



September 2, 2016

**Commonwealth of Pennsylvania
Department of Environmental Protection
Policy Office**

Rachel Carson State Office Building,
P.O. Box 2063
Harrisburg, PA 17105-2063

**RE: Proposed Designation Recommendations for the 2015 Ozone
Standards, 46 Pa.B. 5162, Saturday, August 20, 2016**

To Whom it May Concern:

Olympus Power, LLC (“Olympus” or “Olympus Power”) is pleased to offer these comments in response to the Pennsylvania Department of Environmental Protection’s (“PADEP”) proposed designation recommendations for the 2015 ozone national ambient air quality standards (“NAAQS”), 46 Pa.B. 5162, Saturday, August 20, 2016.

Olympus Power is a leading power plant investment and management firm with assets located throughout the United States, including Pennsylvania. Olympus has been the owner and asset manager of projects with interests in 38 operating power plants across the U.S. with over \$3.5 billion of assets and the responsibility for the management and operation of projects with a gross capacity in excess of 4,600 megawatts (MW) of electricity generation. Over time, these assets have included coal refuse-fired, natural gas-fired, coal-fired, oil-fired, hydroelectric, biomass-fired, solar powered and wind powered electric generating facilities. Our current investments in Pennsylvania include interests in four coal refuse-fired facilities: Westwood Generation, Panther Creek Energy, Northampton Generating Company and Scrubgrass Generating, and two coal-fired facilities: Keystone Generating Station and Conemaugh Generating Station.

As will be set forth in greater detail in these comments, Olympus believes that PADEP’s proposed classifications of the majority of Pennsylvania counties are flawed because of the measured design values for the three year 2013-2015 period. During this period, the vast majority of the regulatory agency operated monitors in Pennsylvania measured attainment of the 2015 ozone NAAQS. Importantly, these monitored concentrations, most of which demonstrate attainment of the 2015 ozone NAAQS, have been measured prior to the implementation of the Pennsylvania Reasonably Available Control Technology II (“PA RACT II”) regulation and the introduction of Tier 3 gasoline which will occur on January 1, 2017.

Both PA RACT II and Tier 3 gasoline regulations become effective on January 1, 2017. PA RACT II will result in additional reductions of ozone precursors from affected major stationary sources and, according to EPA, Tier 3 gasoline will result in an immediate 10% reduction in nitrogen oxides emissions from the existing fleet of Tier 2 vehicles. That is a considerable reduction considering that the mobile source category is by far the largest emitter of nitrogen oxides in the Northeast. Plus, the remaining nonattainment areas are located in, or downwind of, urban areas where mobile source emissions are predominant.

It is important that areas which have already measured attainment of the 2015 ozone NAAQS, be designated as attainment. The efforts, including new regulations and new programs, to allow these areas to ultimately be designated as attainment should not be necessary or required for major sources in areas which are already measuring attainment of that standard. This is especially true considering the United States Court of Appeals for the Sixth Circuit decision regarding redesignation of an area to attainment. The Court found "...we agree with its claim that "reasonably available control measures" are a prerequisite to redesignation." What this decision means is that Reasonably Available Control Technology/Reasonably Available Control Measures ("RACT/RACM") regulations are required to be developed and implemented by the affected major sources even if the area is already measuring attainment of the standard prior to the designation of nonattainment. Consequently, inappropriately designating an area as nonattainment requires those actions regardless of the measured attainment of the 2015 ozone NAAQS.

It is worth noting that the ozone concentrations measured by every regulatory agency operated monitor in Pennsylvania already show attainment of the 2008 ozone NAAQS prior to the implementation of the PA RACT II and Tier 3 regulations. Importantly, the PA RACT II regulation was finalized as part of the effort to achieve attainment of the 2008 ozone NAAQS in Pennsylvania, but now that regulation, along with Tier 3 gasoline implementation, will likely result in nitrogen oxide emission reductions that result in the achievement of attainment of the 2015 ozone NAAQS for the eight remaining monitors that have 2013-2015 design values in excess of the 2015 ozone NAAQS.

To substantiate Olympus Power's recommendations, we have attached a presentation prepared and presented by PADEP at the December 10, 2015 Air Quality Technical Advisory Committee ("AQTAC") meeting. On Slide 48 PADEP clearly states:

Based on preliminary 2013-2015 ozone design values, eight samplers in the Commonwealth are monitoring nonattainment of the 2015 8-hour ozone NAAQS.

Conversely, this means that the map displayed on Slide 49 shows that the remaining 42 monitors are monitoring attainment of the 2015 8-hour ozone NAAQS

While we recognize that Pennsylvania is located entirely in the Ozone Transport Region and subject to regulatory requirements 42 U.S.C.A. § 7511c., the appropriate designation of each area is beneficial to the major sources located in these counties. An example of that circumstance is the

PA RACT II regulation which regulates the averaging of units by attainment designation. We urge PADEP to consider each of the Olympus Power LLC recommendations and revise the proposed classifications.

PADEP should not propose that Allegheny, Armstrong, Beaver, Butler, Washington, Fayette and Westmoreland Counties be designated as a multi-county nonattainment area.

As can be seen in the Map on Slide 49 of the attached Exhibit A, PADEP presentation, every ozone monitor in this seven county area is measuring attainment of the 2015 ozone NAAQS, except for one monitor in Allegheny County and the monitor in Armstrong County. Consequently, it is inappropriate to identify all of these counties as a multi-county non-attainment area. Instead, only Allegheny and Armstrong Counties should be designated as non-attainment areas for the 2015 ozone NAAQS and they should not be linked as a part of any larger nonattainment area. Linking counties into a single multi-county non-attainment area results in the entire area remaining classified as non-attainment, even if only one monitor in one county is actually measuring nonattainment of the standard.

Because the entire Commonwealth is located in the Clean Air Act (CAA) defined Ozone Transport Region (OTR), which requires some regulatory processes to consider the entire Commonwealth as “moderate” nonattainment, it is unnecessary to create separate internal “ozone transport regions” within the CAA designated OTR. Regardless of Pennsylvania being wholly located within the OTR, it is ultimately in the best interest of businesses to be located in areas which have a formal, county specific designation as attainment. A classification of attainment for the 2015 ozone NAAQS would show that the reductions that have already been achieved have resulted in attainment of the 2015 ozone NAAQS, which is important information to be shared with the citizens of Pennsylvania. Importantly, this has no negative effect on the availability and use of emission reduction credits (“ERC”s) necessary for the operation of new or modified major sources of ozone precursors. Importantly, each county would only be obligated to obtain ERCs at a ratio that is consistent with the county specific classification rather than at a higher level of nonattainment designation that could be made for an entire multi-county nonattainment area due to the ozone concentrations measured in a different county.

Designating counties based upon the measured design values could be quite important in the very near future, because if the PA RACT II and the Tier 3 gasoline implementation result in measured attainment of the 2015 ozone NAAQS in all counties then the current PA RACT II regulation could be determined to be adequate for Pennsylvania and no revision to that regulation would be required.

RACT is required to be considered each time an ambient air quality standard is revised. However, it should also be recognized that RACT is only intended to address the major sources in a non-attainment area. It is only intended to consider intrastate transport and it is not intended to address the interstate transport of ozone or ozone precursors. Consequently, only the benefits inside Pennsylvania are to be considered. Importantly, the implementation of RACT/RACM measures do

not have to result in attainment of the new standard. This is an important consideration because other states and some advocacy groups have attempted to misrepresent RACT and the appropriate regulation of major stationary sources in Pennsylvania.

It is the recommendation of Olympus Power that Allegheny, Armstrong, Beaver, Butler, Washington, Fayette and Westmoreland Counties not be designated as a multi-county nonattainment area. Rather, it is Olympus' recommendation that only Allegheny and Armstrong Counties be designated as nonattainment and that they should not be linked as a multi-county nonattainment area.

Further, if the design values for the 2014-2016 ozone season period show measured attainment of the 2015 ozone NAAQS in Allegheny County and Armstrong County, then the designation for those counties should be revised to attainment of the 2015 ozone NAAQS prior to EPA finalizing the designations on October 1, 2017.

PADEP's should not propose a multi-county nonattainment area for Bucks, Chester, Delaware, Montgomery and Philadelphia Counties.

First, Chester County should not be designated as a nonattainment area or as part of a multi-county nonattainment area. The monitor located in that county has a measured design value for the 2013-2015 time period that demonstrates attainment of the 2015 ozone NAAQS. Further, the PA RACT II regulation and Tier 3 gasoline will result in additional significant reductions in ozone precursors further reducing the ambient ozone concentrations at that location.

The remaining counties should not be linked into a single multi-county nonattainment area. That multi-county nonattainment designation will only make it more difficult for individual counties to ultimately be designated as attainment areas. As previously stated, because the entire Commonwealth is located in the CAA defined OTR, which requires some regulatory processes to consider the entire Commonwealth as "moderate" nonattainment, it is unnecessary to create separate internal "ozone transport regions" within the Clean Air Act designated OTR. Regardless of Pennsylvania being wholly located within the OTR, it is ultimately in the best interest of businesses to be located in areas which have a formal, county specific designation. Importantly, this has no negative effect on the availability and use of ERCs necessary for the operation of new major sources of ozone precursors. It could actually help in that each county would only be obligated to obtain ERCs at a ratio that is consistent with the county specific classification, rather than at a higher level of nonattainment designation that could be made for an entire multi-county nonattainment area due to the ozone concentrations measured in a different county.

Those counties with measured design values that show concentrations that are not in attainment with the 2015 ozone NAAQS should be proposed as individual county nonattainment areas. Further, if the design values for the 2014-2016 ozone season period show measured attainment of the 2015 ozone NAAQS in Bucks, Delaware, Montgomery or Philadelphia Counties, then the designation for any or all of those counties should be revised to attainment of the 2015 ozone NAAQS prior to EPA finalizing the designations on October 1, 2017.

Indiana and Lebanon Counties should initially be designated as individual county nonattainment areas of the 2015 ozone NAAQS, however, if the design values for the 2014-2016 ozone season period show measured attainment of the 2015 ozone NAAQS in either or both of those counties, then the designation for either or both of those counties should be revised to attainment of the 2015 ozone NAAQS prior to EPA finalizing the designations on October 1, 2017.

Because of the considerable additional reduction of ozone season precursors that will result from the implementation of PA RACT II and Tier 3 gasoline, PADEP should ensure that if the design values measured in either or both of those counties during the 2014-2016 period demonstrate attainment, the designation(s) should be revised to attainment of the 2015 ozone NAAQS. If the monitors in those counties measure attainment using the 2014-2016 design values then those regulations which become effective on January 1, 2017 would result in even lower emissions of ozone precursors which will provide for even lower ozone concentrations being measured in the future.

PADEP should not designate the bulk of Pennsylvania as unclassifiable/attainment. The remainder of the state should be designated as being in attainment of the 2015 ozone NAAQS.

Because there are 42 monitors measuring attainment of the 2015 ozone NAAQS and only 8 measuring nonattainment of the 2015 ozone NAAQS, PADEP should recommend that these areas be designated as simply being in attainment. Even the designation as unclassifiable/attainment potentially puts additional burdens on Pennsylvania industries and businesses and upon the PADEP to achieve the redesignation to attainment at a later date. If the measured design value concentrations are demonstrating attainment of the 2015 ozone NAAQS, then the designation should be attainment. Especially considering the additional reductions of ozone precursors that will result from the implementation of PA RACT II and Tier 3 gasoline.

In the event the monitor in one of these counties were to measure a 2014-2016 design value greater than the 2015 ozone NAAQS, it is likely that EPA would insist upon a designation of nonattainment for that county.

CONCLUSION

Olympus Power appreciates the opportunity to provide comments to these proposed designations for the 2015 ozone NAAQS. Olympus is concerned with the potential substantive and adverse impact of this proposal upon the Pennsylvania's existing major sources including electric generating facilities located in Pennsylvania.

In the opinion of Olympus Power, the designations should not be multi-county and the designations should be based upon the 2013-2015 measured design values and revised as appropriate based on the 2014-2016 measured design values. The anticipated positive impact of the PA RACT II

regulation and of Tier 3 gasoline, which will become effective January 1, 2017, will provide for maintenance of, or even lower, design values being measured in subsequent time periods.

Olympus Power appreciates the opportunity to offer these comments. If EPA has any questions regarding these comments or the evaluation undertaken by Olympus Power to predict the potential impacts in Pennsylvania from this proposal, please do not hesitate to contact me at vbrisini@olympuspower.com or Olympus Power's Executive Vice President, Government Affairs and General Counsel, Sean P. Lane, at the address set forth above.

Very truly yours,

A handwritten signature in black ink, appearing to read "Vincent J. Brisini". The signature is fluid and cursive, with a large, stylized initial "V" and "B".

Vincent J. Brisini
Director of Environmental Affairs

Attachments: **EXHIBIT A** – PADEP AQTAC Presentation December 10, 2015

EXHIBIT B – PA RACT II EGU NO_x Emissions Estimate
prepared by Olympus Power

EXHIBIT A



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Air Quality



Air Quality Update on the Ozone National Ambient Air Quality Standards

Air Quality Technical Advisory Committee

Dec. 10, 2015

Harrisburg

Tom Wolf, Governor

John Quigley, Secretary

Agenda

- 2015 – A Year in Review
 - Ozone vs. Meteorology
 - An Ozone Episode in June 2015
- EPA's Adoption of New Ozone Standards
- Conclusions

2015 Ozone Season Summary

- Ozone monitoring season – April to October
- Overview of the projected 2015 design values (DV) for the 8-hour ozone national ambient air quality standard (NAAQS)
- 2015 DV calculation – 4th high from 2013, 2014 and 2015 averaged over a 3-year period

Number of 8-hour Ozone Exceedances

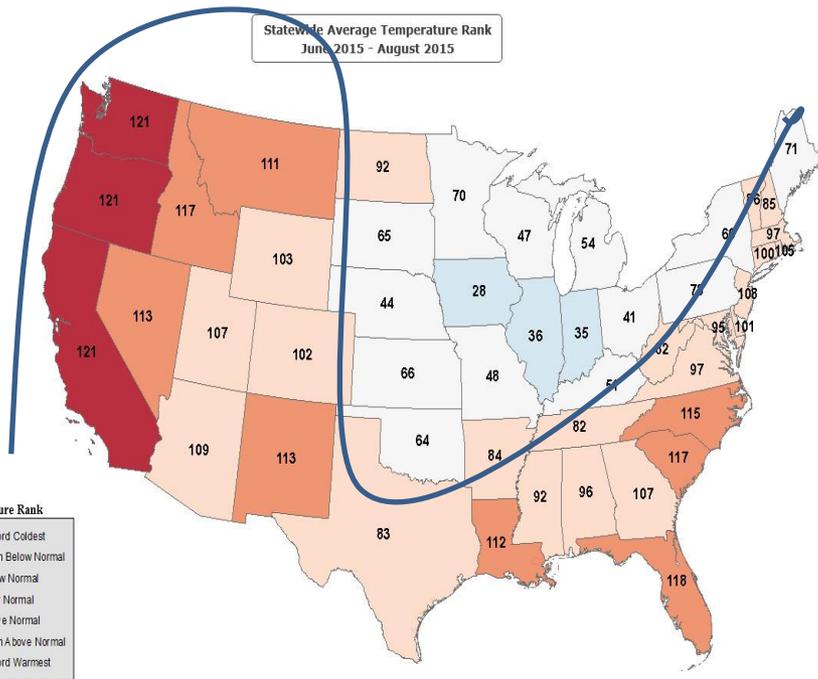
- Number of 8-hour ozone exceedance days and total number of exceedances per year within Pennsylvania's monitoring network (~50 ozone monitors)
 - 2013: 11 days | 43 total exceedances
 - 2014: 7 days | 16 total exceedances
 - 2015: 16 days | 41 total exceedances

2008 8-Hour Ozone NAAQS Attainment Status

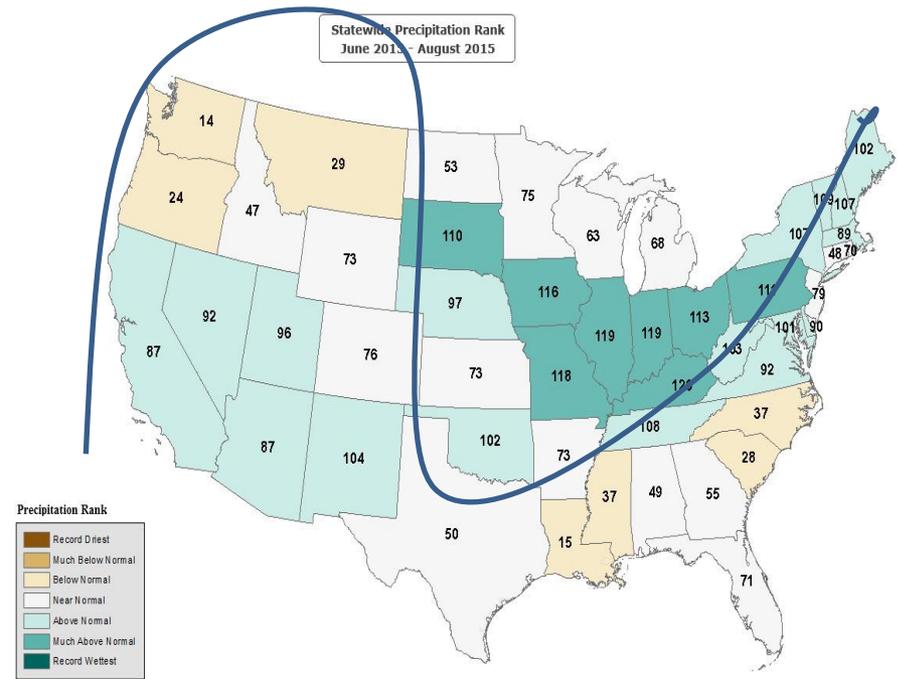
- In 2014, one sampler in Allegheny County monitored nonattainment of the 2008 8-hour ozone NAAQS (0.075 parts per million or 75 parts per billion).
- In 2015, based on preliminary design values, zero samplers in the Commonwealth are monitoring nonattainment of the 2008 8-hour ozone NAAQS.

