GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Final Report for $PM_{2.5}$ Exceedances in Georgia during 2020

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1. Introduction

The current annual and 24-hour $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) are 12 $\mu g/m^3$ and 35 $\mu g/m^3$, respectively. Federal Reference Method (FRM) monitors collect $PM_{2.5}$ samples for 24 hours on filters while Federal Equivalent Method (FEM) monitors measures hourly $PM_{2.5}$ concentrations continuously. An exceedance of the $PM_{2.5}$ NAAQS occurs when the measured 24-hour $PM_{2.5}$ concentration is equal to or greater than 35.5 $\mu g/m^3$.

Since 2016, the Data and Modeling Unit (DMU) has developed an initial exceedance report for each $PM_{2.5}$ exceedance day.[1] These reports are completed within three business days of the exceedance and include a preliminary analysis of the air quality, meteorological, and emission data to aid in determining the cause of the $PM_{2.5}$ exceedance. For the initial reports, DMU focuses on 24-hour $PM_{2.5}$ NAAQS exceedances identified at FEM monitors because measurements at FRM monitors are not immediately available. FRM measurements are available several months after their sample collection because samples need to be transferred and analyzed in the laboratory. For sites with both FRM and FEM monitors, FEM measurements[2] can be replaced with FRM measurements for the purpose of design value calculations if the FRM monitor is designated as the "primary" monitor at the site. $PM_{2.5}$ design values (DVs) are the 3-year average NAAQS metrics that are compared to the NAAQS levels to determine when a monitoring site meets or does not meet the NAAQS.

This final $PM_{2.5}$ exceedance report will summarize $PM_{2.5}$ exceedances throughout Georgia in 2020. This report consists of three parts: (1) final 24-hour $PM_{2.5}$ concentrations for the days with the highest concentrations up to the 98th percentile at each monitor including the comparison with what was reported in the initial reports, (2) annual 98th percentile concentrations and design values at each $PM_{2.5}$ monitor, and (3) a summary of the findings. Non-regulatory FEM monitors are not included in this report since they are not comparable to the NAAQS for regulatory purposes and do not have official $PM_{2.5}$ design values. Figure 1 shows the locations of FRM, FEM, and speciation monitors across Georgia in 2020.

2. 24-hour $PM_{2.5}$ NAAQS Exceedances in 2020

In the following subsections, final daily $PM_{2.5}$ concentrations are reported for each monitor up to the 98th percentile value. The number of reported days varies depending on the number of creditable[3] samples as shown in Table 1. Each subsection also contains a discussion of any changes from the initially reported exceedance concentrations to the final exceedance concentrations along with a short description of the cause of the exceedances.

[1] Georgia DNR employees may download all initial $PM_{2.5}$ exceedance reports for 2020 at Initial $PM_{2.5}$ Exceedance Reports during 2020. The general public may obtain a copy of these reports by sending an e-mail to askEPD@gaepd.org and requesting the initial $PM_{2.5}$ exceedance reports during 2020 from the Air Protection Branch.

[2] An FEM monitor can be a primary monitor or a collocated monitor installed at a site with a filter based monitor (FRM). An FEM collocated monitor is used to provide supplemental particulate data at the site.

[3] Creditable samples are daily values in the combined site record that are given credit for data completeness. The number of creditable samples for a given year also governs which value in the sorted series of daily values represents the 98th percentile for that year. Creditable samples include daily values collected on scheduled sampling days and valid make-up samples taken for missed or invalidated samples on scheduled sampling days.

