

An aerial photograph showing a vast expanse of white, fluffy clouds from a high altitude. The sun is low on the horizon to the left, creating a bright, golden glow that illuminates the clouds and the sky. The sky transitions from a pale yellow near the horizon to a clear, light blue at the top.

OTC Modeling Committee Update

OTC/MANE-VU Stakeholders' Meeting

March 30, 2020

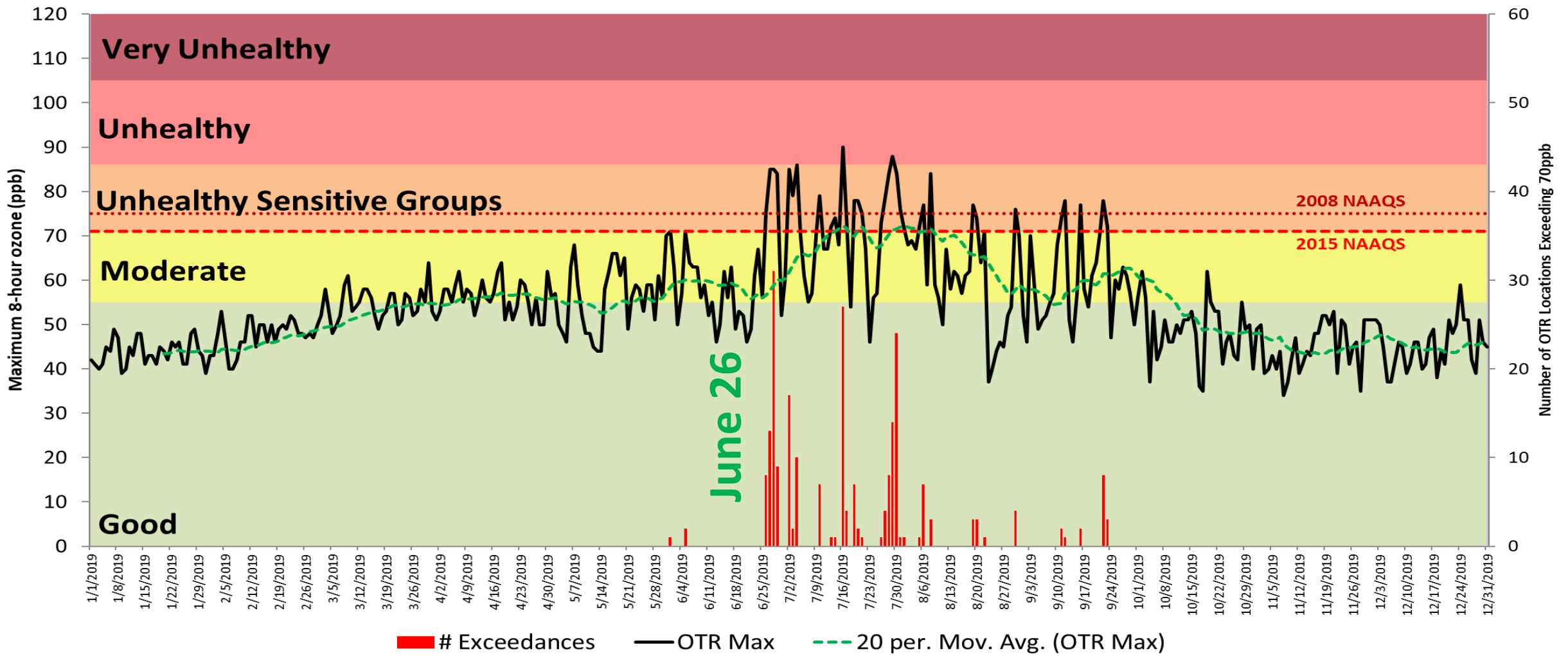
2008 and 2015 Ozone NAAQS Timelines

Ozone Timeline	2008 NAAQS	2015 NAAQS
Moderate Nonattainment Area Attainment Date	July 2018	August 2024 (2021-23 data)
SIPs dues for reclassified 2008 NAAQS Moderate to Serious nonattainment areas	August 2020	--
Serious Nonattainment Area Attainment Date	July 1, 2021 (2018-20 data)	August 1, 2027 (2024-26 data)
Severe Nonattainment Area Attainment Date	July 2027 (2024-26 data)	August 2033
Extreme Nonattainment Area Attainment Data	July 2032	August 2038