Meteorology Data - Summer 2015

Temperature



Precipitation

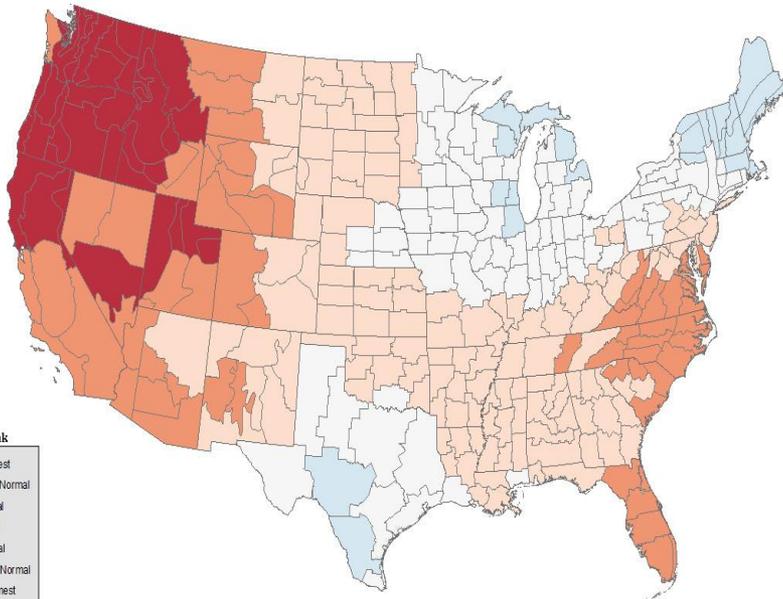


Blue Line –
Approximate Location of Jet Stream

Meteorology Data - June 2015

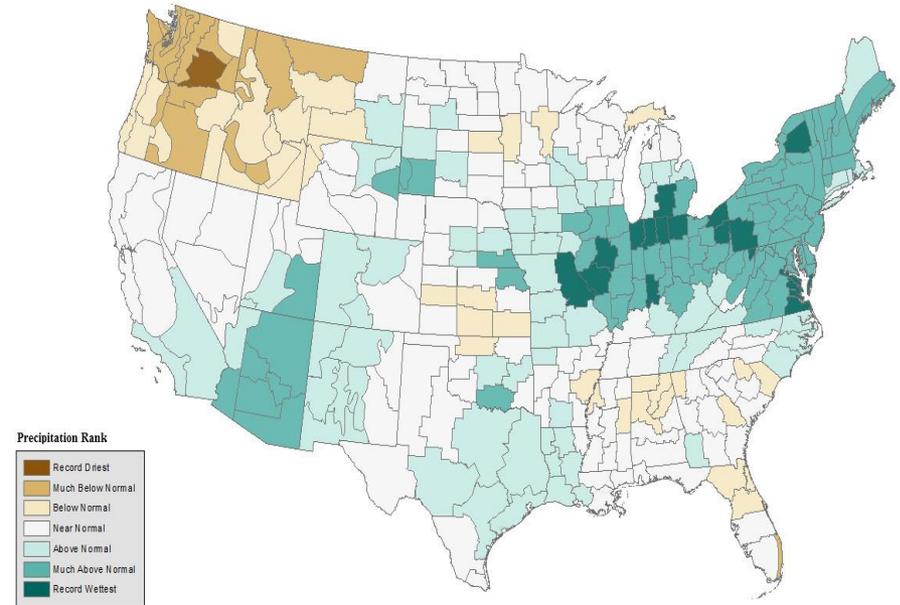
Temperature

Divisional Average Temperature Rank
June 2015



Precipitation

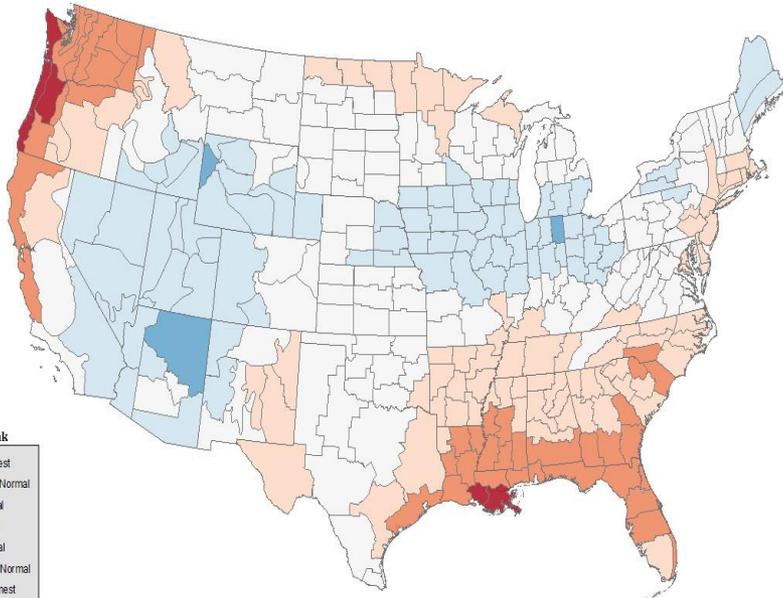
Divisional Precipitation Rank
June 2015



Meteorology Data - July 2015

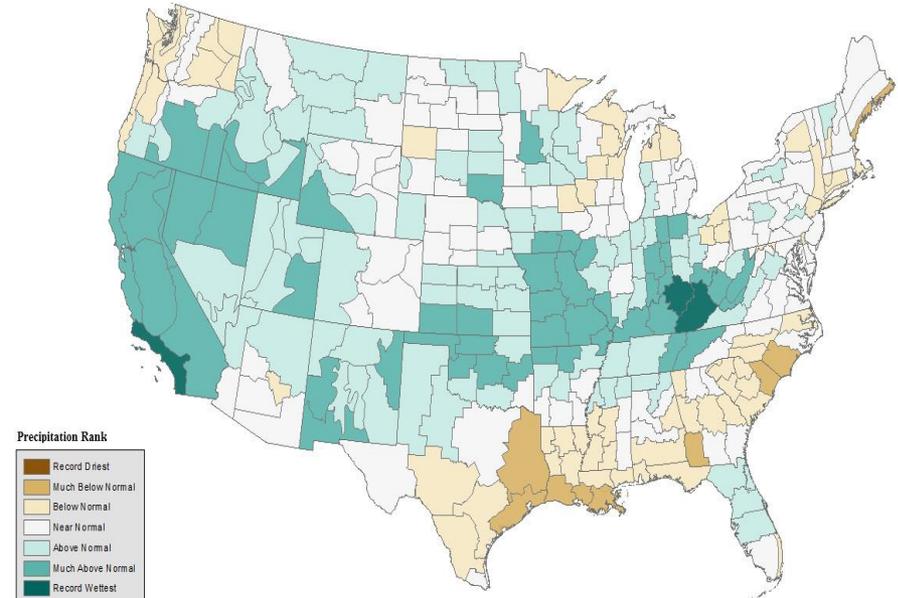
Temperature

Divisional Average Temperature Rank
July 2015



Precipitation

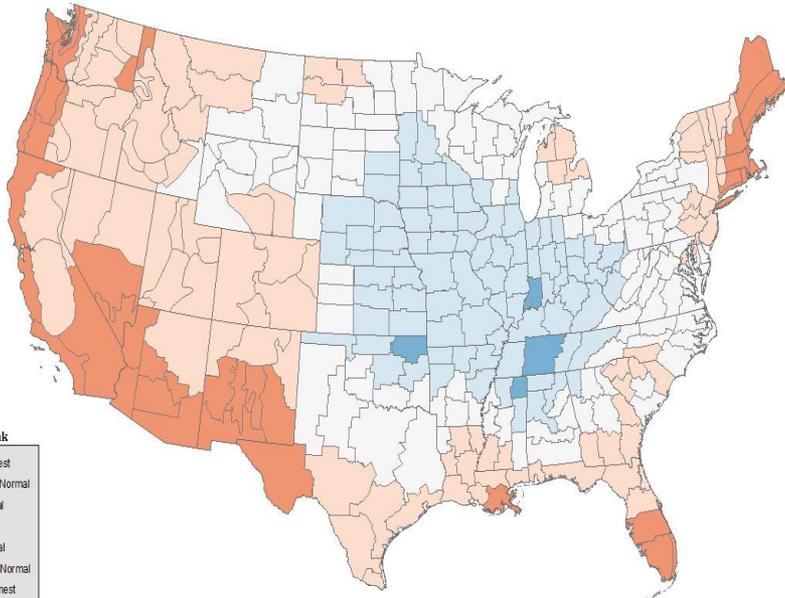
Divisional Precipitation Rank
July 2015



Meteorology Data - August 2015

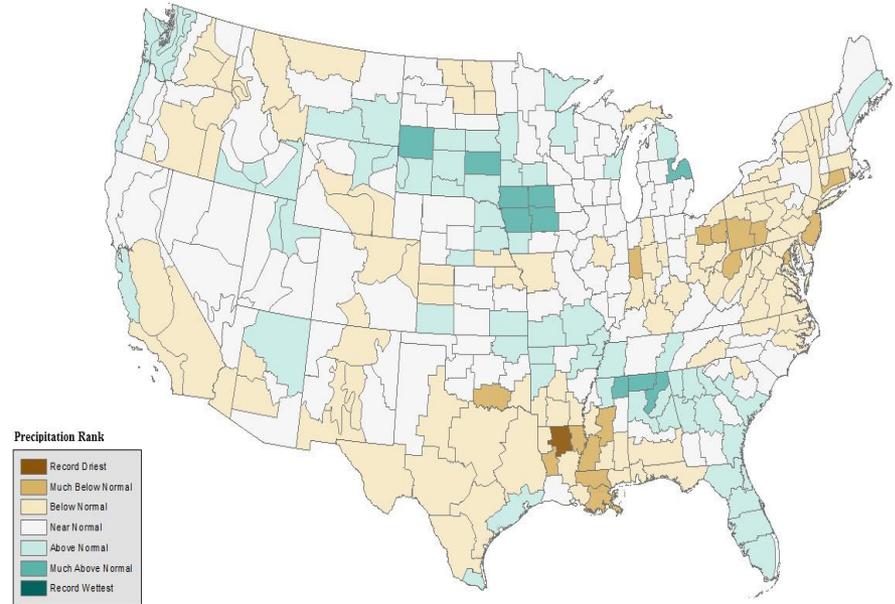
Temperature

Divisional Average Temperature Rank
August 2015



Precipitation

Divisional Precipitation Rank
August 2015

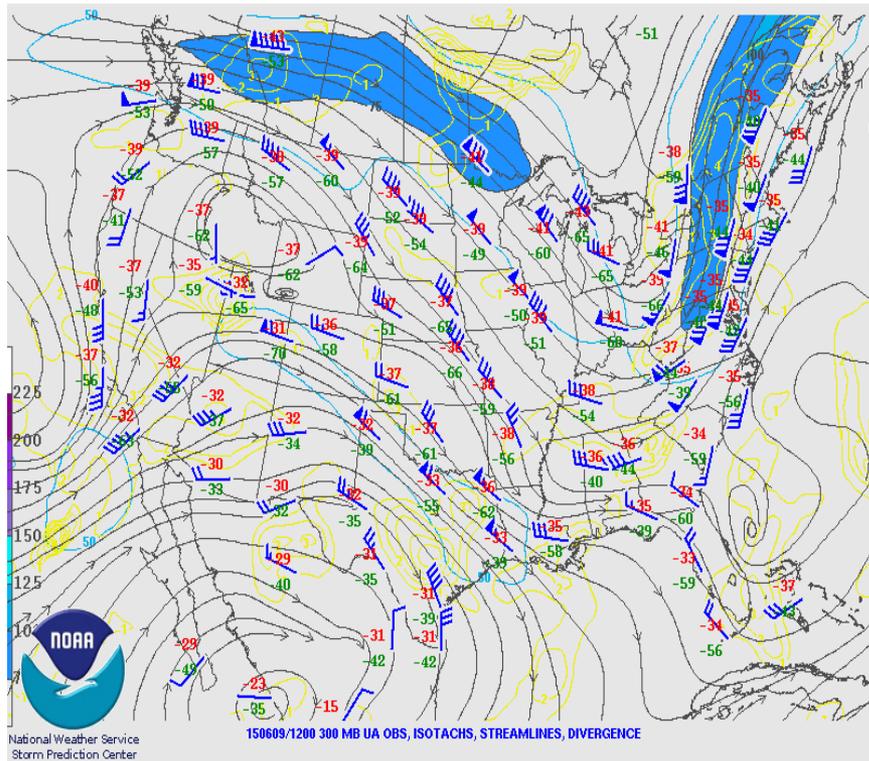


Ozone Episode – June 11, 2015

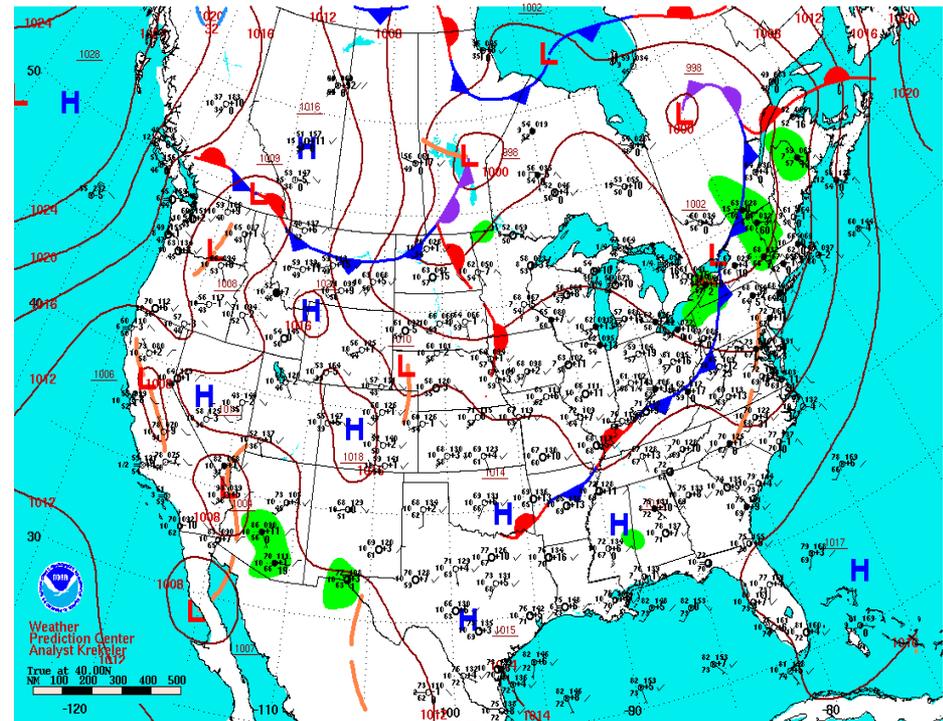
- On June 11, multiple monitors across the Commonwealth (and the Mid-Atlantic states, in general) exceeded the threshold for the 2008 ozone NAAQS .
- The setup – The meteorological pattern promoted transport from Canada. Usually the air mass is cleaner in nature as it moves into the region... this time it was different.