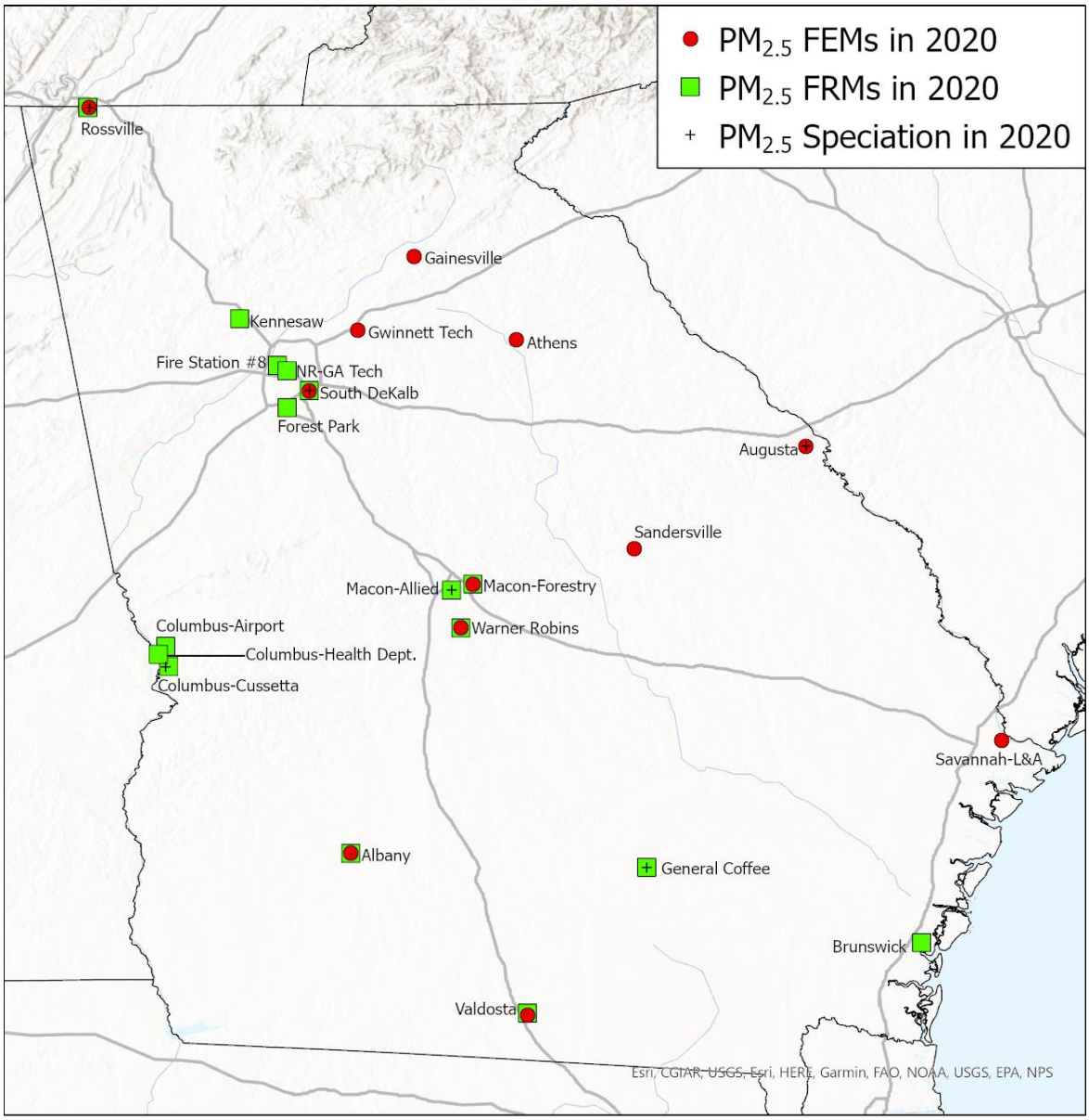

Figure 1. Locations of $PM_{2.5}$ FRM, FEM, and speciation monitors across Georgia in 2020.

Table 1. Annual number of creditable samples and the n^{th} maximum 24-hour average value corresponding to the 98^{th} percentile (Source: Table 1 of Appendix N to 40 CFR 50).

Annual number of creditable samples	the n^{th} maximum 24-hour average value corresponding to the 98th percentile
1 to 50	1
51 to 100	2
101 to 150	3
151 to 200	4
201 to 250	5
251 to 300	6
301 to 350	7
351 to 366	8

Table 2. Number of creditable samples and the n^{th} maximum 24-hour average value corresponding to the 98^{th} percentile at each $PM_{2.5}$ monitoring site in 2020.

Site Name	AQS ID	Annual number of creditable samples	the n^{th} maximum 24-hour average value corresponding to the 98^{th} percentile
Albany	13-095-0007	363	8
Athens	13-059-0002	361	8
Augusta*	13-245-0091	325	7
Brunswick	13-127-0006	107	3
Columbus-Airport	13-215-0008	121	3
Columbus-Cusseta*	13-215-0011	69	2
Columbus-Health Dept.	13-215-0001	121	3
Fire Station #8	13-121-0039	122	3
Forest Park	13-063-0091	121	3
Gainesville	13-139-0003	359	8
General Coffee*	13-069-0002	120	3
Gwinnett Tech	13-135-0002	361	8
Kennesaw	13-067-0003	120	3
Macon-Allied*	13-021-0007	116	3
Macon-Forestry	13-021-0012	366	8
NR-GA Tech	13-121-0056	121	3
Rossville*	13-295-0002	177	4
Sandersville	13-303-0001	353	8
Savannah-L&A	13-051-1002	365	8
South DeKalb*	13-089-0002	365	8
Valdosta	13-185-0003	122	3
Warner Robins	13-153-0001	362	8

* These sites have co-located $PM_{2.5}$ speciation monitors.

2.1. Albany (AQS ID: 13-095-0007)

At the Albany monitor in 2020, two exceedances were initially reported and confirmed based on FRM and FEM measurements.

Table 3. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Albany monitor (AQS ID: 13-095-0007) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	**39.0**	FRM	41	Saharan dust
20200626	2	**36.6**	FRM	38	Saharan dust
20201210	3	31.7	FEM	N/A	No exceedance documented
20200904	4	26.0	FEM	N/A	No exceedance documented
20200327	5	23.5	FRM	N/A	No exceedance documented
20200314	6	23.4	FRM	N/A	No exceedance documented
20200326	7	23.4	FRM	N/A	No exceedance documented
20200404	8	22.4	FRM	N/A	No exceedance documented

2.2. Athens (AQS ID: 13-059-0002)

At the Athens monitor in 2020, no exceedances were reported based on FEM measurements.

Table 4. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Athens monitor (AQS ID: 13-059-0002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	34.8	FEM Primary	N/A	No exceedance documented
20200903	2	23.0	FEM Primary	N/A	No exceedance documented
20200319	3	22.8	FEM Primary	N/A	No exceedance documented
20201211	4	22.6	FEM Primary	N/A	No exceedance documented
20200626	5	22.4	FEM Primary	N/A	No exceedance documented
20201212	6	20.2	FEM Primary	N/A	No exceedance documented
20201104	7	20.1	FEM Primary	N/A	No exceedance documented
20201231	8	19.7	FEM Primary	N/A	No exceedance documented

2.3. Augusta (AQS ID: 13-245-0091)

At the Augusta monitor in 2020, one exceedance was initially reported and confirmed based on FEM measurements.

Table 5. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Augusta monitor (AQS ID: 13-245-0091) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	**40.7**	FEM	41	Saharan dust
20201212	2	31.4	FEM	N/A	No exceedance documented
20201211	3	31.1	FEM	N/A	No exceedance documented
20200704	4	30.1	FEM	N/A	No exceedance documented
20200318	5	23.6	FEM	N/A	No exceedance documented
20200903	6	23.5	FEM	N/A	No exceedance documented
20200904	7	22.8	FEM	N/A	No exceedance documented

2.4. Brunswick (AQS ID: 13-127-0006)

At the Brunswick monitor in 2020, no exceedances were reported based on FRM measurements.

Table 6. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Brunswick monitor (AQS ID: 13-127-0006) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	33.6	FRM	No FEM	No exceedance documented
20201211	2	27.0	FRM	No FEM	No exceedance documented
20200801	3	16.0	FRM	No FEM	No exceedance documented

2.5. Columbus-Airport (AQS ID: 13-215-0008)

At the Columbus-Airport monitor in 2020, no exceedances were reported based on FRM measurements.

Table 7. Daily $PM_{2.5}$ concentrations at the Columbus-Airport monitor (AQS ID: 13-215-0008) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	32.3	FRM	No FEM	No exceedance documented
20200903	2	22.9	FRM	No FEM	No exceedance documented
20200406	3	19.0	FRM	No FEM	No exceedance documented

2.6. Columbus-Cusseta (AQS ID: 13-215-0011)

At the Columbus-Cusseta monitor in 2020, no exceedances were reported based on FRM measurements.

Table 8. Daily $PM_{2.5}$ concentrations up to the 98^{th} percentile value at the Columbus-Cusseta monitor (AQS ID: 13-215-0011) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	33.9	FRM	No FEM	No exceedance documented
20200316	2	18.2	FRM	No FEM	No exceedance documented

2.7. Columbus-Health Dept. (AQS ID: 13-215-0001)

At the Columbus-Health Dept. monitor in 2020, no exceedances were reported based on FRM measurements.