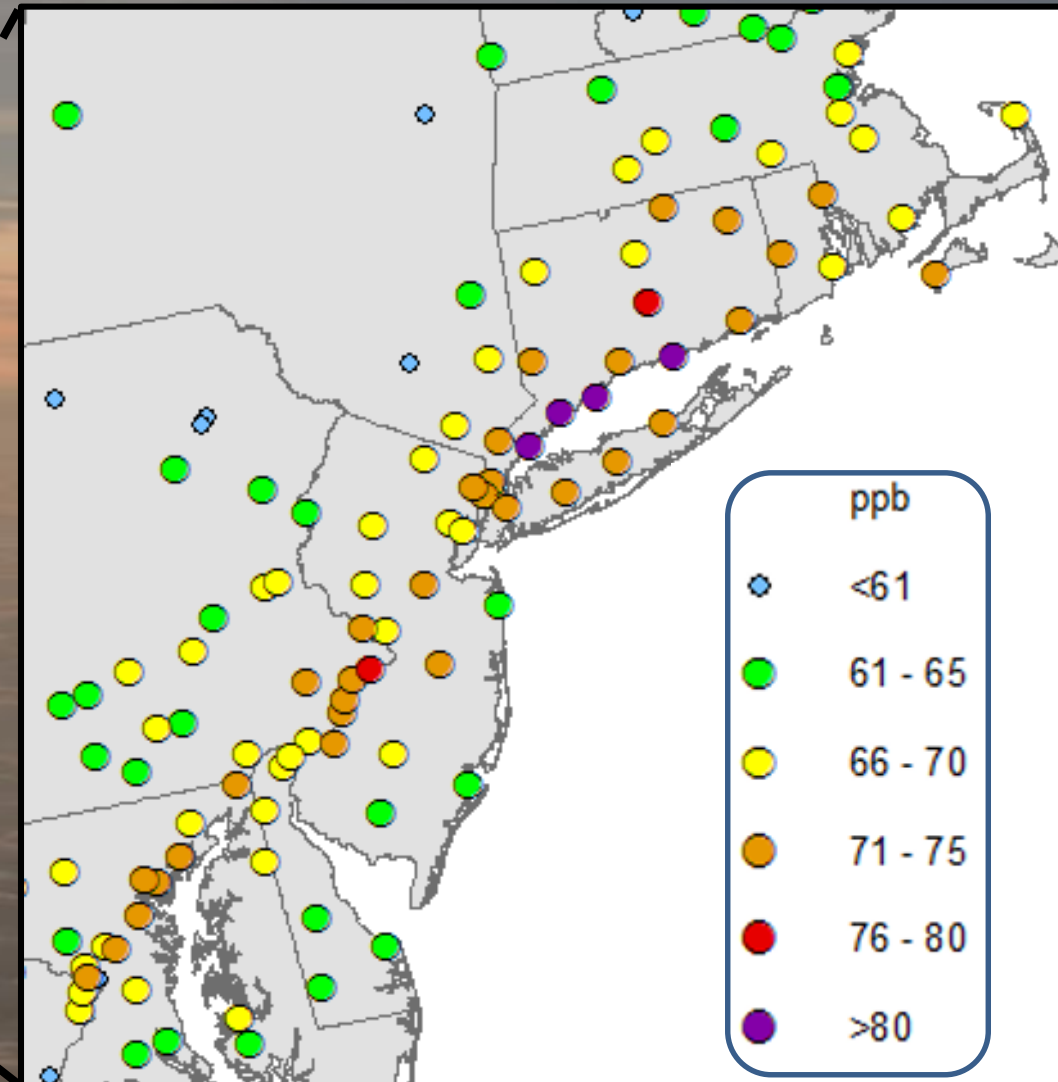
