLIT MODEL
Backward trajectories ending at 0800 UTC 20 Sep 03
EDAS Meteorological Data



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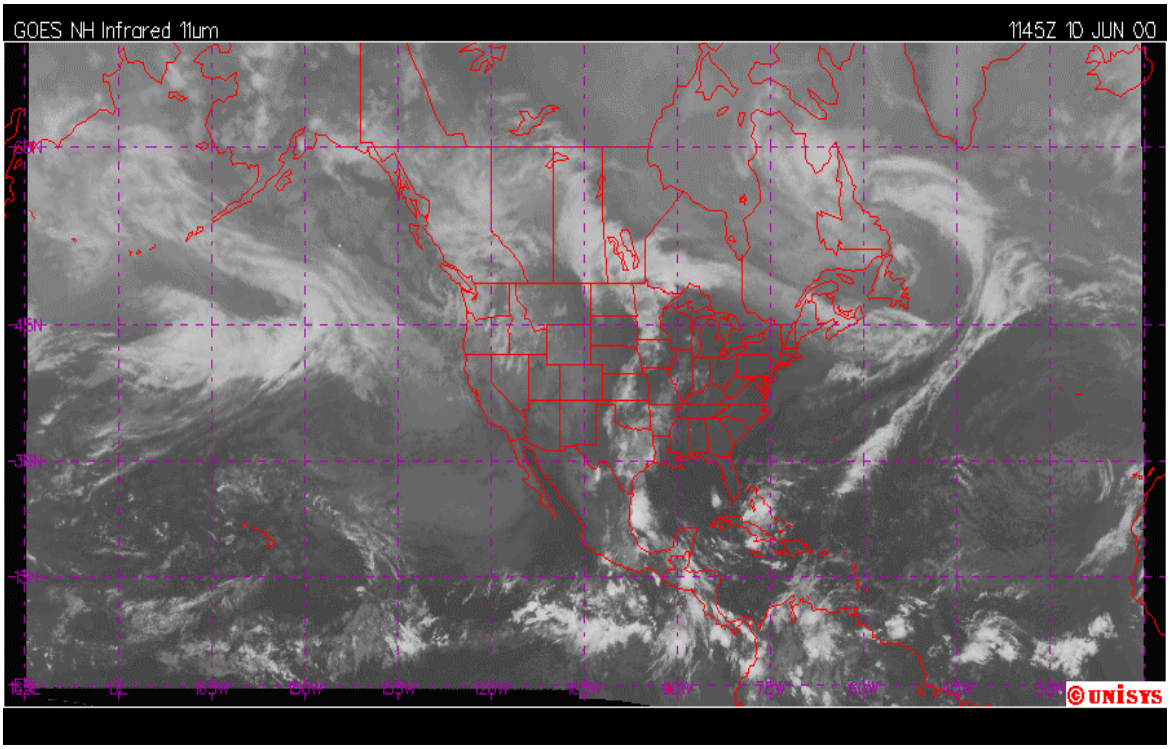
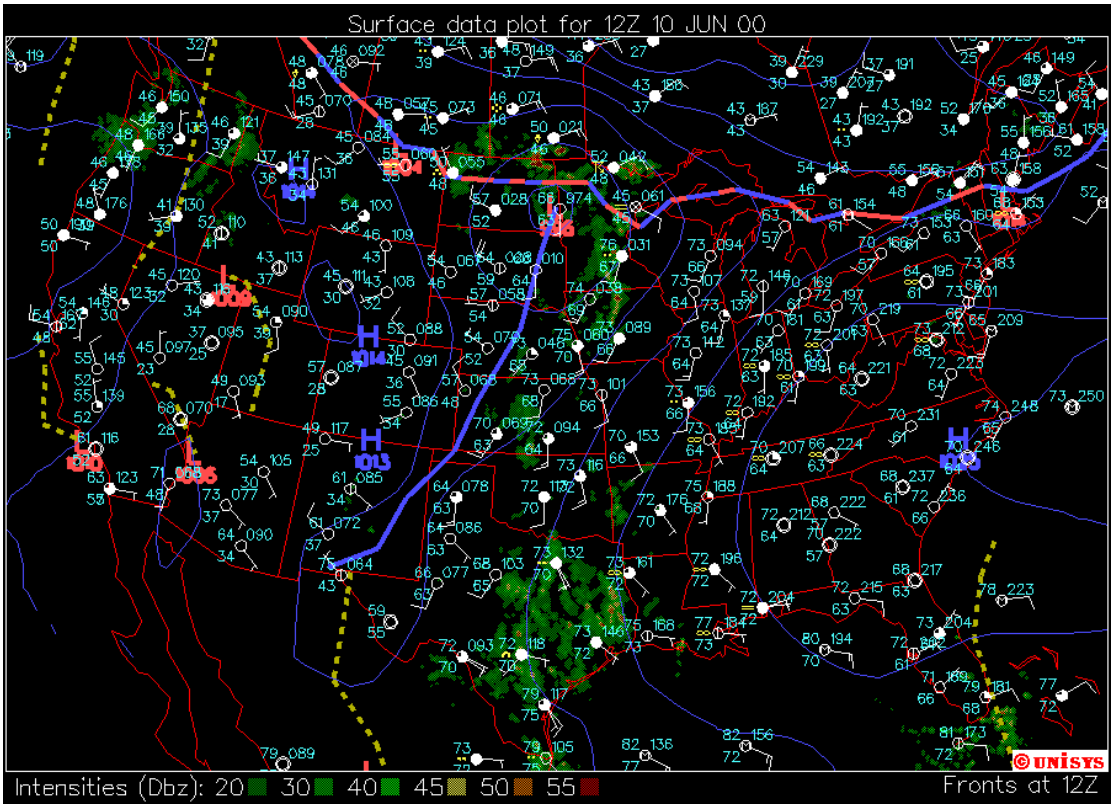
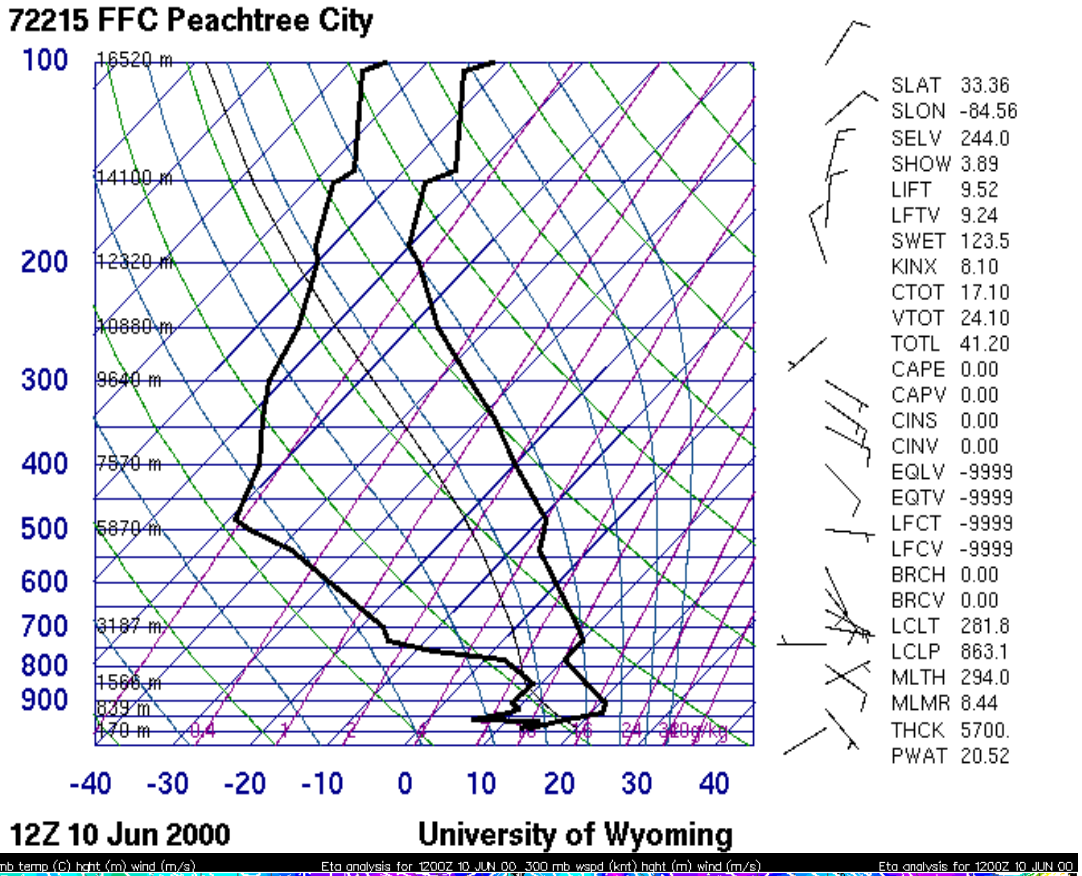