Table 9. Daily $PM_{2.5}$ concentrations up to the 98^{th} percentile value at the Columbus-Health Dept. monitor (AQS ID: 13-215-0001) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	31.4	FRM	No FEM	No exceedance documented
20200101	2	24.3	FRM	No FEM	No exceedance documented
20200903	3	23.0	FRM	No FEM	No exceedance documented

2.8. Fire Station #8 (AQS ID: 13-121-0039)

At the Fire Station #8 monitor in 2020, no exceedances were reported based on FRM measurements.

Table 10. Daily $PM_{2.5}$ concentrations at the Fire Station #8 monitor (AQS ID: 13-121-0039) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200705	1	31.6	FRM	No FEM	No exceedance documented
20200626	2	25.2	FRM	No FEM	No exceedance documented
20200903	3	24.1	FRM	No FEM	No exceedance documented

2.9. Forest Park (AQS ID: 13-063-0091)

At the Forest Park monitor in 2020, no exceedances were reported based on FRM measurements.

Table 11. Daily $PM_{2.5}$ concentrations up to the 98^{th} percentile value at the Forest Park monitor (AQS ID: 13-063-0091) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200705	1	30.7	FRM	No FEM	No exceedance documented
20200626	2	27.0	FRM	No FEM	No exceedance documented
20200903	3	24.1	FRM	No FEM	No exceedance documented

2.10. Gainesville (AQS ID: 13-139-0003)

At the Gainesville monitor in 2020, no exceedances were reported based on FEM measurements.

Table 12. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Gainesville monitor (AQS ID: 13-139-0003) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	34.6	FEM	N/A	No exceedance documented
20200704	2	32.5	FEM	N/A	No exceedance documented
20200903	3	26.2	FEM	N/A	No exceedance documented
20200626	4	22.9	FEM	N/A	No exceedance documented
20200302	5	21.4	FEM	N/A	No exceedance documented
20200705	6	19.0	FEM	N/A	No exceedance documented
20201212	7	18.8	FEM	N/A	No exceedance documented
20200902	8	18.8	FEM	N/A	No exceedance documented

2.11. General Coffee (AQS ID: 13-069-0002)

At the General Coffee monitor in 2020, no exceedance was initially reported due to the absence of FEM measurements. Later, one exceedance on June 26, 2020 was confirmed based on FRM measurements. For the exceedance on June 26, 2020 at the General Coffee monitor, no initial report was developed due to the absence of FEM measurement. However, the exceedance was likely due to Saharan dust associated with the state-wide Saharan dust event that caused elevated $PM_{2.5}$ levels across Georgia. This conclusion is supported by the $PM_{2.5}$ speciation data (Figure) which show high soil concentrations (26.3 $\mu g/m^3$).

Table 13. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the General Coffee monitor (AQS ID: 13-069-0002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	**38.4**	FRM	No FEM	Saharan dust
20200903	2	17.5	FRM	No FEM	No exceedance documented
20201229	3	15.9	FRM	No FEM	No exceedance documented

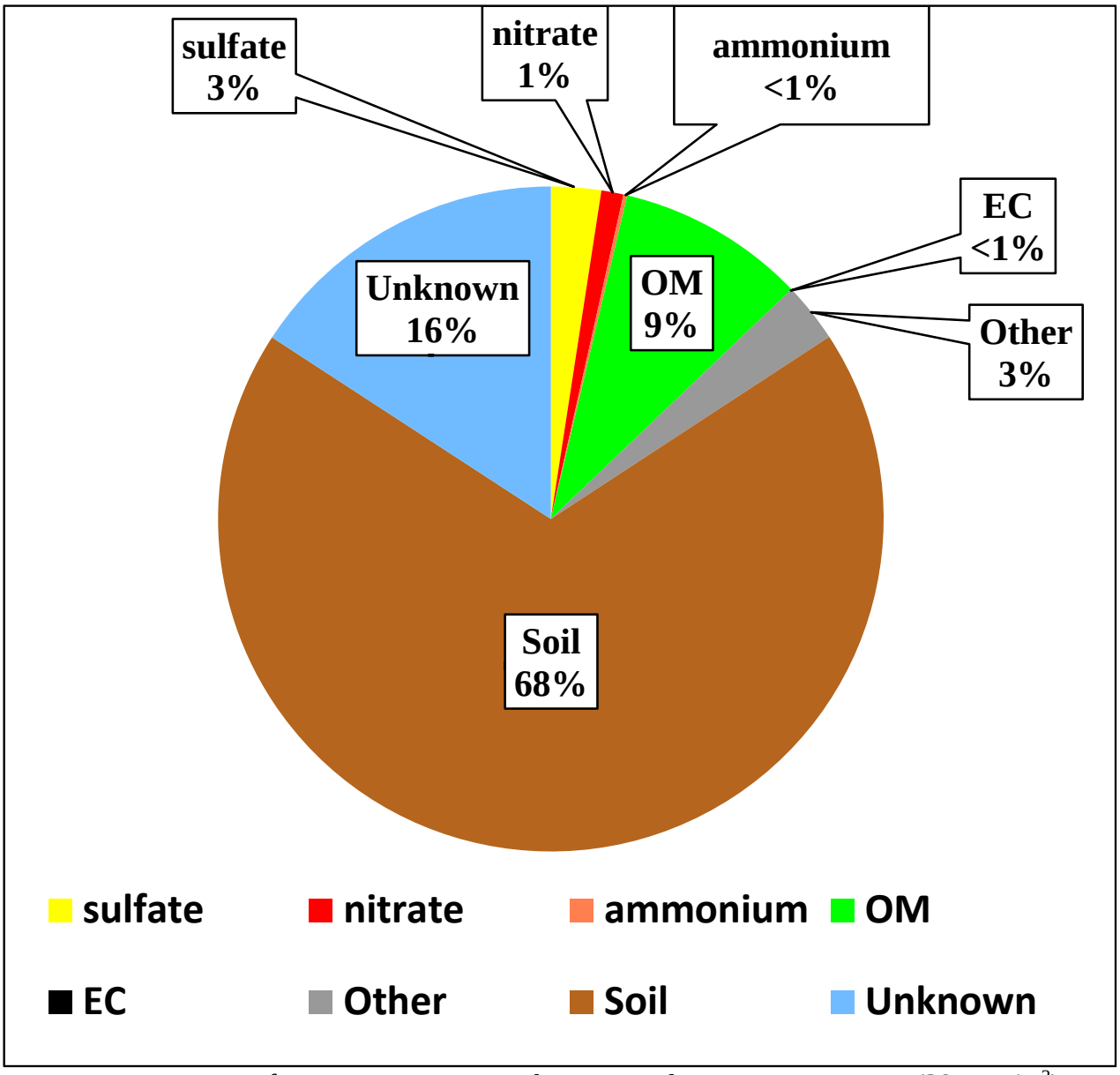

Figure 2. Percentages of $PM_{2.5}$ constituents in the measured $PM_{2.5}$ concentration (38.4 µg/m^3) at the General Coffee monitor on June 26, 2020. Details about the definitions of "Other" and "Unknown" are in Appendix A.