Meteorology – June 09, 2015

Upper Air



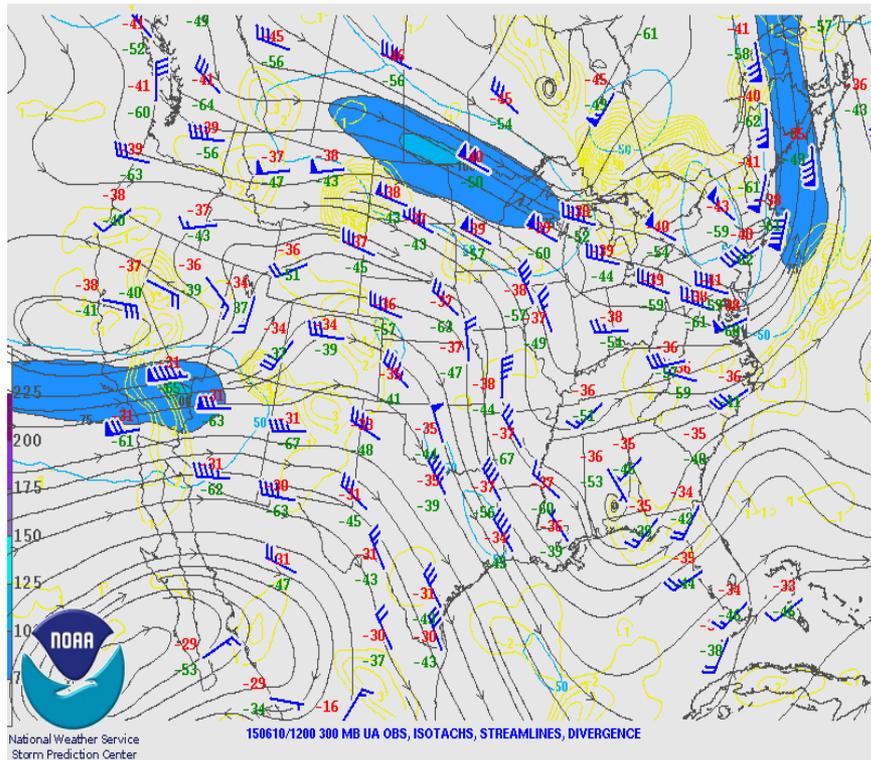
Surface



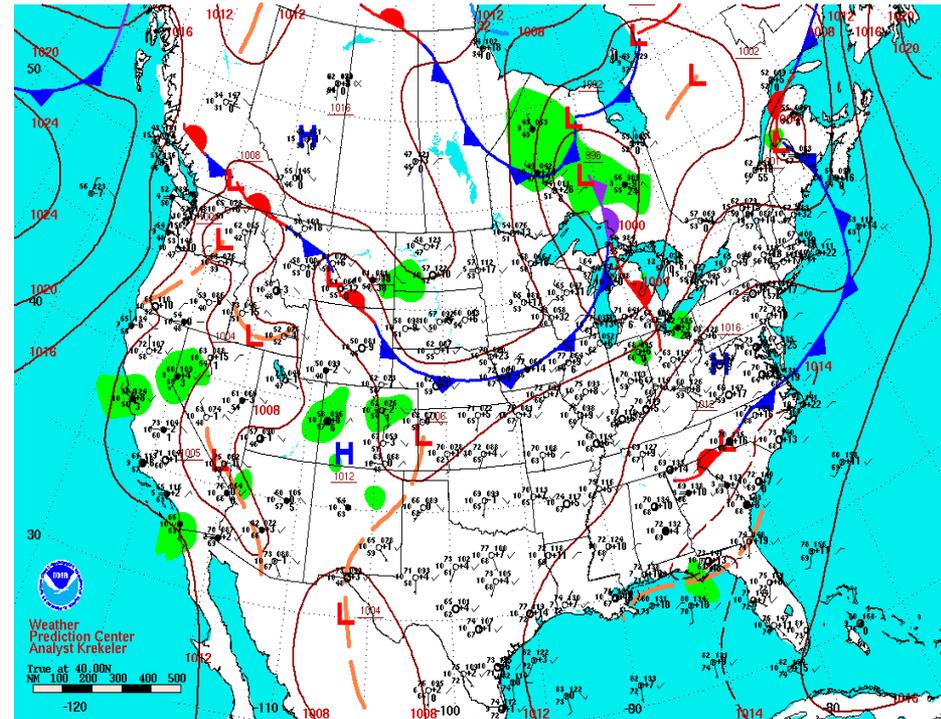
Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Meteorology – June 10, 2015

Upper Air



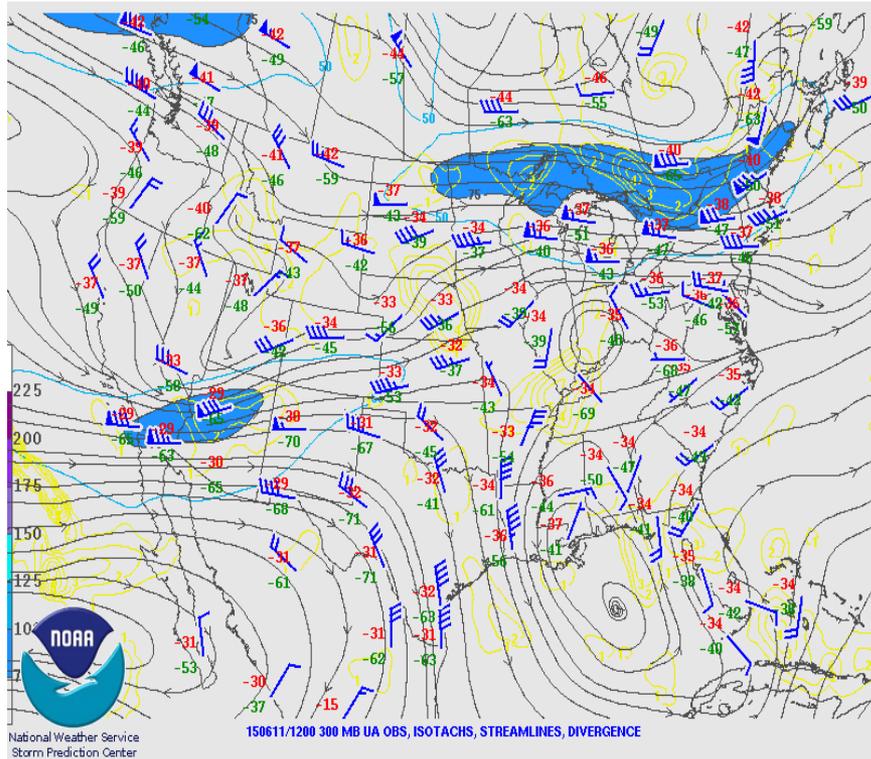
Surface



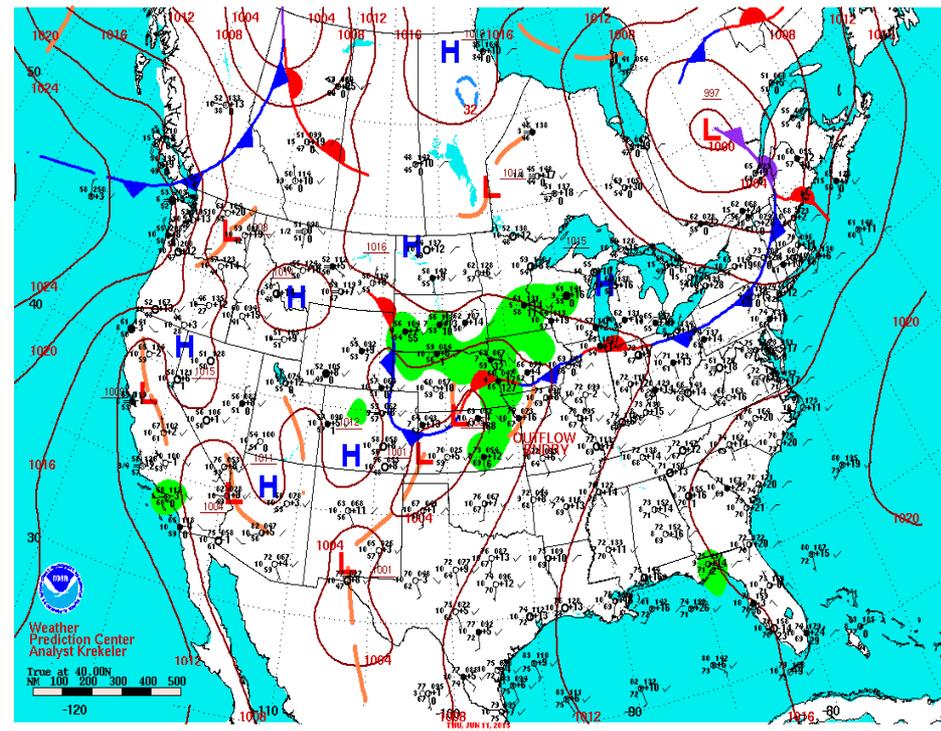
Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Meteorology – June 11, 2015