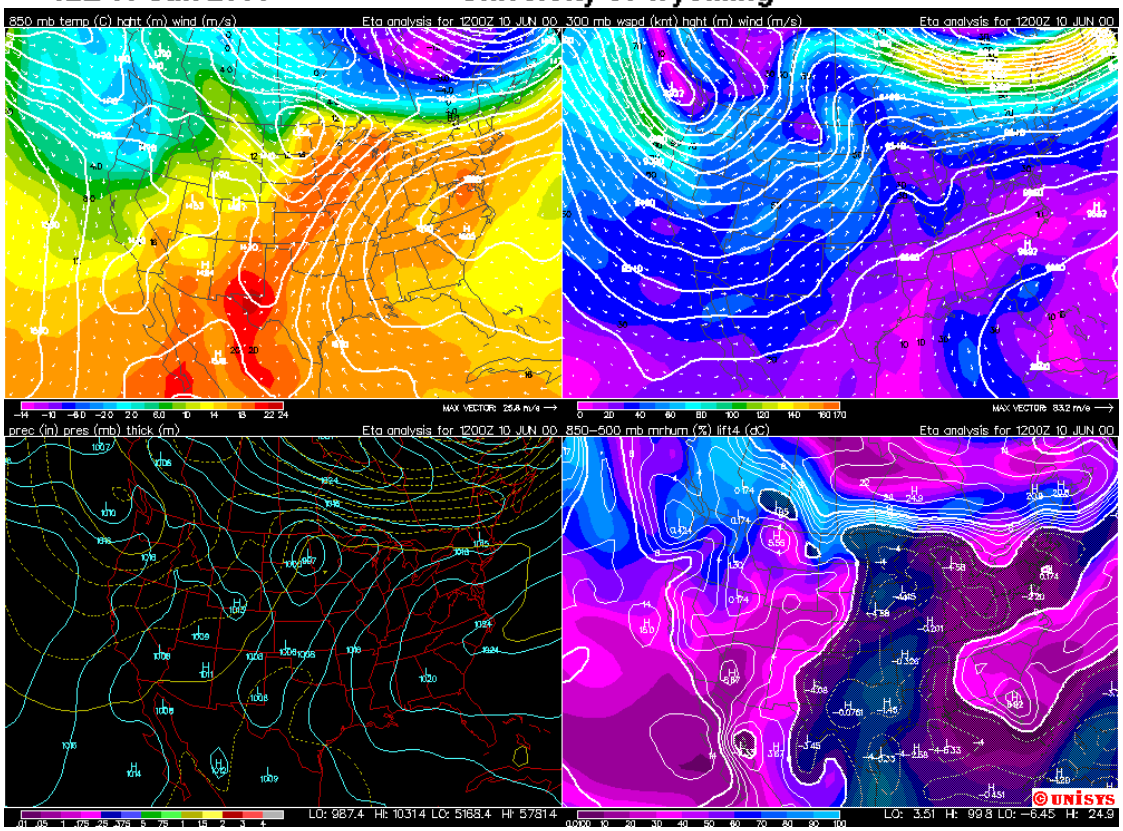
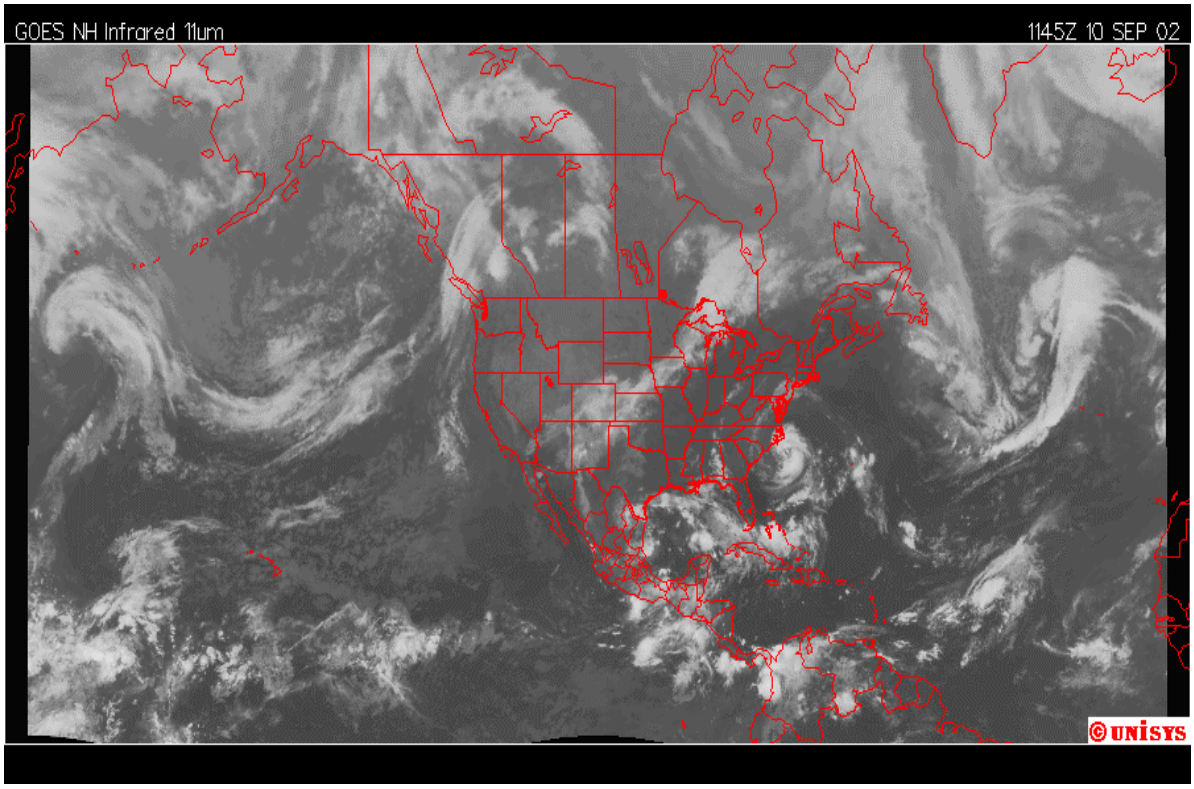
Trajectory Direction: Backward Duration: 24 hrs Meteo Data: EDAS
Vertical Motion Calculation Method: Model Vertical Velocity
Produced with HYSPLIT from the NOAA ARL Website (http://www.arl.noaa.gov/ready/)

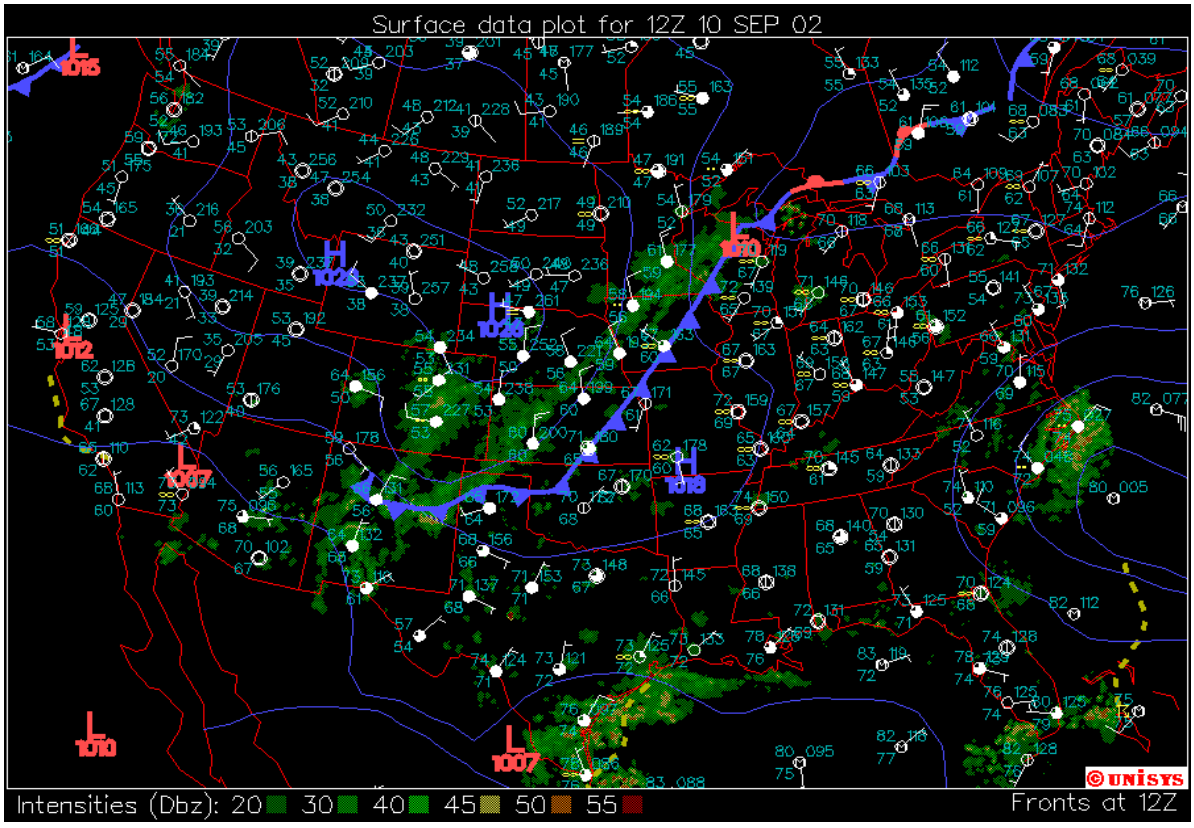