2.12. Gwinnett Tech (AQS ID: 13-135-0002)

At the Gwinnett Tech monitor in 2020, no exceedances were reported based on FEM measurements.

Table 14. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Gwinnett Tech monitor (AQS ID: 13-135-0002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200705	1	30.2	FEM	N/A	No exceedance documented
20200627	2	28.3	FEM	N/A	No exceedance documented
20201122	3	25.5	FEM	N/A	No exceedance documented
20201121	4	23.2	FEM	N/A	No exceedance documented
20200704	5	22.9	FEM	N/A	No exceedance documented
20200626	6	21.7	FEM	N/A	No exceedance documented
20201211	7	21.6	FEM	N/A	No exceedance documented
20200903	8	21.0	FEM	N/A	No exceedance documented

2.13. Kennesaw (AQS ID: 13-067-0003)

At the Kennesaw monitor in 2020, no exceedances were reported based on FRM measurements.

Table 15. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Kennesaw monitor (AQS ID: 13-067-0003) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200705	1	30.7	FRM	No FEM	No exceedance documented
20200626	2	26.9	FRM	No FEM	No exceedance documented
20200903	3	23.5	FRM	No FEM	No exceedance documented

2.14. Macon-Allied (AQS ID: 13-021-0007)

At the Macon-Allied monitor in 2020, no exceedances were reported based on FRM measurements.

Table 16. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Macon-Allied monitor (AQS ID: 13-021-0007) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	28.2	FRM	No FEM	No exceedance documented
20200903	2	26.9	FRM	No FEM	No exceedance documented
20200319	3	16.6	FRM	No FEM	No exceedance documented

2.15. Macon-Forestry (AQS ID: 13-021-0012)

At the Macon-Forestry monitor in 2020, no exceedances were reported based on FEM measurements.

Table 17. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Macon-Forestry monitor (AQS ID: 13-021-0012) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	33.8	FEM	N/A	No exceedance documented
20200626	2	23.1	FEM	N/A	No exceedance documented
20200904	3	21.1	FEM	N/A	No exceedance documented
20200903	4	20.6	FEM	N/A	No exceedance documented
20200407	5	19.2	FEM	N/A	No exceedance documented
20200317	6	18.9	FEM	N/A	No exceedance documented
20200320	7	18.8	FEM	N/A	No exceedance documented
20200328	8	18.2	FEM	N/A	No exceedance documented

2.16. NR-GA Tech (AQS ID: 13-121-0056)

At the NR-GA Tech monitor in 2020, no exceedances were reported based on FRM measurements.

Table 18. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the NR-GA Tech monitor (AQS ID: 13-121-0056) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200705	1	31.4	FRM	No FEM	No exceedance documented
20200626	2	27.3	FRM	No FEM	No exceedance documented
20200903	3	24.5	FRM	No FEM	No exceedance documented

2.17. Rossville (AQS ID: 13-295-0002)

At the Rossville monitor in 2020, no exceedances were reported based on FRM and FEM measurements.

Table 19. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Rossville monitor (AQS ID: 13-295-0002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	27.9	FEM	N/A	No exceedance documented
20200405	2	19.5	FEM	N/A	No exceedance documented
20200404	3	18.2	FEM	N/A	No exceedance documented
20200626	4	18.0	FRM	N/A	No exceedance documented

2.18. Sandersville (AQS ID: 13-303-0001)

At the Sandersville monitor in 2020, two exceedances were initially reported and confirmed based on FEM measurements.

Table 20. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Sandersville monitor (AQS ID: 13-303-0001) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	**39.8**	FEM	40	Saharan dust
20201104	2	**35.5**	FEM	36	Prescribed Fires
20201211	3	29.5	FEM	N/A	No exceedance documented
20200904	4	27.1	FEM	N/A	No exceedance documented
20200626	5	26.6	FEM	N/A	No exceedance documented
20200903	6	25.6	FEM	N/A	No exceedance documented
20201009	7	25.5	FEM	N/A	No exceedance documented
20200407	8	20.9	FEM	N/A	No exceedance documented

2.19. Savannah-L&A (AQS ID: 13-051-1002)

At the Savannah-L&A monitor in 2020, one exceedance was initially reported and confirmed based on FEM measurements.

Table 21. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the Savannah-L&A monitor (AQS ID: 13-051-1002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	**47.8**	FEM	48	Saharan dust
20201211	2	27.6	FEM	N/A	No exceedance documented
20201210	3	25.7	FEM	N/A	No exceedance documented
20200904	4	23.9	FEM	N/A	No exceedance documented
20200626	5	23.2	FEM	N/A	No exceedance documented
20201212	6	19.6	FEM	N/A	No exceedance documented
20201231	7	18.5	FEM	N/A	No exceedance documented
20200905	8	18.3	FEM	N/A	No exceedance documented

2.20. South DeKalb (AQS ID: 13-089-0002)

At the South DeKalb monitor in 2020, no exceedance was initially reported based on FEM measurements (31.6 µg/m^3.) Later, one exceedance on July 5, 2020 was confirmed based on FRM measurements. The exceedance was likely due to local fireworks. This conclusion is supported by the $PM_{2.5}$ speciation data (Figure) which show high sulfate concentrations (8.5 µg/m^3) and high potassium ion concentrations (7.9 µg/m^3; not shown in Figure).

Table 22. Daily $PM_{2.5}$ concentrations up to the 98th percentile value at the South DeKalb monitor (AQS ID: 13-089-0002) in 2020.