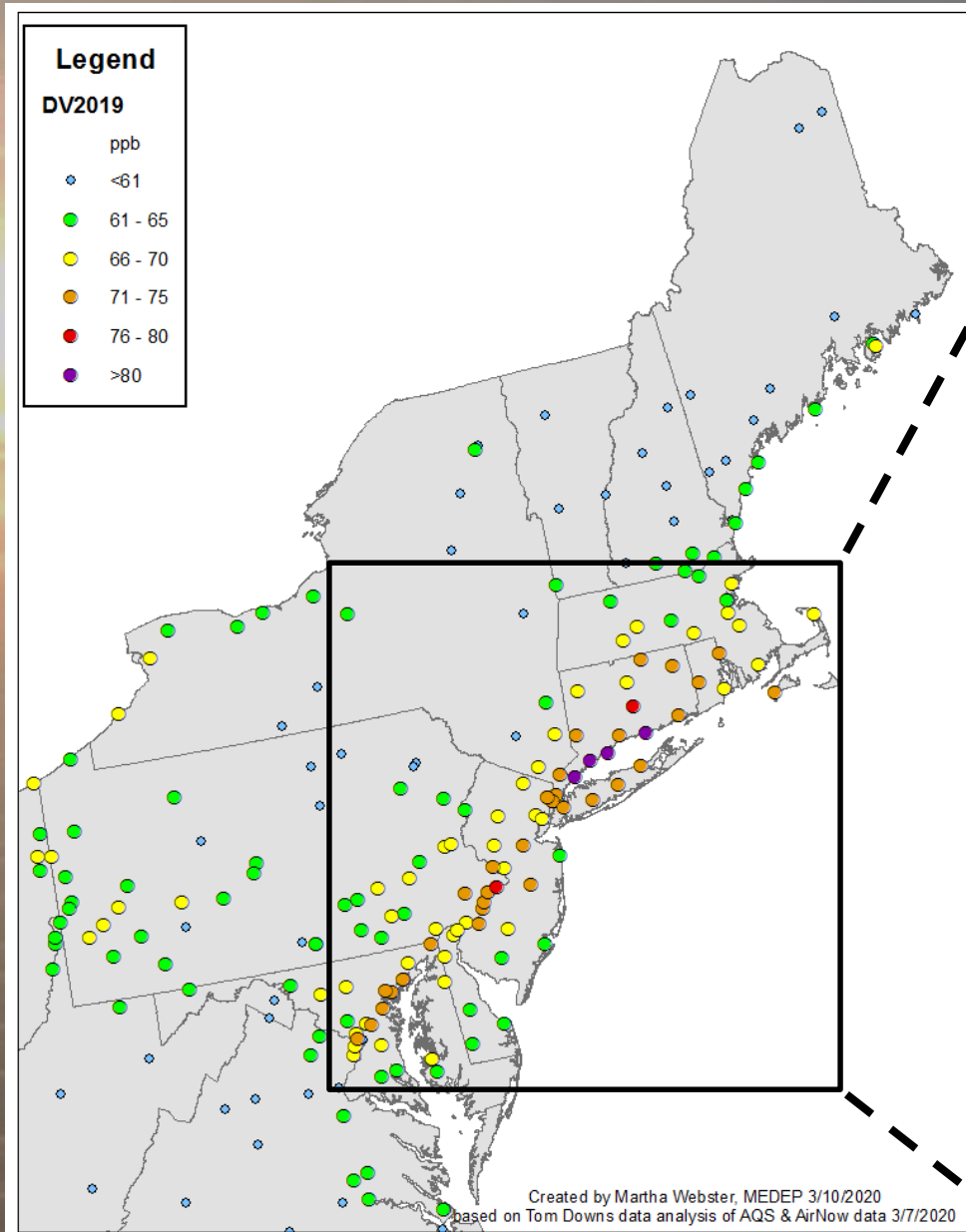
Will we need modeling for 2026?