Upper Air

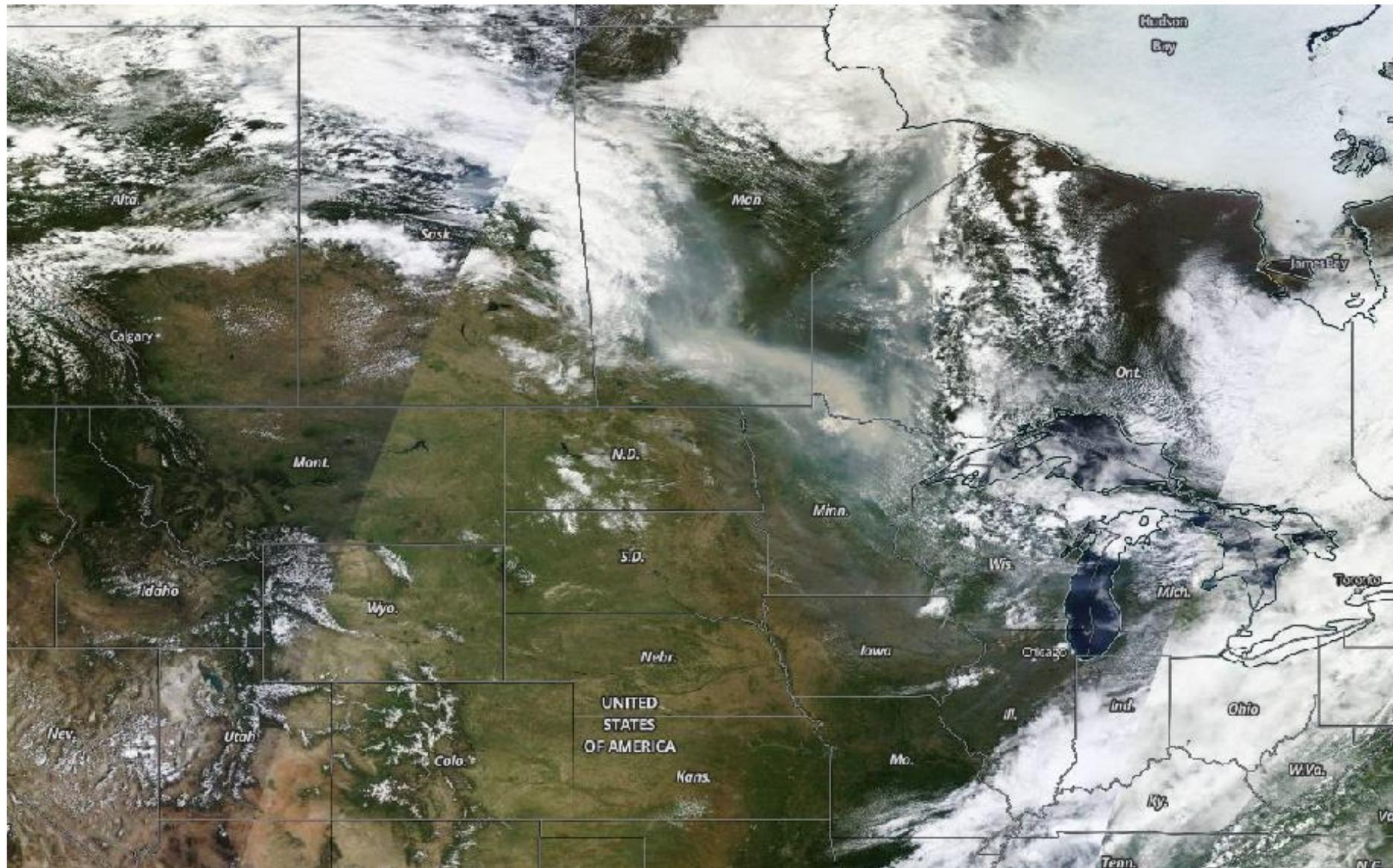


Surface

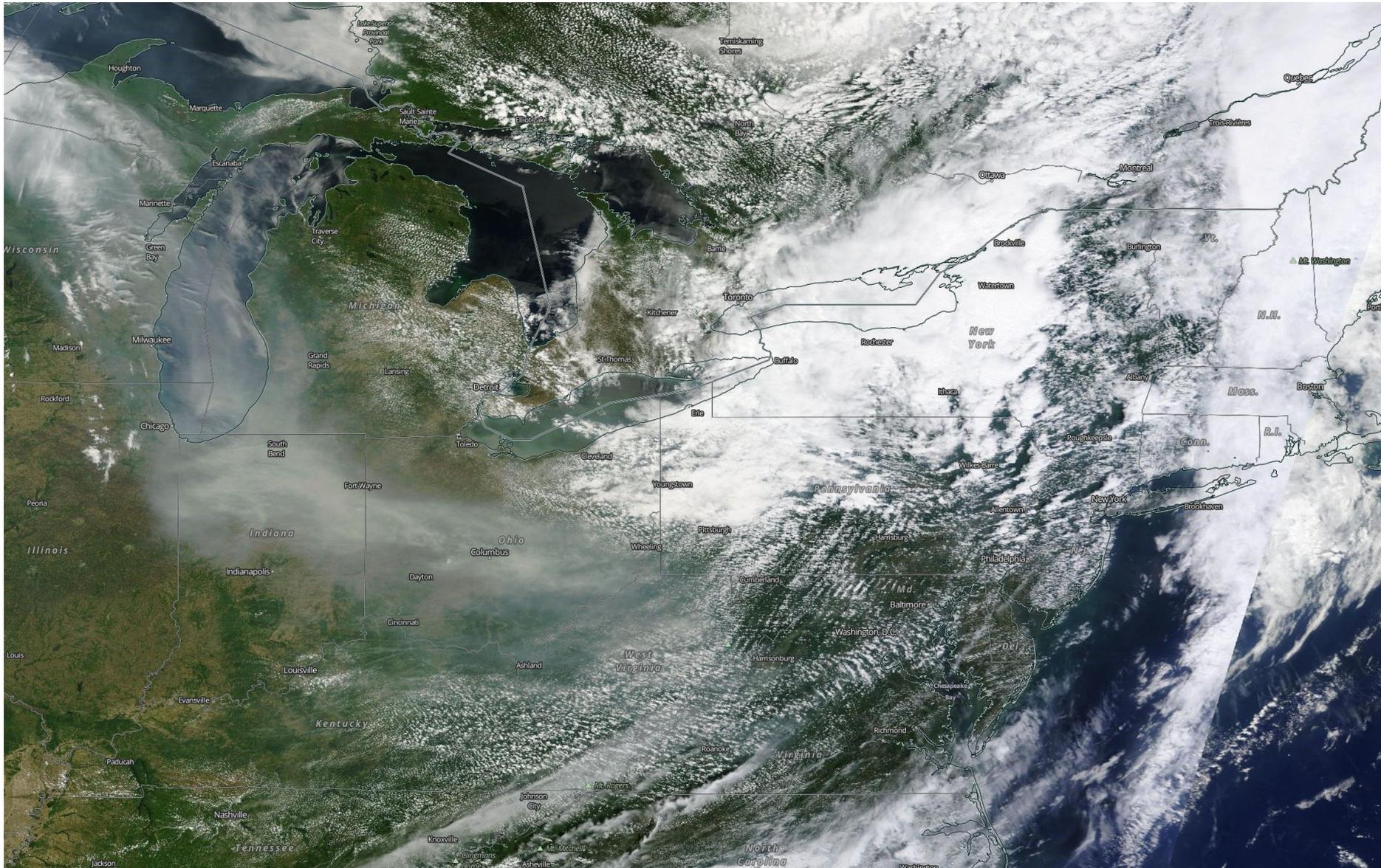


Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

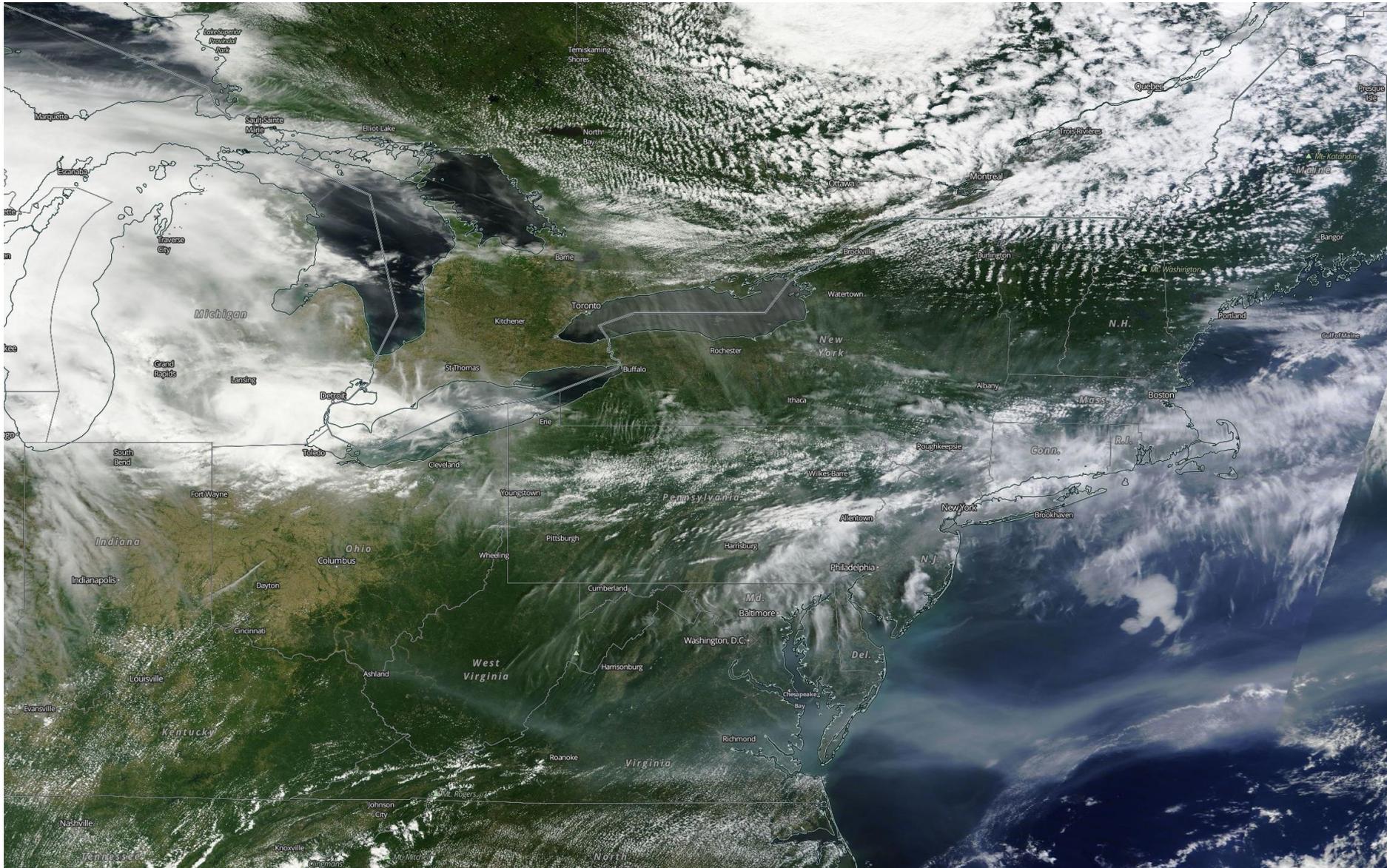
Satellite Imagery – June 08, 2015



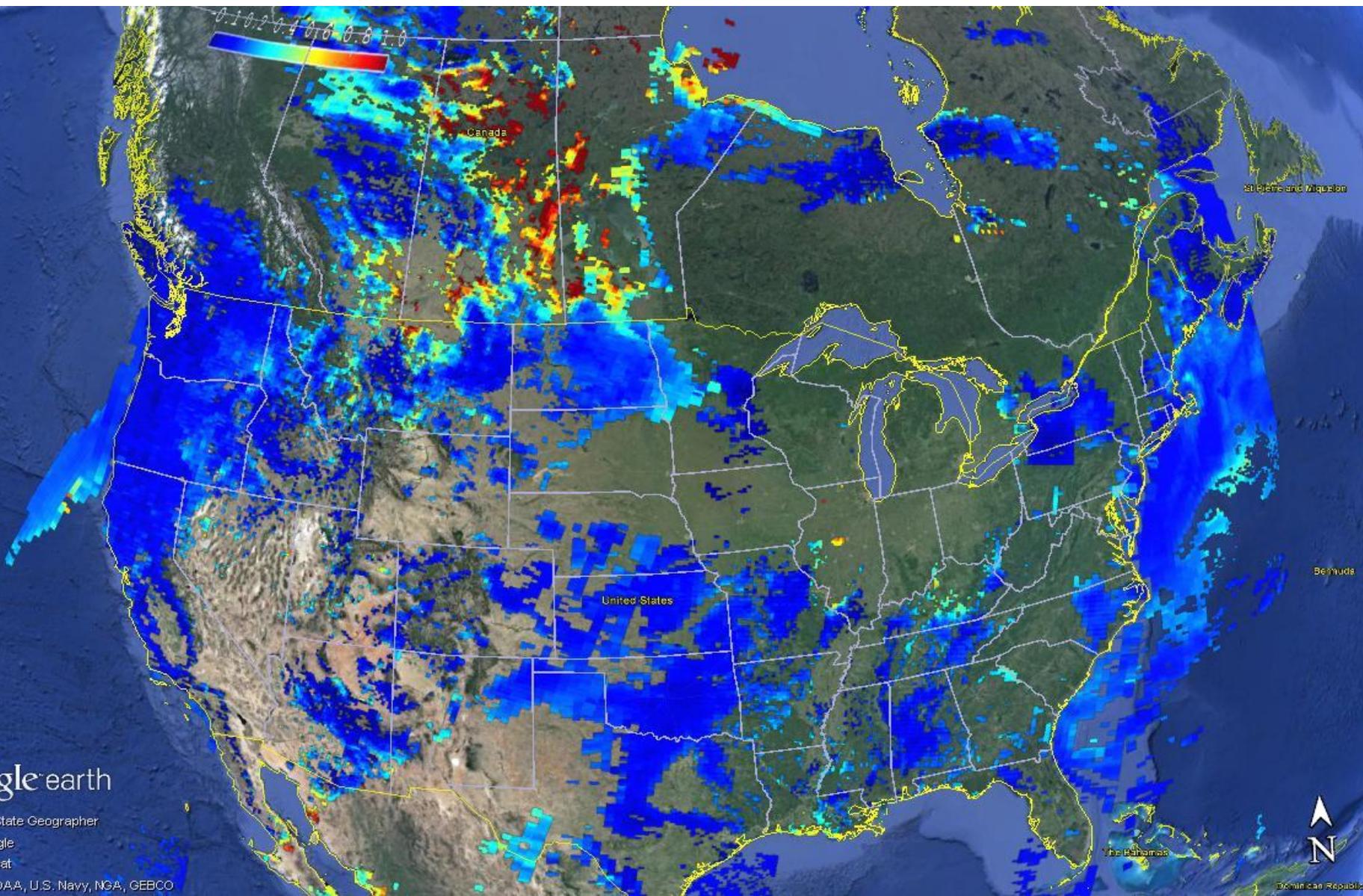
Satellite Imagery – June 09, 2015



Satellite Imagery – June 11, 2015



Aerosol Optical Depth – June 07, 2015



Google earth

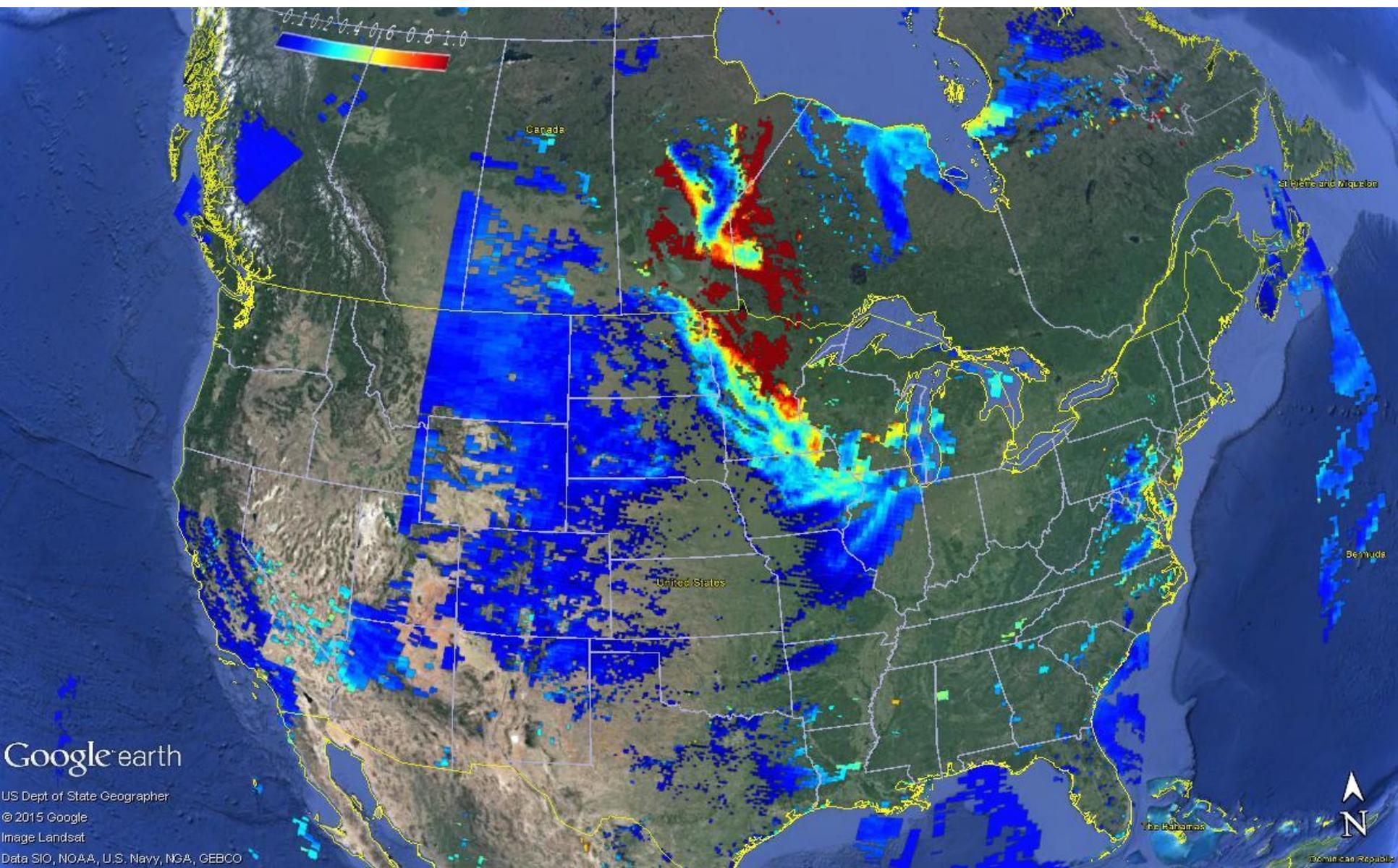
US Dept of State Geographer

© 2015 Google

Image Landsat

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Aerosol Optical Depth – June 08, 2015



Google earth

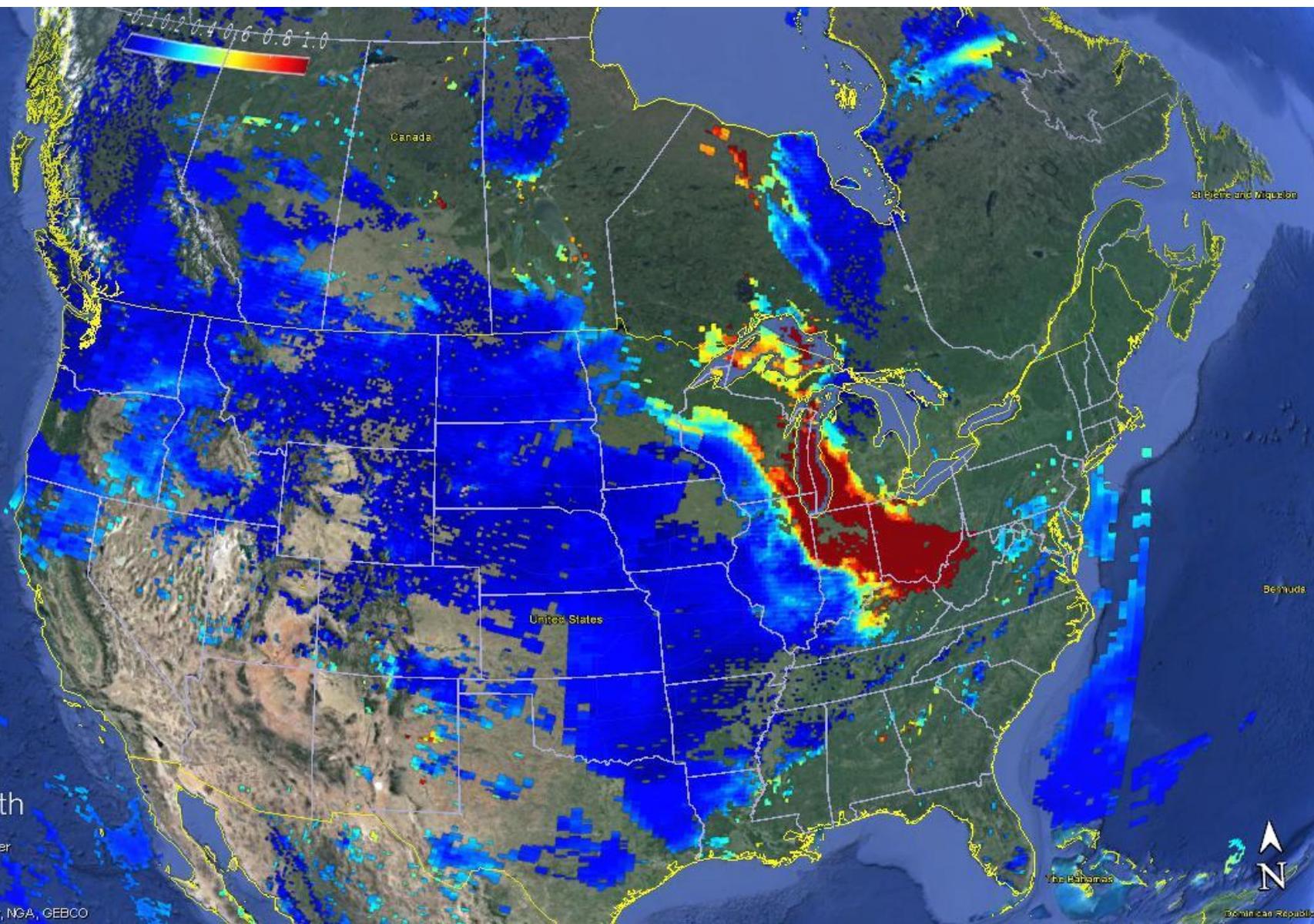
US Dept of State Geographer

© 2015 Google

Image Landsat

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Aerosol Optical Depth – June 09, 2015