Date	Rank	Final $PM_{2.5}$ Concentration (µg/m^3)	Data Source for Final Concentration	FEM Initial Exceedance Report Value (µg/m^3)	Cause of Exceedances
20200705	1	**37.2**	FRM	N/A	Local Fireworks
20200627	2	27.6	FRM	N/A	No exceedance documented
20200626	3	24.8	FRM	N/A	No exceedance documented
20200704	4	24.0	FEM	N/A	No exceedance documented
20201211	5	22.3	FRM	N/A	No exceedance documented
20200903	6	22.0	FRM	N/A	No exceedance documented
20201122	7	20.1	FEM	N/A	No exceedance documented
20200904	8	19.8	FEM	N/A	No exceedance documented

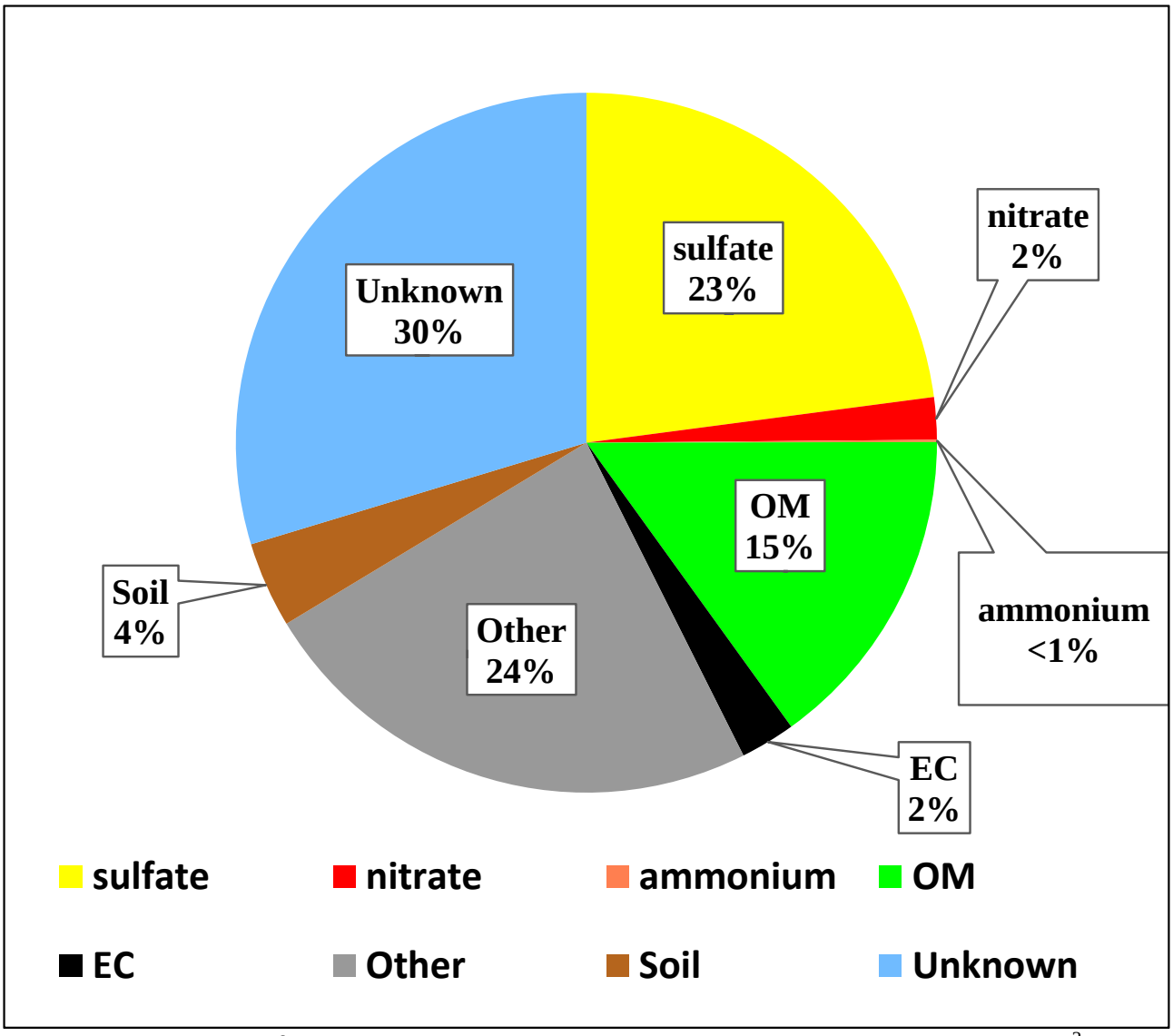

Figure 3. Percentages of $PM_{2.5}$ constituents in the measured $PM_{2.5}$ concentration (37.2 µg/m^3) at the South DeKalb monitor on July 5, 2020. Details about the definitions of "Other" and "Unknown" are in Appendix A.

2.21. Valdosta (AQS ID: 13-185-0003)

At the Valdosta monitor in 2020, no exceedance was initially reported due to the absence of FEM measurements. Later, one exceedance was confirmed based on FRM measurements. For the exceedance on June 26, 2020 at the Valdosta monitor, no initial exceedance report was developed due to the absence of FEM measurement. However, the exceedance was likely due to Saharan dust associated with the state-wide Saharan dust event that caused elevated $PM_{2.5}$ levels across Georgia.

Table 23. Daily $PM_{2.5}$ Concentrations at the Valdosta monitor (AQS ID: 13-185-0003) in 2020

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200626	1	**51.9**	FRM	No FEM	Saharan dust
20201210	2	22.6	FEM	No FEM	No exceedance documented
20200404	3	18.8	FRM	No FEM	No exceedance documented

2.22. Warner Robins (AQS ID: 13-153-0001)

At the Warner Robins monitor in 2020, one exceedance was reported and confirmed based on FEM measurements.

Table 24. Daily $PM_{2.5}$ concentrations up to the 98^{th} percentile value at the Warner Robins monitor (AQS ID: 13-153-0001) in 2020

Date	Rank	Final $PM_{2.5}$ Concentration ($\mu g/m^3$)	Data Source for Final Concentration	FEM Initial Exceedance Report Value ($\mu g/m^3$)	Cause of Exceedances
20200627	1	**40.9**	FEM	41	Saharan dust
20200626	2	26.5	FEM	N/A	No exceedance documented
20200328	3	26.1	FEM	N/A	No exceedance documented
20200904	4	25.0	FEM	N/A	No exceedance documented
20200407	5	22.8	FEM	N/A	No exceedance documented
20200903	6	22.4	FRM	N/A	No exceedance documented
20200320	7	21.7	FEM	N/A	No exceedance documented
20200329	8	21.2	FRM	N/A	No exceedance documented