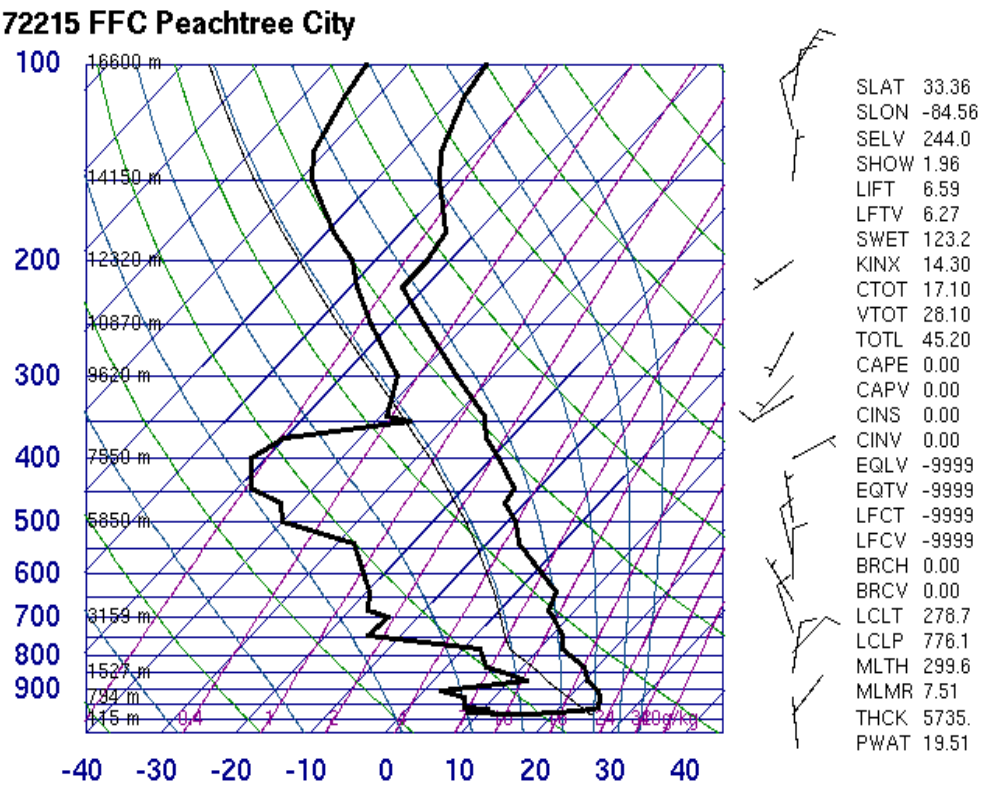


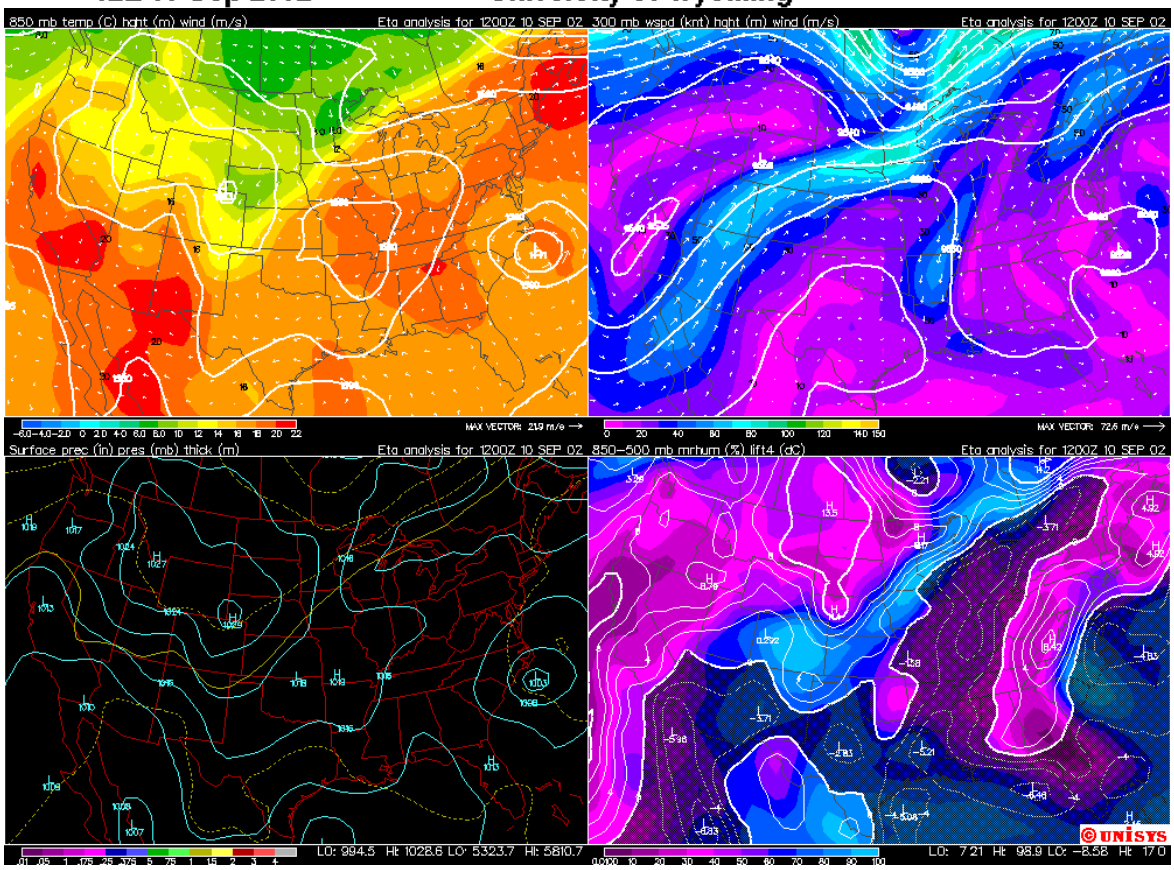












APPENDIX G

Existing Nonattainment Boundaries