Google earth

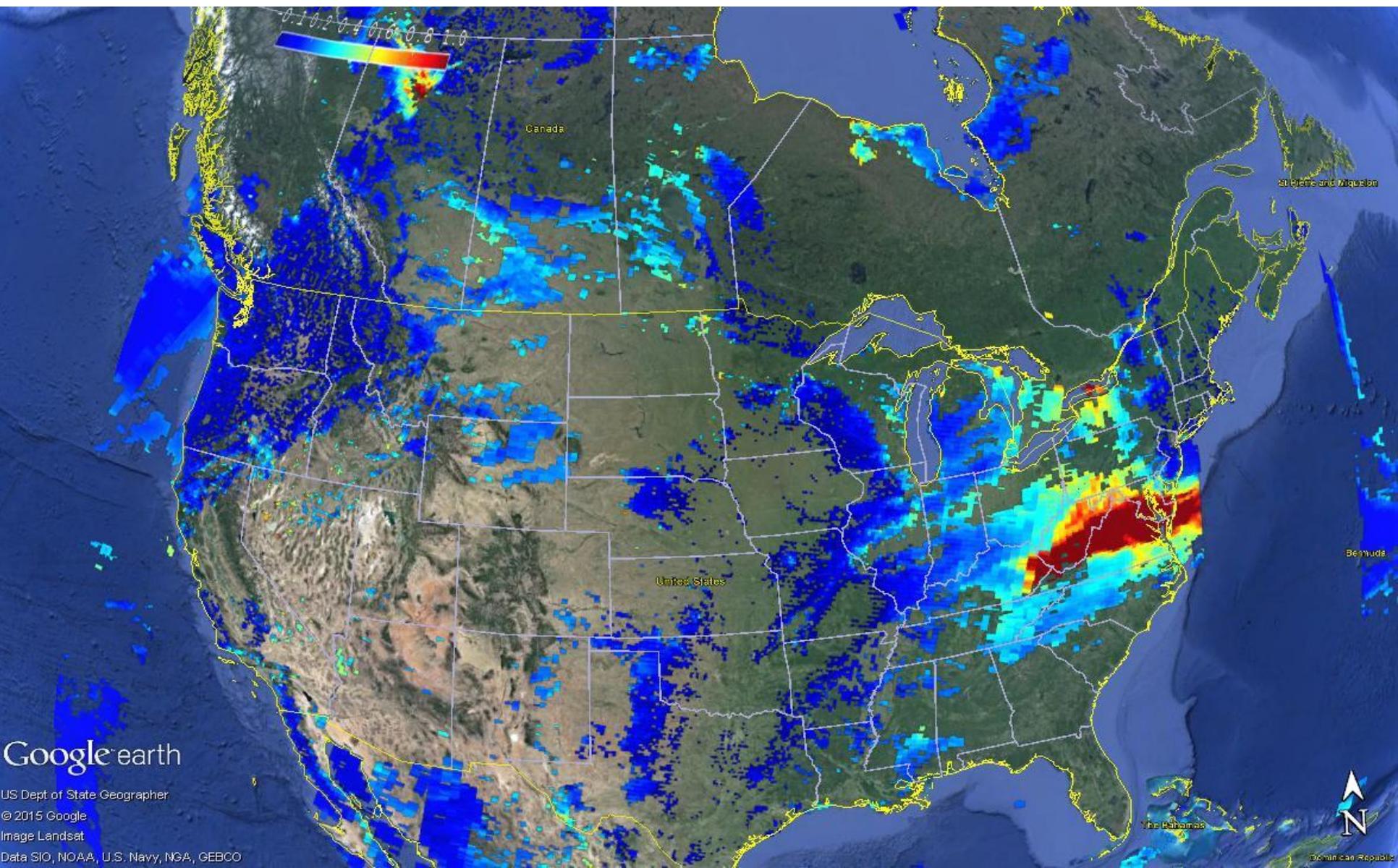
US Dept of State Geographer

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Image Landsat

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Aerosol Optical Depth – June 10, 2015



Google earth

US Dept of State Geographer

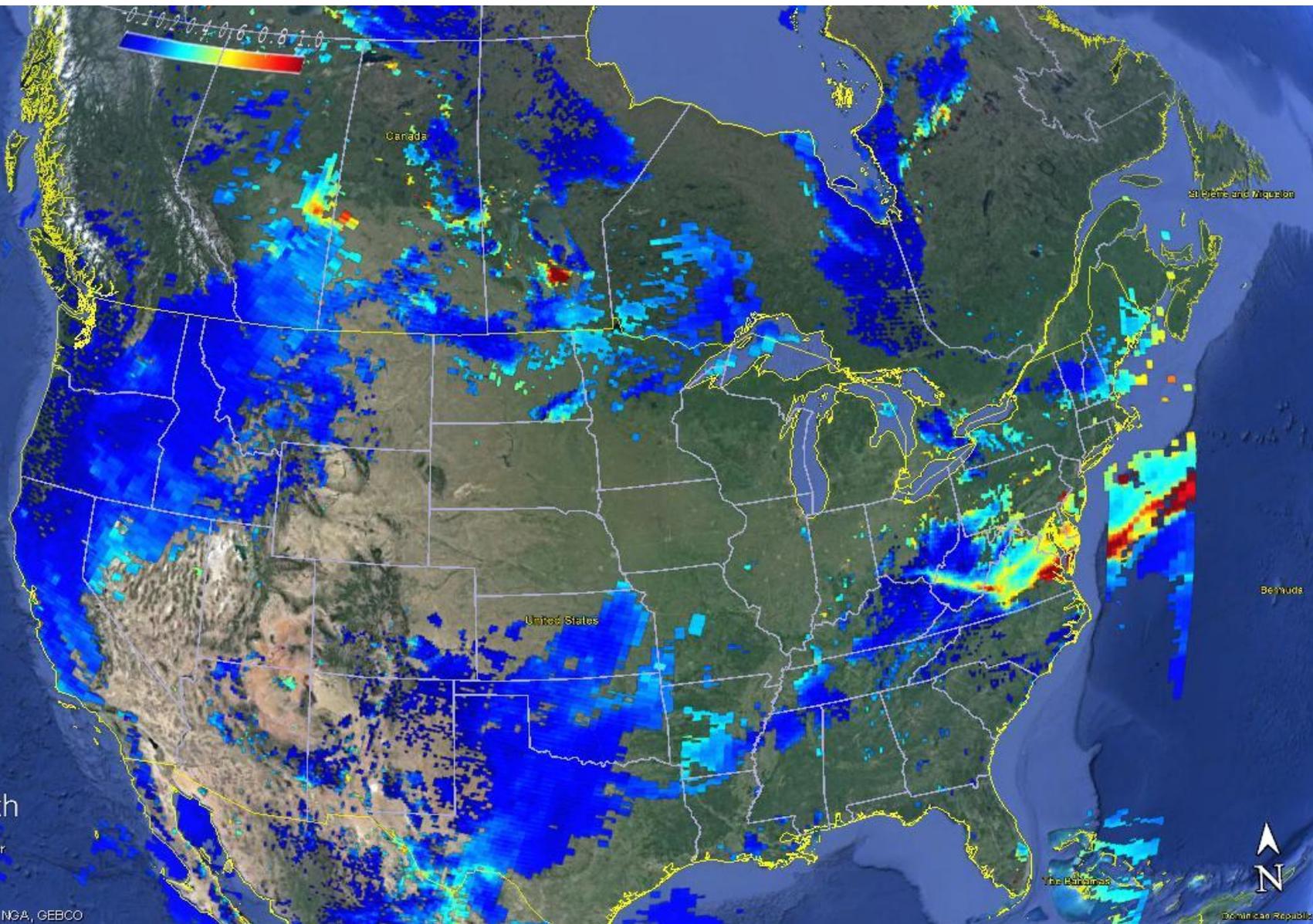
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Image Landsat