3. Annual 98th Percentile Concentrations and Design Values

The annual 98th percentile daily $PM_{2.5}$ concentrations for 2011-2020 are shown in Figure and Table 25. The $PM_{2.5}$ design value is calculated by averaging the annual 98th percentile daily $PM_{2.5}$ concentrations for three consecutive years at each monitoring site. For example, the 2020 design value at Albany (22 $\mu g/m^3$) was calculated by adding the 2018 98th percentile daily $PM_{2.5}$ concentrations (22.3 $\mu g/m^3$), 2019 98th percentile daily $PM_{2.5}$ concentrations (19.8 $\mu g/m^3$), and 2020 98th percentile daily $PM_{2.5}$ concentrations (22.4 $\mu g/m^3$), then dividing by three. The 24-hour $PM_{2.5}$ design values for 2011-2020 are shown in Figure and Table 26. All design values are below the 24-hour $PM_{2.5}$ NAAQS level (35 $\mu g/m^3$). The highest 2020 24-hour design values (22 $\mu g/m^3$) are in Albany (13-095-0007), Columbus-Cusseta (13-215-0011)[4], and Gwinnett Tech (13-135-0002).

[4] The 2020 design value for Columbus-Cusseta (13-215-0011) is not valid because the data used to calculate the 2020 98th percentile value did not meet the completeness requirement specified in 40 CFR Part 58.

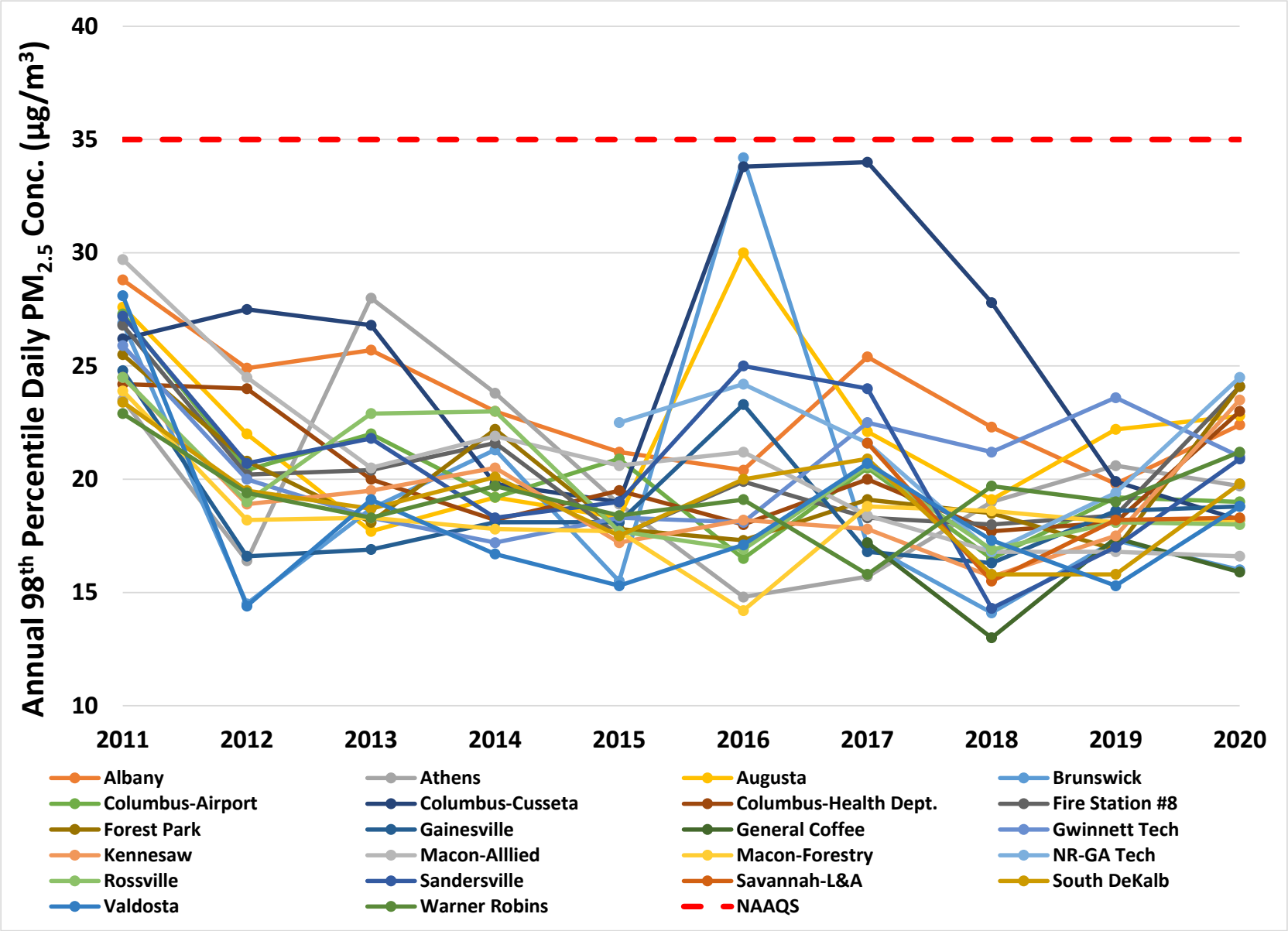

Figure 4. Trend of annual 98th percentile daily $PM_{2.5}$ concentrations in Georgia for 2011-2020.

Table 25. Annual 98th percentile daily $PM_{2.5}$ concentrations in Georgia for 2011-2020