2019 Ozone Season



- 36 days exceeding 70 ppb
- 22 days exceeding 75 ppb
- 6 days exceeding 84 ppb
- 74 different monitors in 12 states (including DC) exceeded 70 ppb
- 43 different monitors in 9 states (including DC) exceeded 75 ppb
- 11 different monitors in 4 states exceeded 84 ppb

Preliminary 2017-2019 Design Values

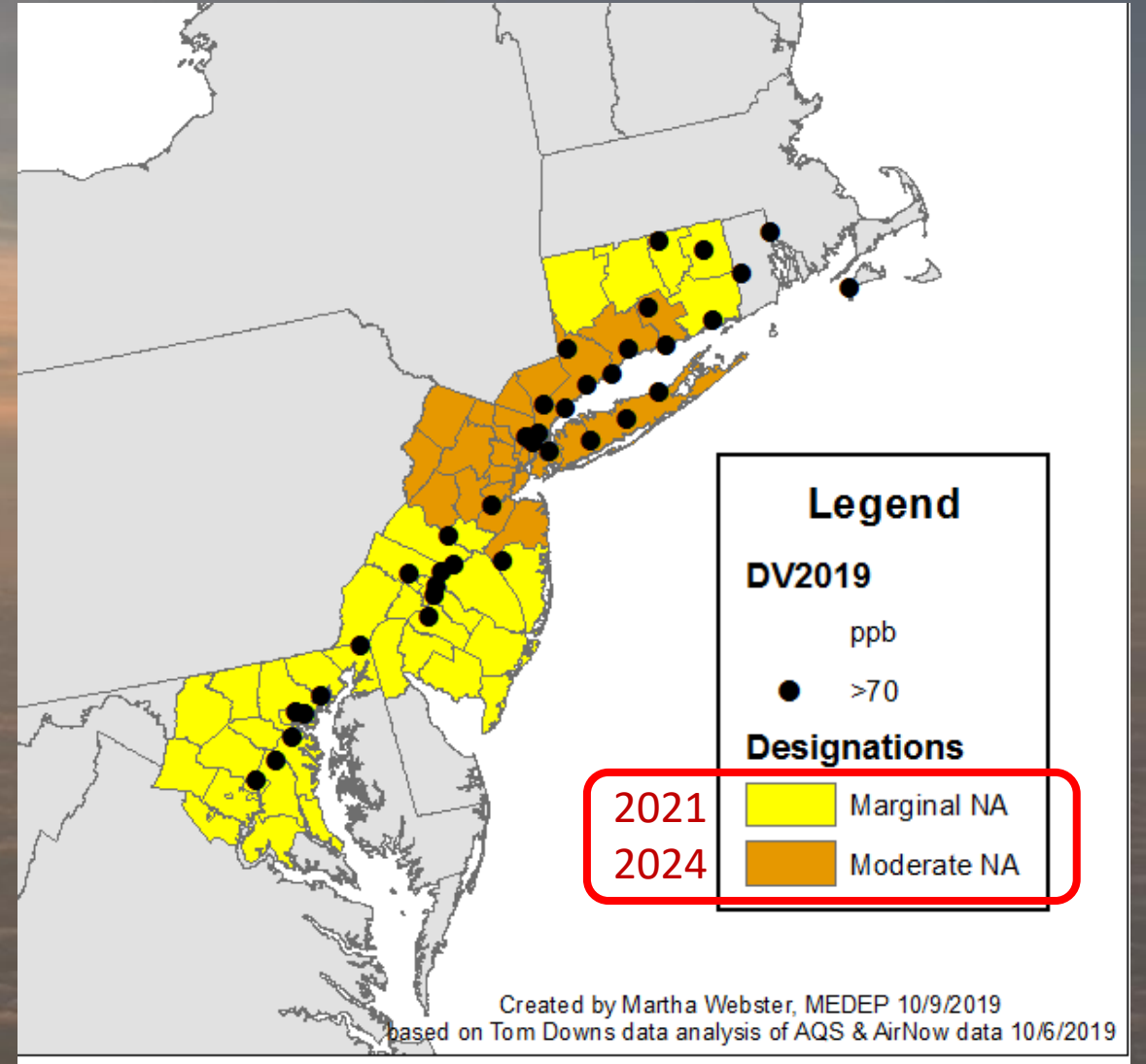
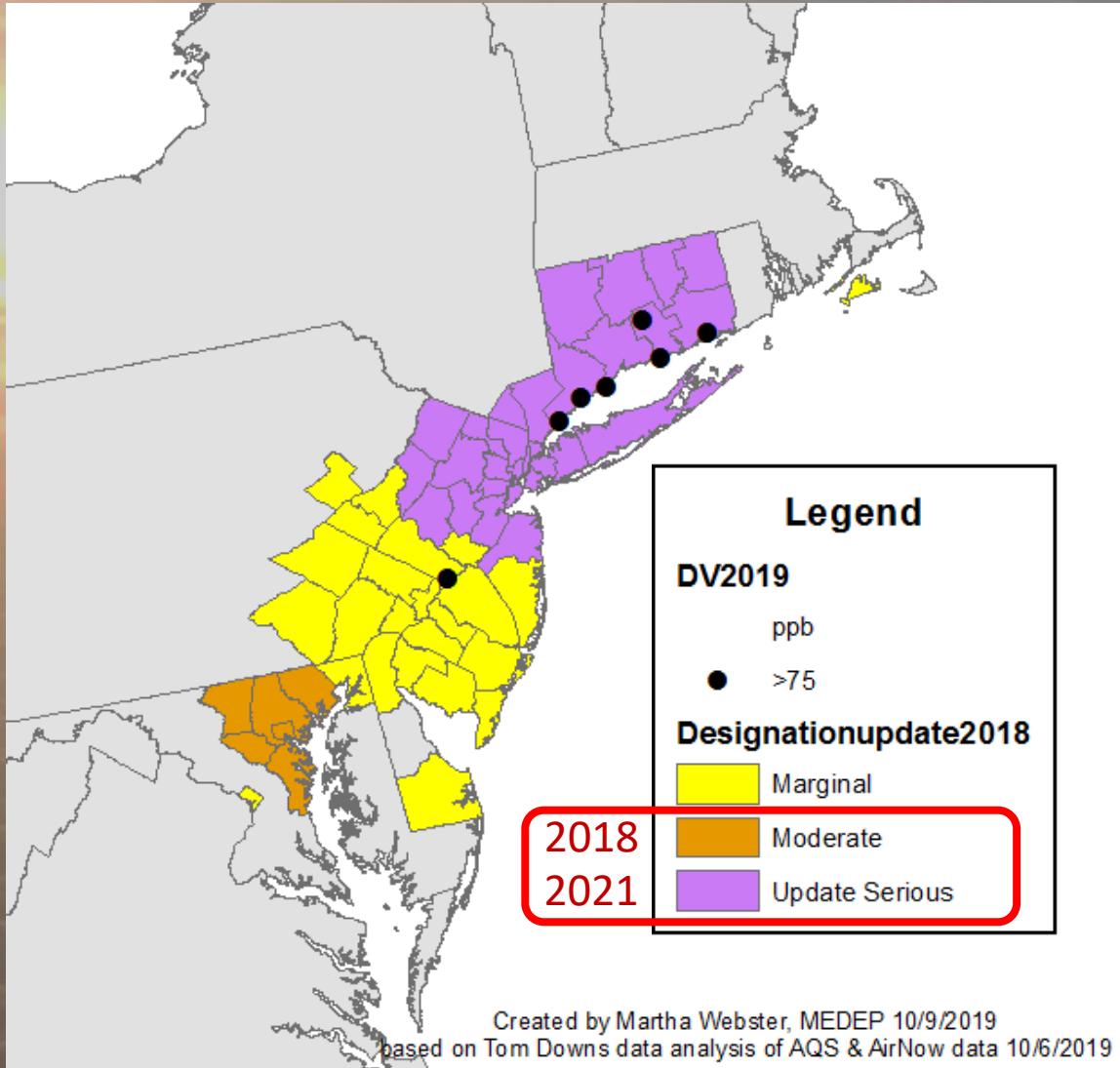