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Dominican Republic

Aerosol Optical Depth – June 11, 2015



Google earth

US Dept of State Geographer

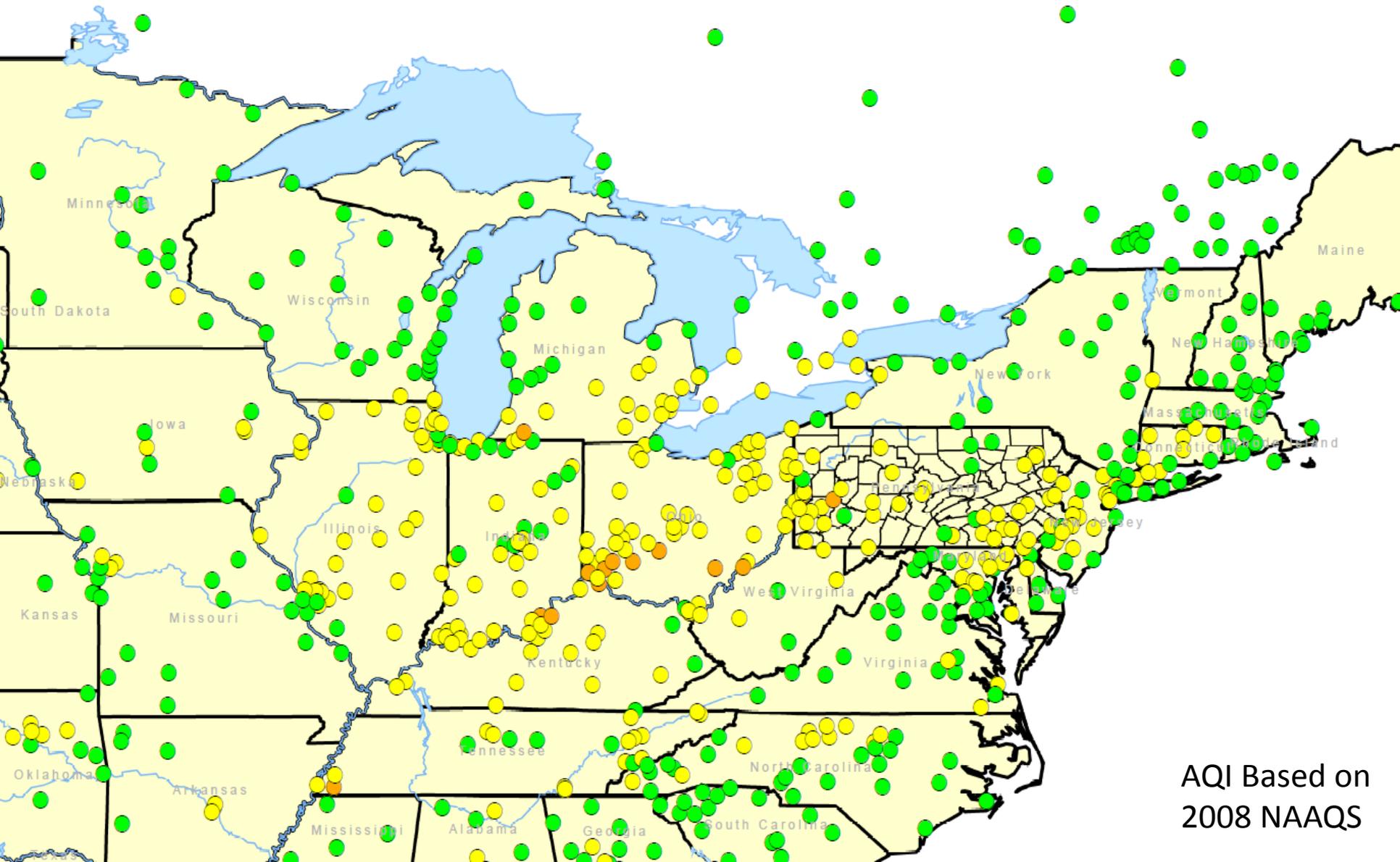
© 2015 Google

Image Landsat

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

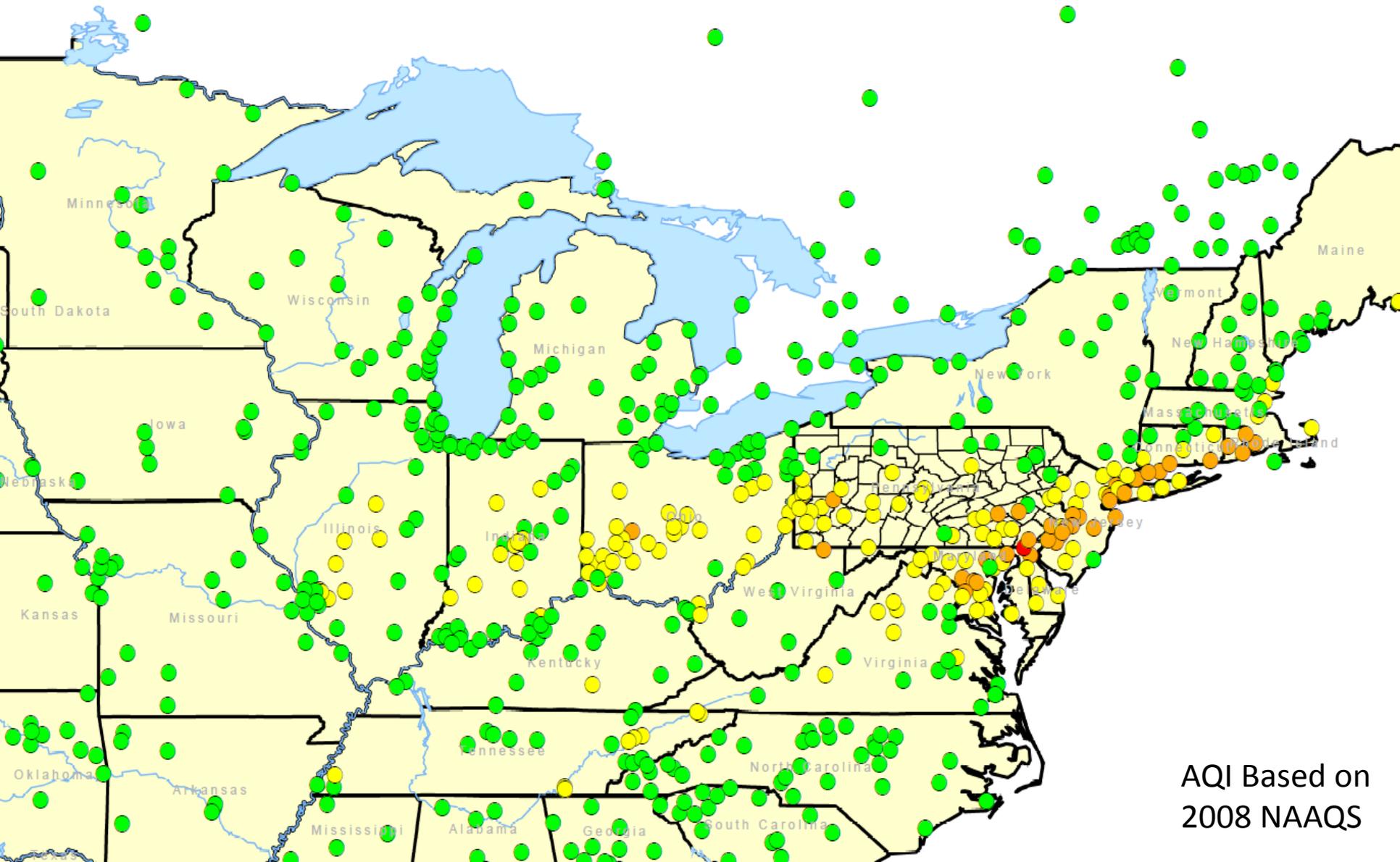
Dominican Republic

Ozone Concentrations – June 10, 2015



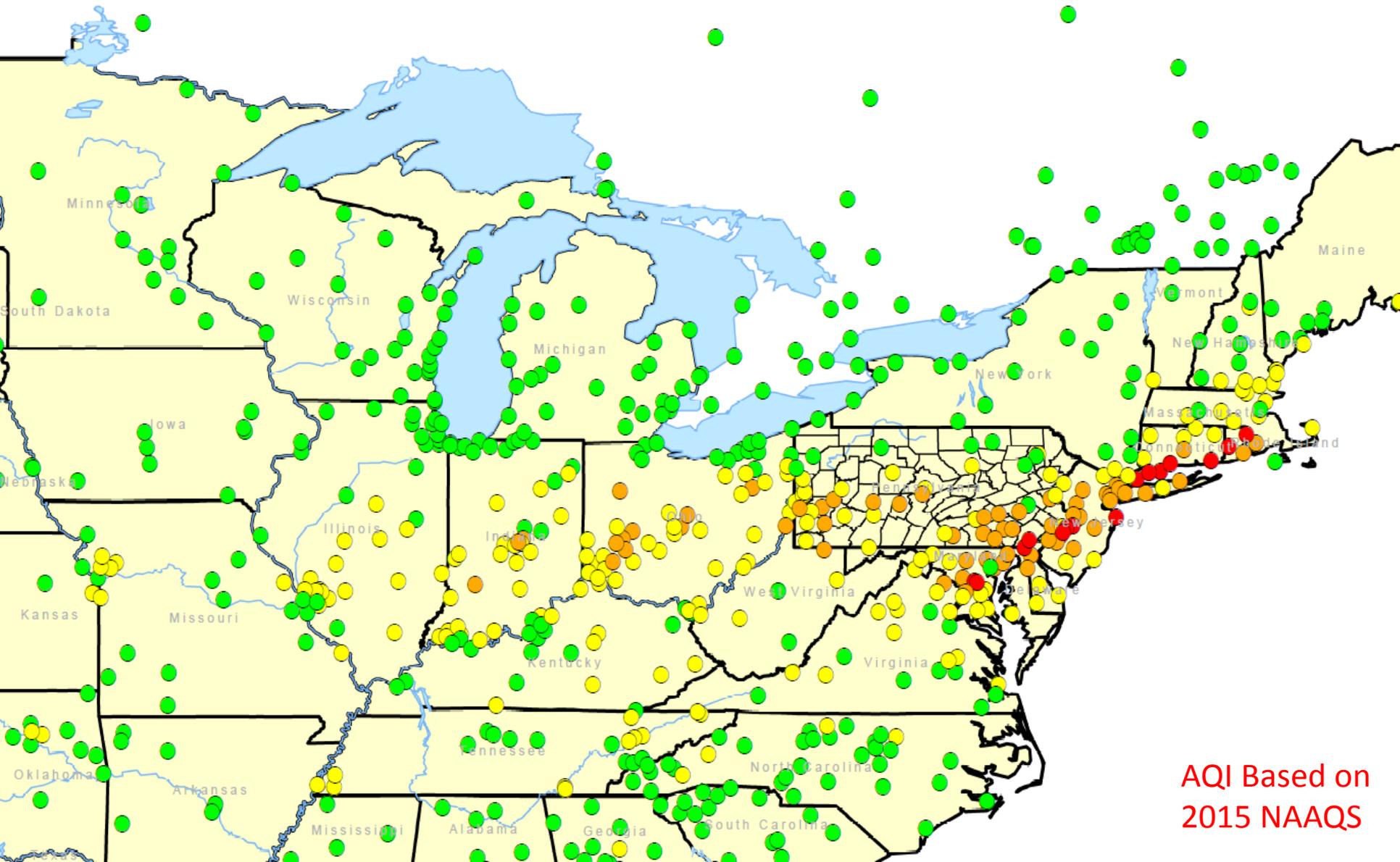
AQI Based on
2008 NAAQS

Ozone Concentrations – June 11, 2015



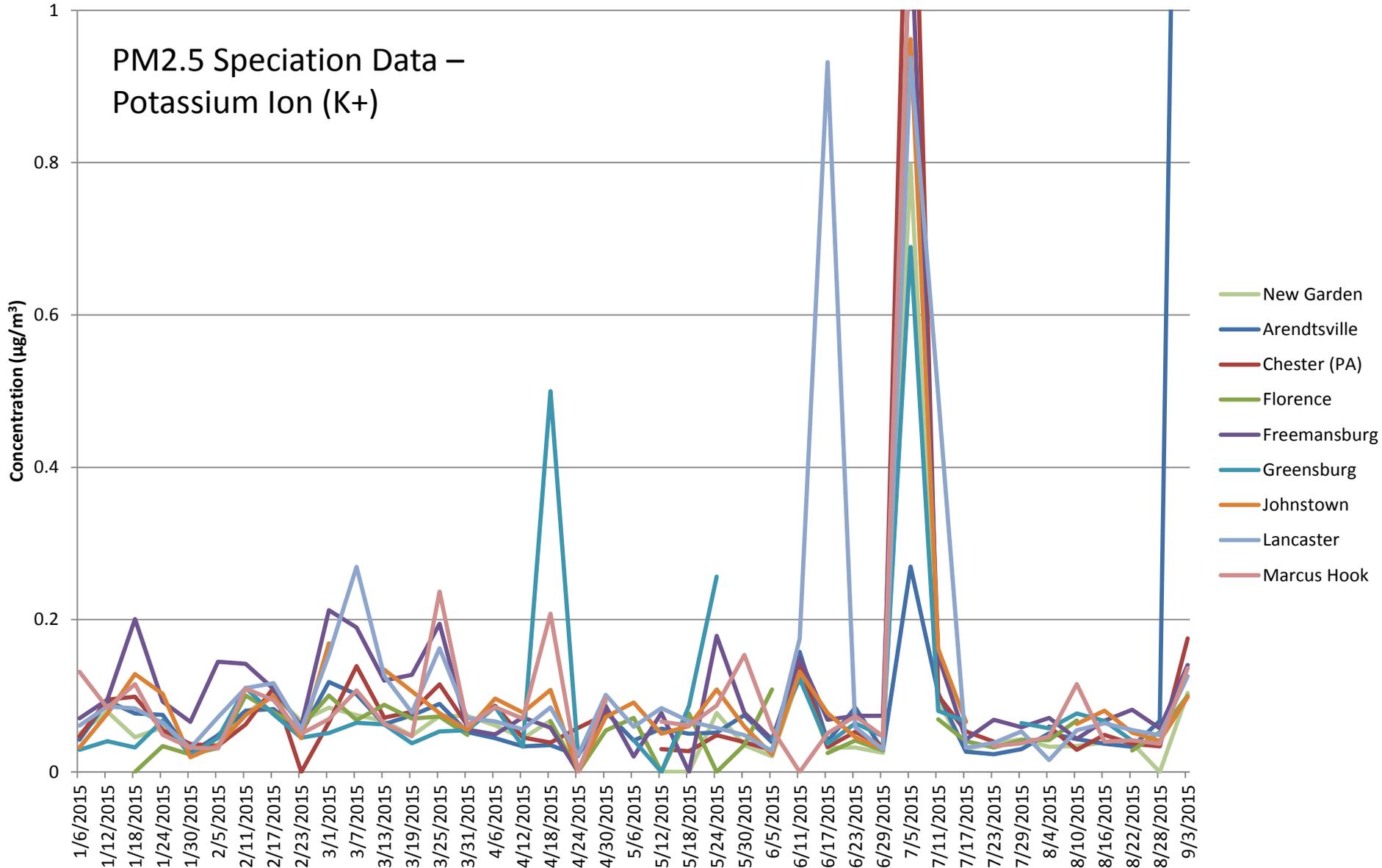
AQI Based on
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Ozone Concentrations – June 11, 2015

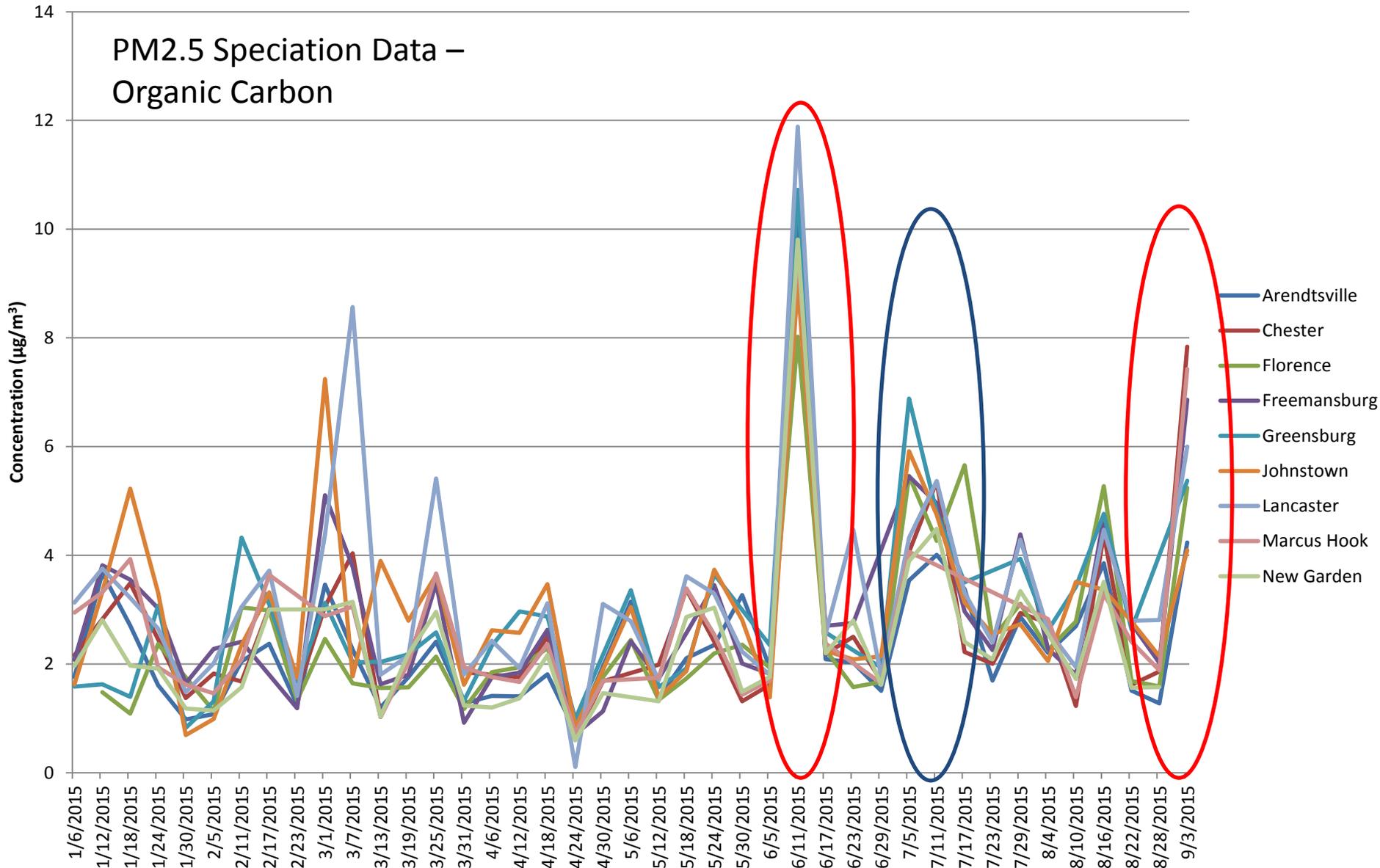


AQI Based on
2015 NAAQS

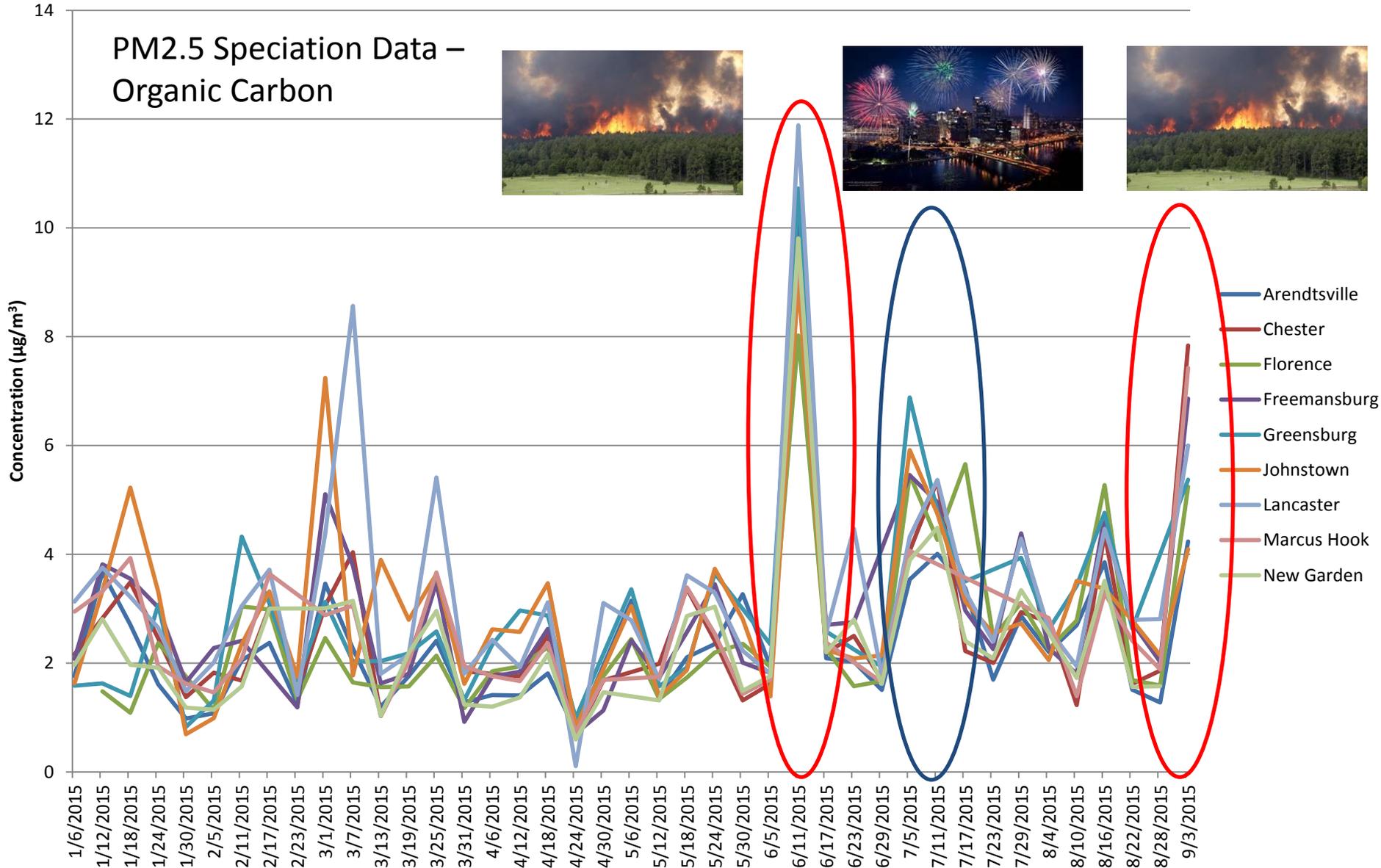
Elevated Ozone Link to Fires



Elevated Ozone Link to Fires



Elevated Ozone Link to Fires



Summary of 2015 Ozone Standard

- Changes to the level of the ozone standard - On October 1, 2015, EPA lowered the 8-hour ozone primary (health-based) standard from 0.075 ppm to 0.070 ppm. The primary standard was lowered because, based on science, the EPA Administrator determined that the 2008 standard was no longer adequate for the protection of public health.
- In addition, the 8-hour ozone secondary (welfare-based) standard was also strengthened to 0.070 ppm. The secondary ozone standard was also lowered because of scientific evidence of the impact of ozone on growth processes of plants and trees.
- Changes to the Air Quality Index (AQI) scale – Based on the strengthening of the ozone standard, EPA has updated the “breakpoints” for each AQI category.

Changes to the Air Quality Index

AQI Category	Index Values	2008 Breakpoints (ppb, 8-hour average)	2015 Breakpoints (ppb, 8-hour average)
Good	0 - 50	0 - 59	0 - 54
Moderate	51 - 100	60 - 75	55 - 70
Unhealthy for Sensitive Groups	101 - 150	76 - 95	71 - 85
Unhealthy	151 - 200	96 - 115	86 - 105
Very Unhealthy	201 - 300	116 - 374	106 - 200
Hazardous	301 - 500	375 - Significant Harm Level*	201 - Significant Harm Level*

* The Significant Harm Level for ozone is 600 ppb (based on a 2-hour average).