Site Name	AQS ID	County	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Albany	13-095-0007	Dougherty	28.8*	24.9*	25.7	23.0	21.2	20.4	25.4	22.3	19.8	22.4
Athens	13-059-0002	Clarke	23.5	16.4	28.0	23.8	18.9	14.8	15.7	19.0	20.6	19.7
Augusta	13-245-0091	Richmond	27.6*	22.0	17.7	19.2	18.3	30.0	22.1	19.1	22.2	22.8
Brunswick	13-127-0006	Glynn	26.9*	14.5*	18.7*	21.3*	15.5	34.2	17.1	14.1	17.3	16.0
Columbus-Airport	13-215-0008	Muscogee	27.3*	20.4	22.0	19.2	20.9	16.5	20.5	16.5	19.2	19.0
Columbus-Cusseta	13-215-0011	Muscogee	26.2*	27.5	26.8	19.8	19.0	33.8	34.0	27.8	19.9	18.2*
Columbus-Health Dept.	13-215-0001	Muscogee	24.2*	24.0	20.0	18.2	19.5	18.0	20.0	17.7	18.1	23.0
Fire Station 8	13-121-0039	Fulton	26.8*	20.2	20.4	21.6	17.5	19.9	18.3	18.0	18.4	24.1
Forest Park	13-063-0091	Clayton	25.5*	20.8	18.1	22.2	17.8	17.3	19.1	18.5	16.9	24.1
Gainesville	13-139-0003	Hall	24.8	16.6	16.9	18.1	18.1	23.3	16.8	16.3*	18.6	18.8
General Coffee	13-069-0002	Coffee							17.2*	13.0	17.4	15.9
Gwinnett Tech	13-135-0002	Gwinnett	25.9*	20.0	18.3	17.2	18.3	18.1	22.5	21.2	23.6	21.0
Kennesaw	13-067-0003	Cobb	24.5*	18.9	19.5	20.5	17.2	18.2	17.8	15.7	17.5	23.5
Macon-Allied	13-021-0007	Bibb	29.7	24.5	20.5	21.9	20.6	21.2	18.4	16.8	16.8	16.6
Macon- Forestry	13-021-0012	Bibb	23.9*	18.2	18.3	17.8	17.7	14.2	18.8	18.6	18.1	18.2
NR-GA Tech	13-121-0056	Fulton					22.5	24.2	21.6	16.8	19.4	24.5
Rossville	13-295-0002	Walker	24.5	19.0	22.9	23.0	17.7	16.9	20.6	16.9	18.1	18.0*
Sandersville	13-303-0001	Washington	27.2*	20.7	21.8	18.3	19.0	25.0	24.0	14.3	17.0	20.9
Savannah-L&A	13-051-1002	Chatham							21.6*	15.5*	18.2*	18.3
South DeKalb	13-089-0002	DeKalb	23.4	19.5	18.7	20.1	17.5	20.0	20.9	15.8	15.8	19.8
Valdosta	13-185-0003	Lowndes	28.1*	14.4*	19.1	16.7	15.3	17.1	20.7	17.3	15.3	18.8
Warner Robins	13-153-0001	Houston	22.9	19.4	18.3	19.7	18.4	19.1	15.8	19.7	19.0	21.2

* Indicates that the data used to calculate the 98th percentile value did not meet the completeness requirement specified in 40 CFR Part 58.

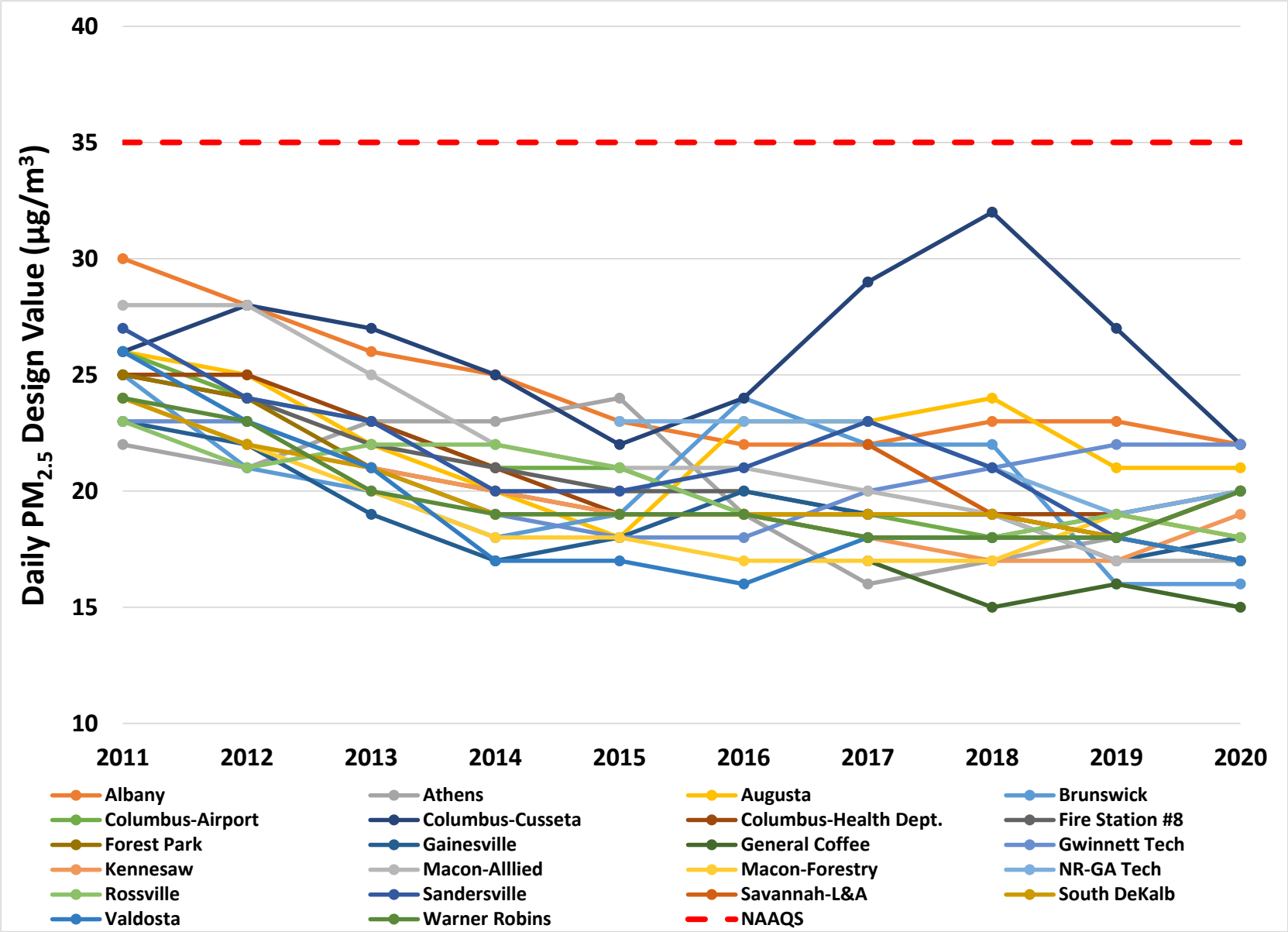

Figure 5. Trend of daily $PM_{2.5}$ design values in Georgia for 2011-2020.

Table 26. Design values for the 24-hour $PM_{2.5}$ NAAQS in Georgia for 2011-2020.