Ozone design values are the 3-year average of the year's 4th maximum 8-hour concentration at each monitor. It directly compares to the health standard (NAAQS).

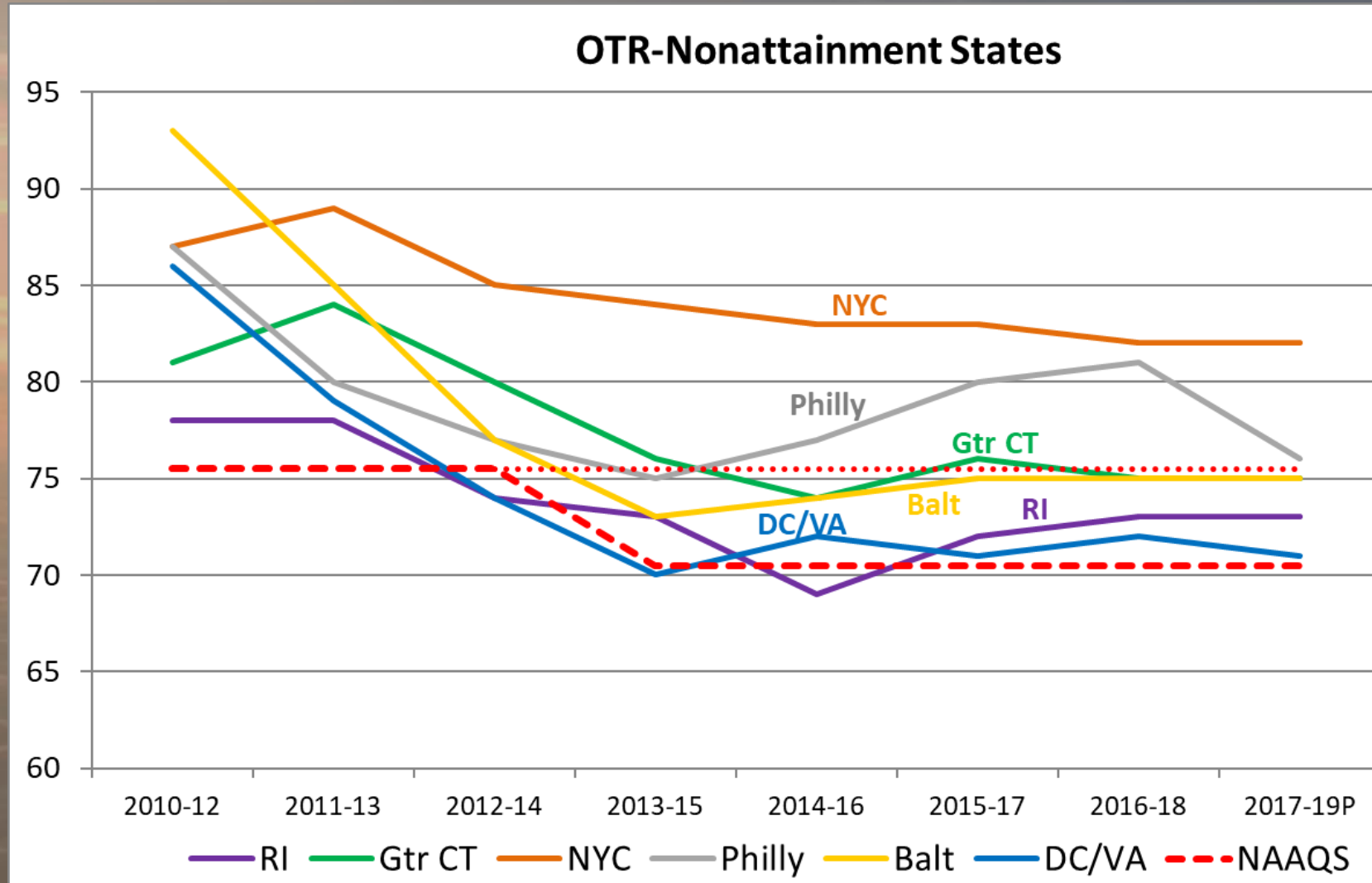
2019 Ozone Design Values

With 2008 NAAQS Nonattainment Areas

With 2015 NAAQS Nonattainment Areas



Ozone Design Values (ppb) in Key Nonattainment Areas of the OTR



Summer of 2020 presents many questions regarding the coronavirus, the economy, and potentially the question as to whether the year is representative for attainment.