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Code **ORANGE** or higher –
Air Quality Action Days for Ozone

Changes to the Air Quality Index

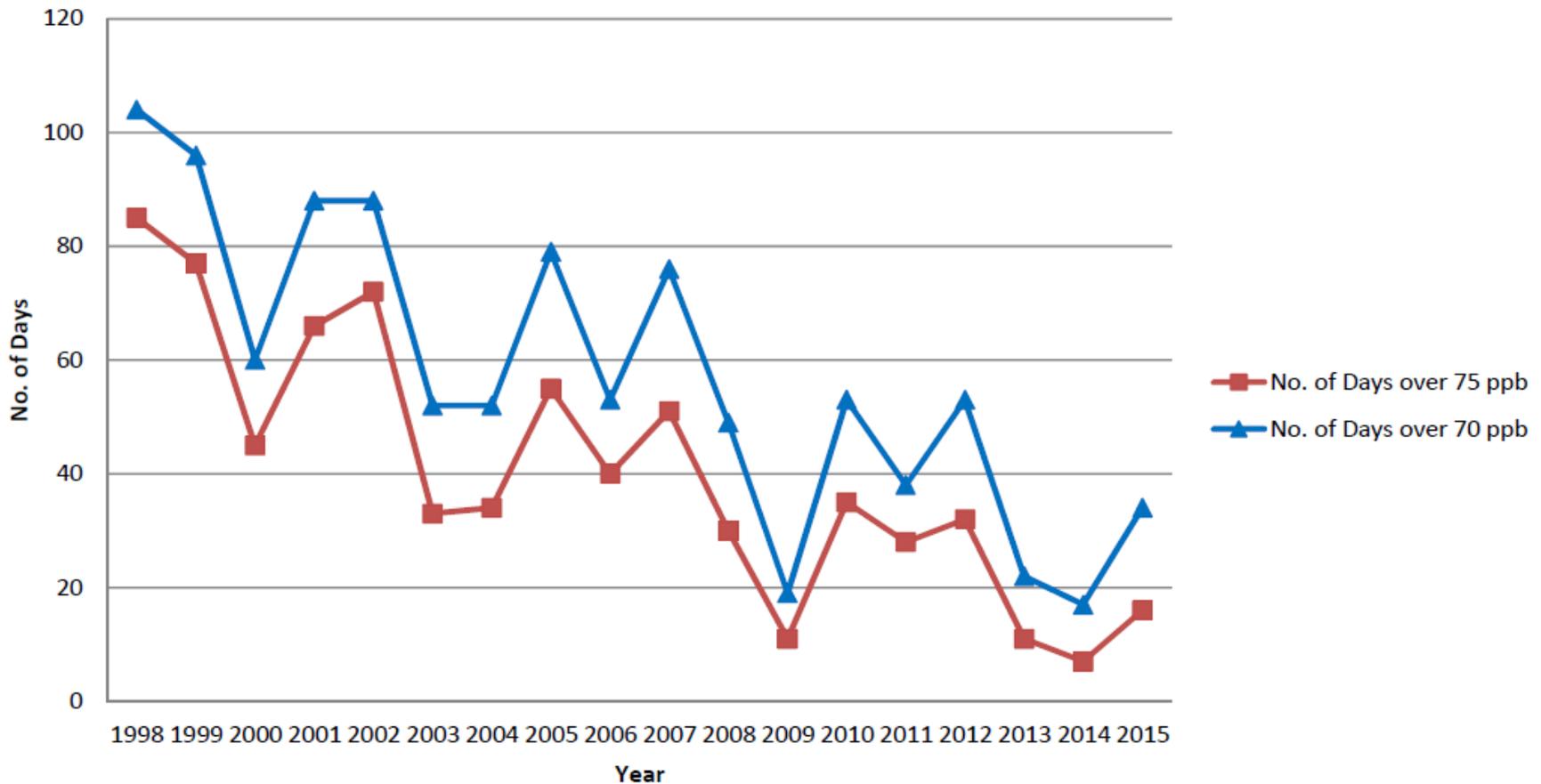
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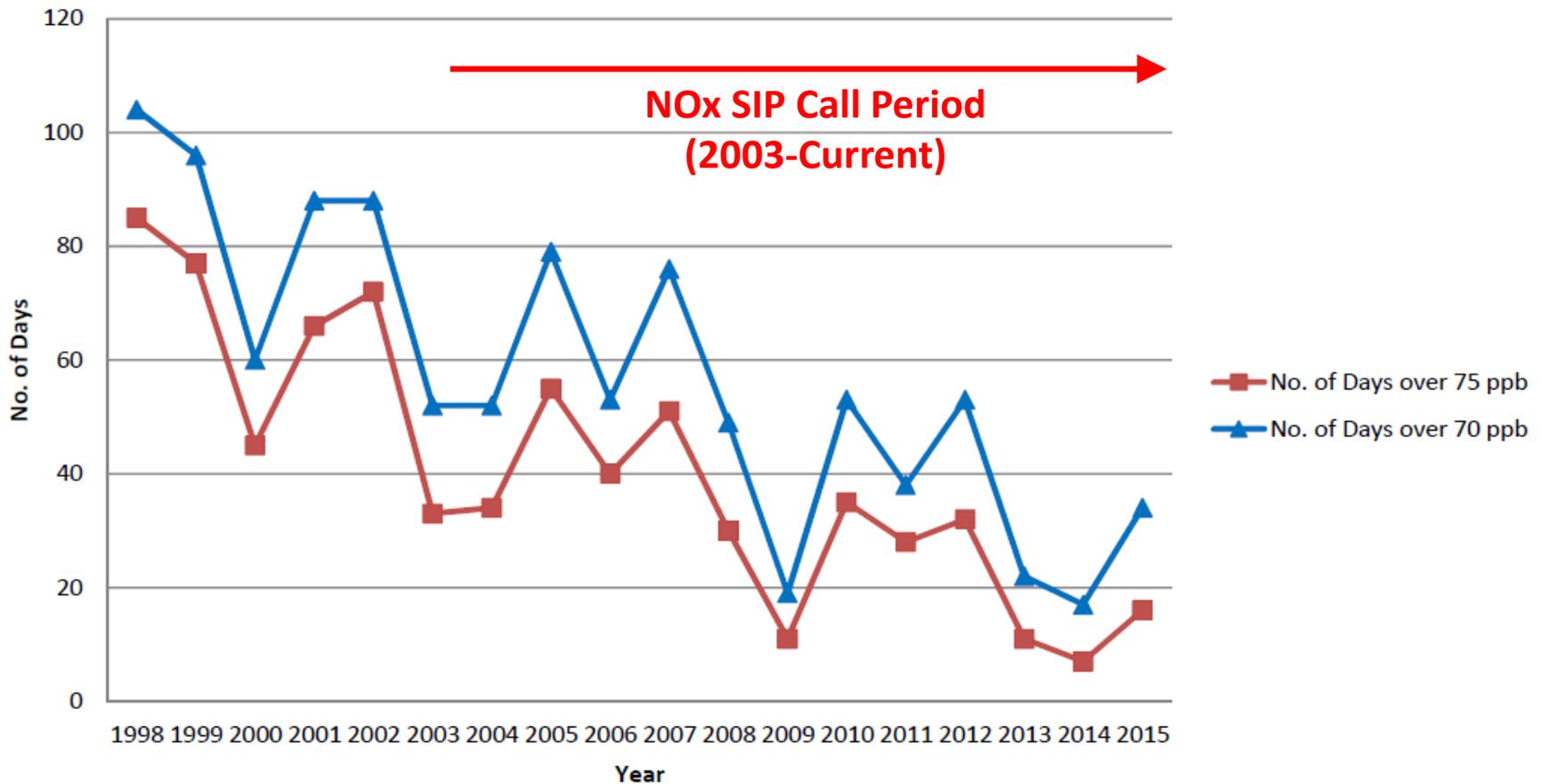
Days Above the 2008 and 2015 Ozone NAAQS

No. of Days above 70 and 75 ppb, by Year



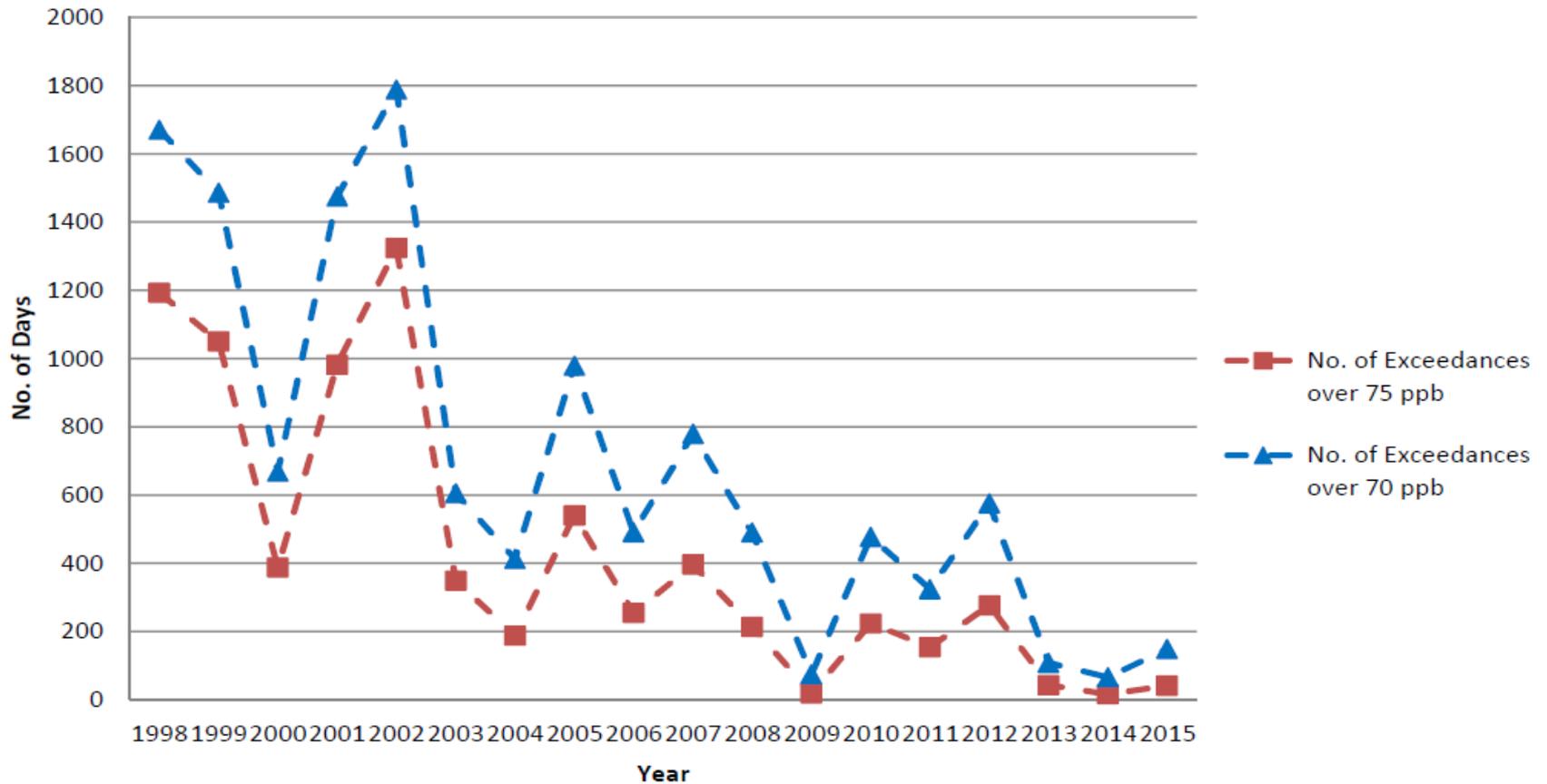
Days Above the 2008 and 2015 Ozone NAAQS

No. of Days above 70 and 75 ppb, by Year



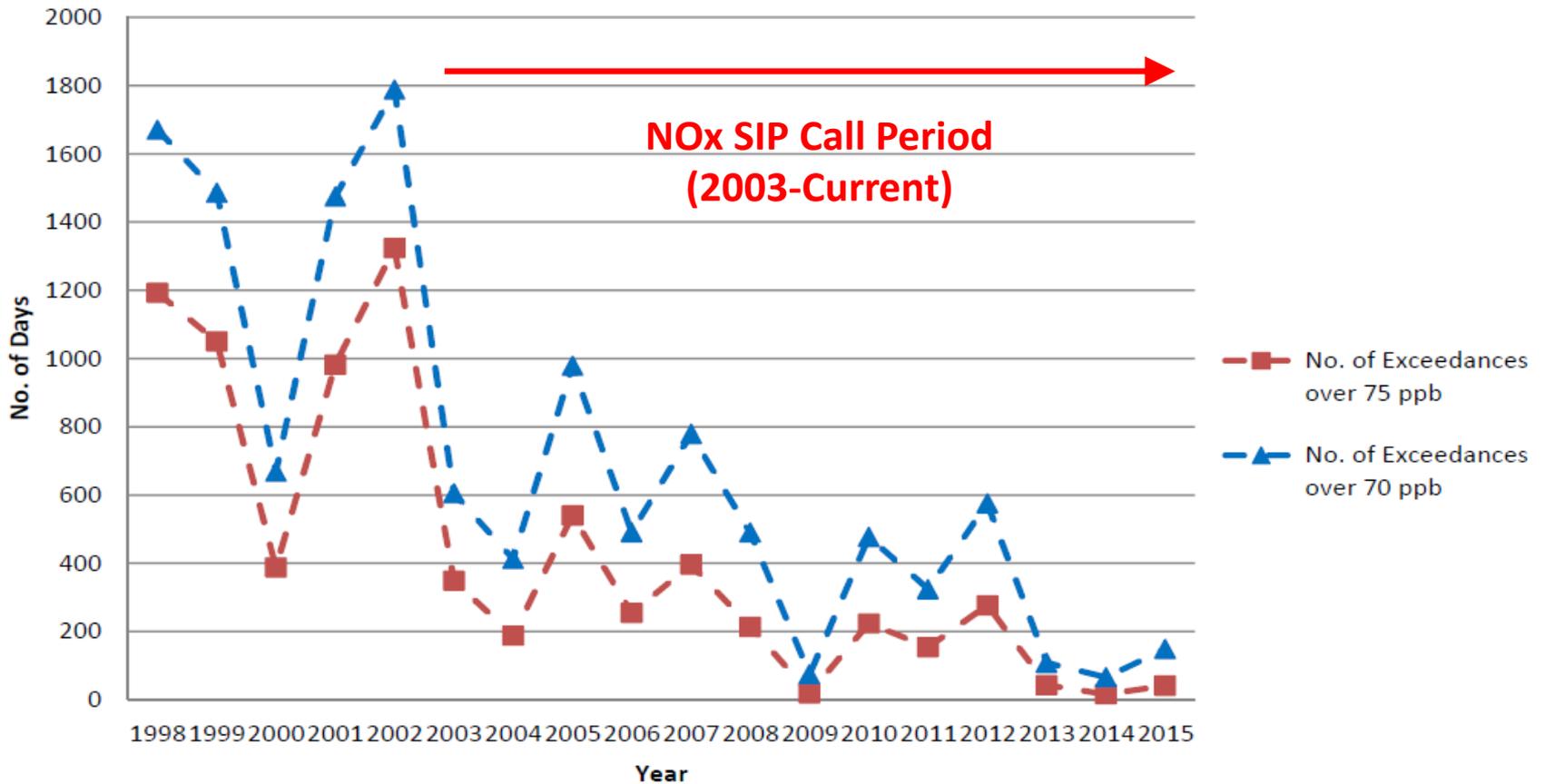
Number of Ozone NAAQS Exceedances

No. of Exceedances above 70 and 75 ppb, by Year



Number of Ozone NAAQS Exceedances

No. of Exceedances above 70 and 75 ppb, by Year



Summary of 2015 Ozone Standard Revisions

- Changes to the Monitoring Network
 - Updates to the Photochemical Assessment Monitoring Stations (PAMS)
 - Extension of the ozone monitoring season
 - Approved additional Federal Reference Method monitor
 - New data handling procedure for determining compliance with revised standards
- Updates to the PAMS network include additional PAMS (which measure ozone, nitrogen oxides and volatile organic compounds (VOCs)) at the following:
 - NCore sites (currently in major metro areas, including Philadelphia and Pittsburgh)
 - Areas where nonattainment area is classified as moderate or higher (develop an Environmental Monitoring Plan to address).

Summary of Ozone Monitoring Revisions

- The final rule for EPA's 2015 ozone standards changed the length of the ozone monitoring season for 32 states.
 - Currently, PA's ozone monitoring season is April to October each year.
 - Beginning in January 2017, the ozone monitoring season will extend from March – October (Note: The Transport Rule ozone season will remain May –September for trading purposes).
 - PADEP collects ozone data year-round to assess the impact of natural gas operations on wintertime ozone levels.
- The addition of a new ozone Federal Reference Monitor (FRM), based on advanced technology and monitoring methods, will be used with currently existing FRM and Federal Equivalent Monitors (FEMs) to meet EPA requirements.