Site Name	AQS ID	County	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Albany	13-095-0007	Dougherty	30*	28*	26	25	23	22	22	23	23	22
Athens	13-059-0002	Clarke	22	21	23	23	24	19	16	17	18	20
Augusta	13-245-0091	Richmond	26*	25*	22*	20	18	23	23	24	21	21
Brunswick	13-127-0006	Glynn	25*	21*	20*	18*	19	24	22	22	16	16
Columbus-Airport	13-215-0008	Muscogee	26*	24*	23*	21	21	19	19	18	19	18
Columbus-Cusseta	13-215-0011	Muscogee	26*	28*	27*	25	22	24	29	32	27	22*
Columbus-Health Dept.	13-215-0001	Muscogee	25*	25*	23*	21	19	19	19	19	19	20
Fire Station 8	13-121-0039	Fulton	25*	24*	22*	21*	20	20	19	19	18	20
Forest Park	13-063-0091	Clayton	25*	24*	21*	20	19	19	18	18	18	20
Gainesville	13-139-0003	Hall	23	22	19	17	18	20	19	19	17	18
General Coffee	13-069-0002	Coffee							17*	15*	16*	15
Gwinnett Tech	13-135-0002	Gwinnett	23*	23*	21	19	18	18	20	21	22	22
Kennesaw	13-067-0003	Cobb	24*	22*	21	20	19	19	18	17	17	19
Macon-Allied	13-021-0007	Bibb	28	28	25	22	21	21	20	19	17	17
Macon-Forestry	13-021-0012	Bibb	24	22	20	18	18	17	17	17	19	18
NR-GA Tech	13-121-0056	Fulton					23*	23*	23	21	19	20
Rossville	13-295-0002	Walker	23	21	22	22	21	19	18	18	19	18*
Sandersville	13-303-0001	Washington	27*	24*	23	20	20	21	23	21	18	17
Savannah-L&A	13-051-1002	Chatham							22*	19*	18*	17
South DeKalb	13-089-0002	DeKalb	24	22	21	19	19	19	19	19	18	17
Valdosta	13-185-0003	Lowndes	26*	23*	21*	17	17	16	18	18	18	17
Warner Robins	13-153-0001	Houston	24	23	20	19	19	19	18	18	18	20

* Indicates that the data used to calculate the design value did not meet the completeness requirement specified in 40 CFR Part 58.

4. Summary

In 2020, 22 monitors measured $PM_{2.5}$ concentrations in Georgia. Initially, seven $PM_{2.5}$ exceedances were reported at five monitors. Two exceedances were not initially reported due to the absence of FEM measurement. One exceedance at South DeKalb was not initially reported because the FEM measurement was lower than 35.0 $\mu g/m^3$. Table 27 contains a summary of the final $PM_{2.5}$ exceedances in 2020. Eight exceedances were due to the Saharan dust event. The exceedance at the South DeKalb monitor on July 5, 2020 was likely due to local fireworks. The exceedance at the Sandersville monitor on November 4, 2020 was due to prescribed fires. All annual 98th percentile daily $PM_{2.5}$ concentrations in 2020 are below 25 $\mu g/m^3$. All design values are below the 24-hour $PM_{2.5}$ NAAQS level (35 $\mu g/m^3$). The highest 2020 24-hour design values (22 $\mu g/m^3$) are in Albany (13-095-0007), Columbus-Cusseta (13-215-0011)[5], and Gwinnett Tech (13-135-0002).

Table 27. Summary of $PM_{2.5}$ exceedances in 2020.

Date	Site Name	AQS ID	Final $PM_{2.5}$ Concentration	Cause of Exceedances
20200626	Albany	13-095-0007	**36.6**	Saharan dust
20200626	General Coffee	13-069-0002	**38.4**	Saharan dust
20200626	Valdosta	13-185-0003	**51.9**	Saharan dust
20200627	Albany	13-095-0007	**39.0**	Saharan dust
20200627	Augusta	13-245-0091	**40.7**	Saharan dust
20200627	Sandersville	13-303-0001	**39.8**	Saharan dust
20200627	Savannah-L&A	13-051-1002	**47.8**	Saharan dust
20200627	Warner Robins	13-153-0001	**40.9**	Saharan dust
20200705	South DeKalb	13-089-0002	**37.2**	Local Fireworks
20201104	Sandersville	13-303-0001	**35.5**	Prescribed Fires

[5] The 2020 design value for Columbus-Cusseta (13-215-0011) is not valid because the data used to calculate the 2020 98th percentile value did not meet the completeness requirement specified in 40 CFR Part 58.

Appendix A. Definition of $PM_{2.5}$ Species in this report.

$PM_{2.5}$ Species	Details	AQS Parameter Code
sulfate	sulfate	88403
nitrate	nitrate	88306
ammonium	ammonium	88301
OM	1.4*organic carbon (OC $PM_{2.5}$ LC TOR)	88320
EC	elemental carbon (EC $PM_{2.5}$ LC TOR)	88321
soil	2.2*aluminum	88104
	2.49*silicon	88165
	1.63*calcium	88111
	2.42*iron	88126
	1.84*titanium	88161
Other	antimony $PM_{2.5}$ LC	88102
	arsenic $PM_{2.5}$ LC	88103
	barium $PM_{2.5}$ LC	88107
	bromine $PM_{2.5}$ LC	88109
	cadmium $PM_{2.5}$ LC	88110
	chromium $PM_{2.5}$ LC	88112
	cobalt $PM_{2.5}$ LC	88113
	copper $PM_{2.5}$ LC	88114
	chlorine $PM_{2.5}$ LC	88115
	cerium $PM_{2.5}$ LC	88117
	cesium $PM_{2.5}$ LC	88118
	lead $PM_{2.5}$ LC	88128
	indium $PM_{2.5}$ LC	88131
	manganese $PM_{2.5}$ LC	88132
	nickel $PM_{2.5}$ LC	88136
	magnesium $PM_{2.5}$ LC	88140
	phosphorus $PM_{2.5}$ LC	88152
	selenium $PM_{2.5}$ LC	88154
	tin $PM_{2.5}$ LC	88160
	vanadium $PM_{2.5}$ LC	88164
	silver $PM_{2.5}$ LC	88166
	zinc $PM_{2.5}$ LC	88167
	strontium $PM_{2.5}$ LC	88168
	rubidium $PM_{2.5}$ LC	88176
	potassium $PM_{2.5}$ LC	88180
	sodium $PM_{2.5}$ LC	88184
	zirconium $PM_{2.5}$ LC	88185
Unknown	$PM_{2.5}$ – (sulfate + nitrate + ammonium + OM + EC + soil + Other)	N/A