Summary of Data Handling Procedures

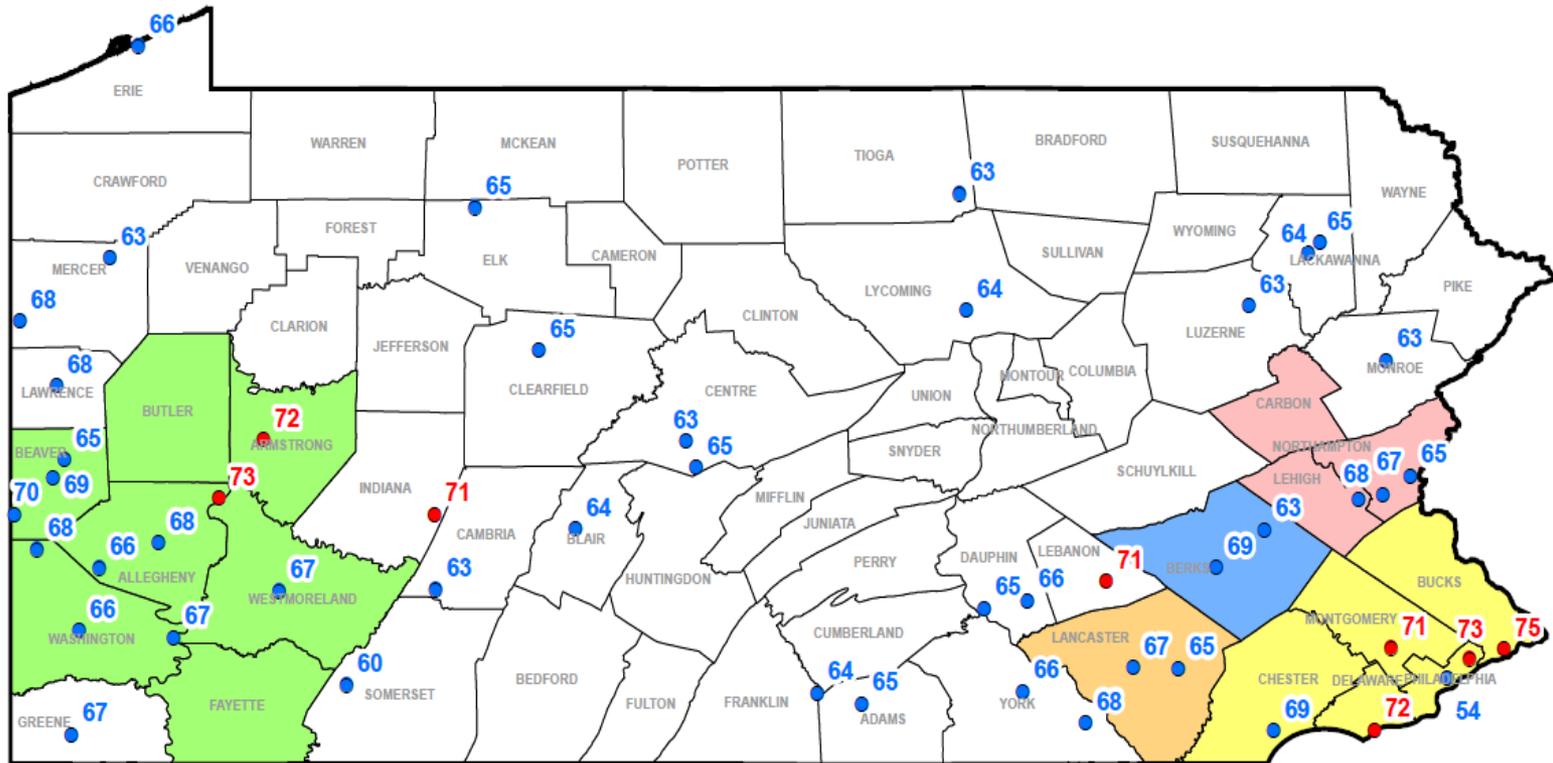
- The new data handling procedures for determining compliance with the 2015 ozone standard include the following:
 - Revisions (being placed in 40 CFR Part 50, Appendix U) for procedures outlined in 40 CFR Part 50, Appendix P for determining daily maximum 8-hour average concentrations
 - Addition of a new procedure for combining data when two or more monitoring instruments are operating at the same monitoring site.
 - Addition of a new procedure for allowing the Regional Administrator to approve “site combinations” when monitoring sites are replaced or relocated
 - Minor change to the data substitution test outlined in Appendix P (used to determine a clear exceedance of the NAAQS in the presence of missing data)

Designations for the 2015 Ozone NAAQS

- Designation Recommendations
 - PADEP must submit Pennsylvania's designation recommendations to EPA Region 3 by October 2016 for attainment and nonattainment areas.
 - EPA Region 3 will issue a 120-day letter to states in June 2017, outlining any modifications to Pennsylvania's designation recommendations.
 - States will have an opportunity to comment on EPA's proposal and to submit supplemental information including certified ambient air data.
 - Final designations, based on 2014-2016 ozone data, will be due in October 2017; designations would take effect in December 2017.
- Based on preliminary 2013-2015 ozone design values, eight samplers in the Commonwealth are monitoring nonattainment of the 2015 8-hour ozone NAAQS.

Projected 2015 Pennsylvania 8-Hour Ozone Design Values

Data Available Through October 31, 2015 (Not Completely QA/QC'd)
 Areas are Shaded Based on EPA's April 30, 2012 Designations



8-Hour Ozone Nonattainment Areas (Based on 2008 Ozone Standard)

- | | |
|--|--|
|  Allentown-Bethlehem-Easton, PA |  Pittsburgh-Beaver Valley, PA |
|  Lancaster, PA |  Reading, PA |
|  Philadelphia-Wilmington-Atlantic City, PA-DE-MD-NJ |  Attainment Counties |

Appearing in Red - Projected 2015 8-Hour Ozone Design Value is Exceeding 2015 Ozone Standard

Appearing in Blue - Projected 2015 8-Hour Ozone Design Value in Attainment of 2015 Ozone Standard

Conclusions

- Based on the preliminary 2015 design values, the Commonwealth continues to see a decline in 8-hour ozone concentrations.
- Near normal temperatures coupled with above normal precipitation produced less than normal number of exceedances of the 2008 ozone NAAQS.
- In fact, based on the preliminary 2015 design values, all monitors in the Commonwealth are attaining the 8-hour ozone NAAQS.

Conclusions

- There were 8-hour ozone NAAQS exceedances in 2015 that could be contributable to wildfire smoke from western Canada / western United States.
- In addition, EPA issued the new ozone standards by October 1, 2015. The final rule for the new ozone NAAQS outlines the following:
 - Changes to the level of the ozone standard
 - Changes to the AQI scale
 - Changes to the monitoring network
 - Nonattainment / attainment designation timeline



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EXHIBIT B

Estimation of Pennsylvania RACT II Rule on Pennsylvania Ozone Season NO_x Emissions from Electric Generation Units

Prepared by:

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January 2016

Olympus Power, LLC has estimated nitrogen oxides (NO_x) emissions from Pennsylvania electric generating units after the implementation of Reasonably Available Control Technology II (RACT II). Pennsylvania RACT II limitations will be in effect year-round and become effective on January 1, 2017.

While the RACT II requirements are unit specific, for the purposes of this effort, the affected units are identified in the accompanying spreadsheet by facility. For the estimation, the 2014 ozone season heat input available from EPA's Clean Air Markets Division (CAMD) website was used for operational heat input with the exception of two facilities, Brunner Island and Montour Power Plants. For those two facilities, the 2015 ozone season operational heat input information from CAMD was used. This was done to ensure that the estimation of their emissions and the overall Pennsylvania emissions were not understated.

For coal fired units, the RACT II limits are expressed as 0.12 lb NO₂/MMBtu when the selective catalytic reduction (SCR) inlet temperature is 600 degree or above and 0.35 lb NO₂/MMBtu when the temperature is below 600 degrees. This limit allows the units to cease injecting ammonia when prices in the PJM wholesale electric market are so low that these units must reduce their load to their absolute minimum sustainable load to reduce their losses. Essentially the rule requires control of emissions at higher loads using the SCR and at the lower loads by limiting the heat input to the boiler. As a consequence, the overall NO_x emission rate for coal-fired units used to estimate emissions after the implementation of RACT II is 0.162 lb NO₂/MMBtu. This is a conservative estimate as the actual rate that is achieved will be dependent upon the dispatch rates of the units. Based on concerns previously raised by Pennsylvania Department of Environmental Protection (PADEP), an emission rate of 0.20 lb NO₂/MMBtu was used for Homer City Power Plant to reflect a "case by case" determination which is allowed under the PA RACT II regulation. Again, this was done to ensure the estimated emissions after implementation of PA RACT II aren't underestimated.

For the coal-fired units that have converted to natural gas or have the permitted capability to burn natural gas at 100% load, the PA RACT II limit of 0.1 lb NO₂/MMBtu was used to estimate emissions.

For the coal refuse-fired facilities, the lower of actual emission rates or the RACT II limit of 0.16 lb NO₂/MMBtu was used to estimate emissions.

For all other facilities the actual emissions rates which are already below the RACT II rate limits were used.

This calculation is reflected in estimated ozone season NO_x emissions from the Pennsylvania electric generating units after the implementation of RACT of 27,010 tons*.

*N.B.: This calculation represents the private estimates prepared by Olympus Power using the assumptions described above and is not necessarily reflective of the actual emissions of any given facility not owned or controlled by Olympus.

Estimation of Pennsylvania RACT II Rule on Ozone Season NOx Emissions from EGUs
Emissions - Unit Level Data Report Nov 24, 2015

Your query will return 57 Facility(s) and 141 Unit(s)

Program: Clean Air Interstate Rule Ozone Season (CAIROS) (ended 2014) Data Set: Emissions - Unit Level Data

Time Frame: Emissions : Ozone Season : 2014

Criteria: State : Pennsylvania

Aggregate Criteria: Facility

Columns: State, Facility Name, Facility ID (ORISPL), Year, Program(s) Selected, NOx (tons), Heat Input (MMBtu)

Record Number	State	Facility Name	Facility ID (ORISPL)	Year	Program(s) Selected	NOx (tons)	Heat Input (MMBtu)	2014 Emission rate (lb NO2/MMBtu)	Projected 2017 Emission Rate w/RACT (lb NO2/MMBtu)	Projected 2017 OS NOx Emissions w/RACT (tons)
2	PA	Allegheny Energy Units 1 & 2	55196	2014	CAIROS	11.3	313,479	0.072094143	0.072094143	11.3
3	PA	Allegheny Energy Units 3, 4 & 5	55710	2014	CAIROS	43.6	10,773,628	0.008093838	0.008093838	43.6
4	PA	Allegheny Energy Units 8 & 9	55377	2014	CAIROS	3.6	91,337	0.078828952	0.078828952	3.6
5	PA	Armstrong Power, LLC	55347	2014	CAIROS	54.2	3,444,997	0.03146592	0.03146592	54.2
6	PA	Bethlehem Power Plant	55690	2014	CAIROS	45.7	17,468,994	0.005232127	0.005232127	45.7
7	PA	Bruce Mansfield	6094	2014	CAIROS	7,158.9	68,605,754	0.208696781	0.162	5557.066074
8	PA	Brunner Island, LLC	3140	2014	CAIROS	2,703.9	22,060,569	Converted to natural gas use during OS	0.1	1103.02845
9	PA	Brunot Island Power Station	3096	2014	CAIROS	6.1	345,029	0.035359347	0.035359347	6.1
10	PA	Cambria Cogen	10641	2014	CAIROS	449.1	4,120,446	0.217986111	0.16	329.63568
11	PA	Chambersburg Units 12 & 13	55654	2014	CAIROS	14.3	350,141	0.08168138	0.08168138	14.3
12	PA	Cheswick	8226	2014	CAIROS	2,192.9	11,092,539	0.395382879	0.162	898.495659
13	PA	Colver Power Project	10143	2014	CAIROS	392.8	4,775,359	0.164511192	0.16	382.02872
14	PA	Conemaugh	3118	2014	CAIROS	7,141.9	44,481,853	0.32111522	0.162	3603.030093
15	PA	Croydon Generating Station	8012	2014	CAIROS	5.6	17,333	0.646166272	0.646166272	5.6
16	PA	Dynegy Fayette II, LLC	55516	2014	CAIROS	52.4	14,896,972	0.007034987	0.007034987	52.4
17	PA	Ebensburg Power Company	10603	2014	CAIROS	99.5	2,165,139	0.091910958	0.091910958	99.4999985
18	PA	Eddystone Generating Station	3161	2014	CAIROS	43.3	676,917	0.127932967	0.127932967	43.3
19	PA	Fairless Energy, LLC	55298	2014	CAIROS	90.7	24,491,675	0.007406598	0.007406598	90.7
20	PA	Fairless Hills Generating Station	7701	2014	CAIROS	30.2	1,496,963	0.040348359	0.040348359	30.2
21	PA	Gilberton Power Company	10113	2014	CAIROS	82.2	3,557,502	0.046212202	0.046212202	82.20000052
22	PA	Grays Ferry Cogen Partnership	54785	2014	CAIROS	71.7	4,661,760	0.030760914	0.030760914	71.7
23	PA	Handsome Lake Energy	55233	2014	CAIROS	28.7	763,480	0.075182061	0.075182061	28.7
24	PA	Hazleton Generation	10870	2014	CAIROS	0.9	7,699	0.233796597	0.233796597	0.9
25	PA	Homer City	3122	2014	CAIROS	8,373.1	44,309,897	0.377933625	0.2	4430.9897
26	PA	Hunlock Creek Energy Center	3176	2014	CAIROS	12.6	2,972,340	0.008478169	0.008478169	12.6
27	PA	Hunlock Unit 4	56397	2014	CAIROS	0.7	16,963	0.082532571	0.082532571	0.7
28	PA	Hunterstown Combined Cycle	55976	2014	CAIROS	37	12,553,366	0.005894833	0.005894833	37
29	PA	Keystone	3136	2014	CAIROS	5,441.9	49,212,797	0.221157924	0.162	3986.236557
30	PA	Liberty Electric Power Plant	55231	2014	CAIROS	77.7	13,719,250	0.01132715	0.01132715	77.7
31	PA	Lower Mount Bethel Energy, LLC	55667	2014	CAIROS	67.2	13,574,542	0.009900887	0.009900887	67.2
32	PA	Martins Creek, LLC	3148	2014	CAIROS	920.8	10,362,703	0.177714251	0.177714251	920.8
33	PA	Montour, LLC	3149	2014	CAIROS	4,463.6	28,555,219	0.312629366	0.162	2312.972739
34	PA	Mountain	3111	2014	CAIROS	3.4	10,625	0.64	0.64	3.4

Estimation of Pennsylvania RACT II Rule on Ozone Season NOx Emissions from EGUs
Emissions - Unit Level Data Report Nov 24, 2015
Your query will return 57 Facility(s) and 141 Unit(s)
Program: Clean Air Interstate Rule Ozone Season (CAIROS) (ended 2014) Data Set: Emissions - Unit Level Data
Time Frame: Emissions : Ozone Season : 2014
Criteria: State : Pennsylvania
Aggregate Criteria: Facility
Columns: State, Facility Name, Facility ID (ORISPL), Year, Program(s) Selected, NOx (tons), Heat Input (MMBtu)

Record Number	State	Facility Name	Facility ID (ORISPL)	Year	Program(s) Selected	NOx (tons)	Heat Input (MMBtu)	2014 Emission rate (lb NO2/MMBtu)	Projected 2017 Emission Rate w/RACT (lb NO2/MMBtu)	Projected 2017 OS NOx Emissions w/RACT (tons)
35	PA	Mt. Carmel Cogeneration	10343	2014	CAIROS	117.7	1,968,427	0.119587874	0.119587874	117.7
36	PA	New Castle	3138	2014	CAIROS	125.7	681,272	Converted to natural gas	0.1	34.0636
37	PA	NextEra Energy Marcus Hook, LP	55801	2014	CAIROS	105.5	18,759,894	0.011247398	0.011247398	105.5
39	PA	Northampton Generating Plant	50888	2014	CAIROS	139.7	3,438,808	0.081249084	0.081249084	139.7
40	PA	Northeastern Power Company	50039	2014	CAIROS	31	1,141,525	0.054313309	0.054313309	31
41	PA	Ontelaunee Energy Center	55193	2014	CAIROS	37.6	11,729,809	0.006411017	0.006411017	37.6
42	PA	PEI Power Corporation	50279	2014	CAIROS	7.3	193,333	0.075517372	0.075517372	7.3
43	PA	Panther Creek Energy Facility	50776	2014	CAIROS	214.1	3,562,568	0.120194197	0.120194197	214.1
45	PA	Portland	3113	2014	CAIROS	0.6	11,613	0.103332472	0.103332472	0.6
46	PA	Richmond	3168	2014	CAIROS	2.3	7,251	0.634395256	0.634395256	2.3
47	PA	Scrubgrass Generating Plant	50974	2014	CAIROS	233.3	3,064,233	0.152273016	0.152273016	233.3
48	PA	Seward	3130	2014	CAIROS	513.2	12,930,373	0.079378994	0.079378994	513.2
49	PA	Shawville	3131	2014	CAIROS	1,994.4	9,308,724	Converted to natural gas	0.1	465.4362
50	PA	St. Nicholas Cogeneration Project	54634	2014	CAIROS	99.5	4,488,918	0.044331396	0.044331396	99.5
51	PA	Talen Ironwood, LLC	55337	2014	CAIROS	133.6	18,061,861	0.014793603	0.014793603	133.6
52	PA	Tolna	3116	2014	CAIROS	1.1	3,359	0.654956832	0.654956832	1.1
53	PA	Veolia Energy Philadelphia - Schuylkill	50607	2014	CAIROS	0.8	17,014	0.094040202	0.094040202	0.8
54	PA	WPS Westwood Generation, LLC	50611	2014	CAIROS	111.8	1,492,789	0.149786741	0.149786741	111.8
55	PA	Warren	3132	2014	CAIROS	179.6	730,251	0.491885667	0.491885667	179.6
56	PA	Wheelabrator - Frackville	50879	2014	CAIROS	139.8	2,225,430	0.125638641	0.125638641	139.8
57	PA	York Energy Center	55524	2014	CAIROS	35.3	11,225,982	0.006288982	0.006288982	35.3

2014 OS NOx 44345.4

27010.18347

Coal refuse-fired
Coal-fired
Gas conversion
Retired