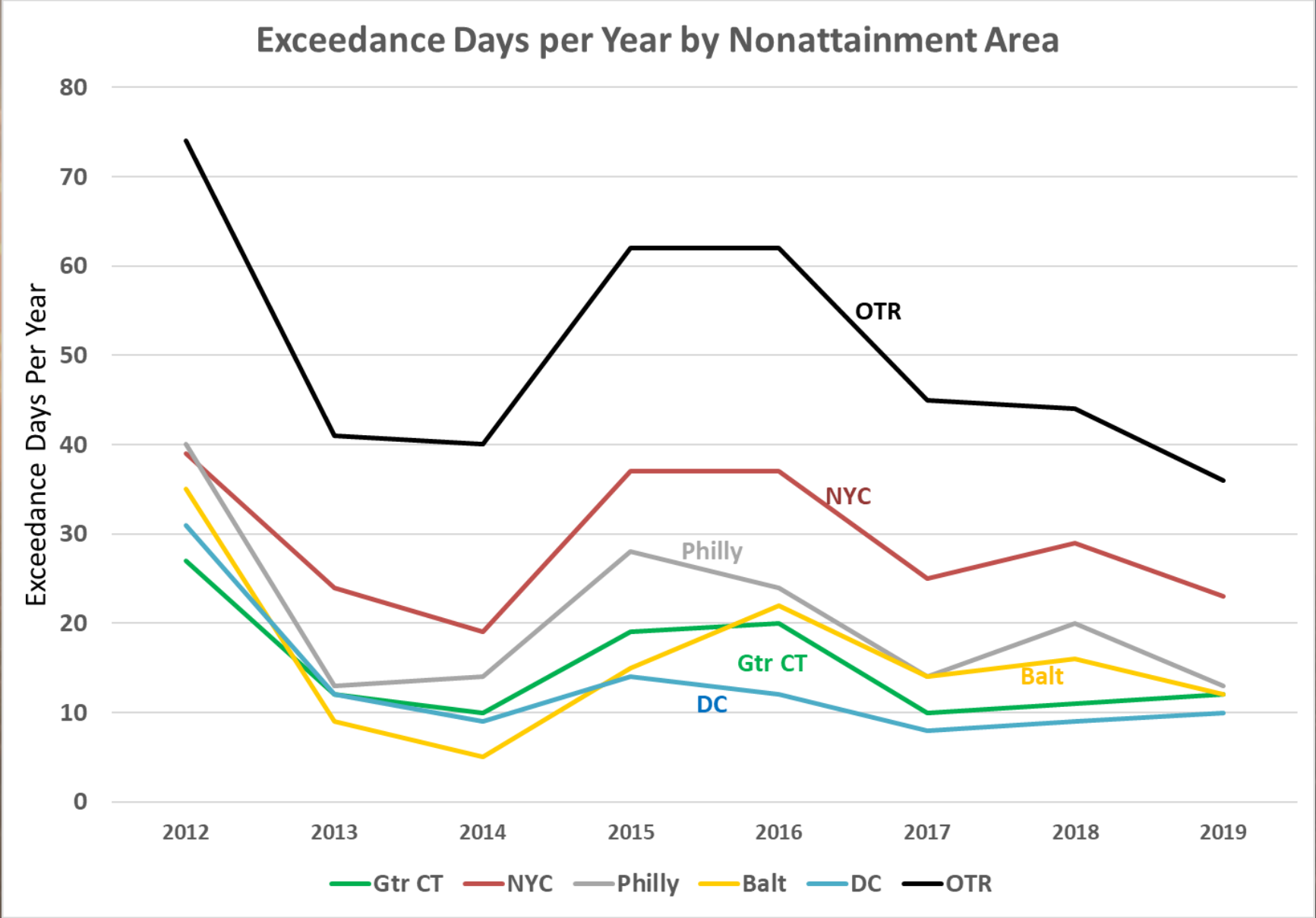
Maximum design value within each nonattainment area

Based on 2015 NAAQS Nonattainment Areas

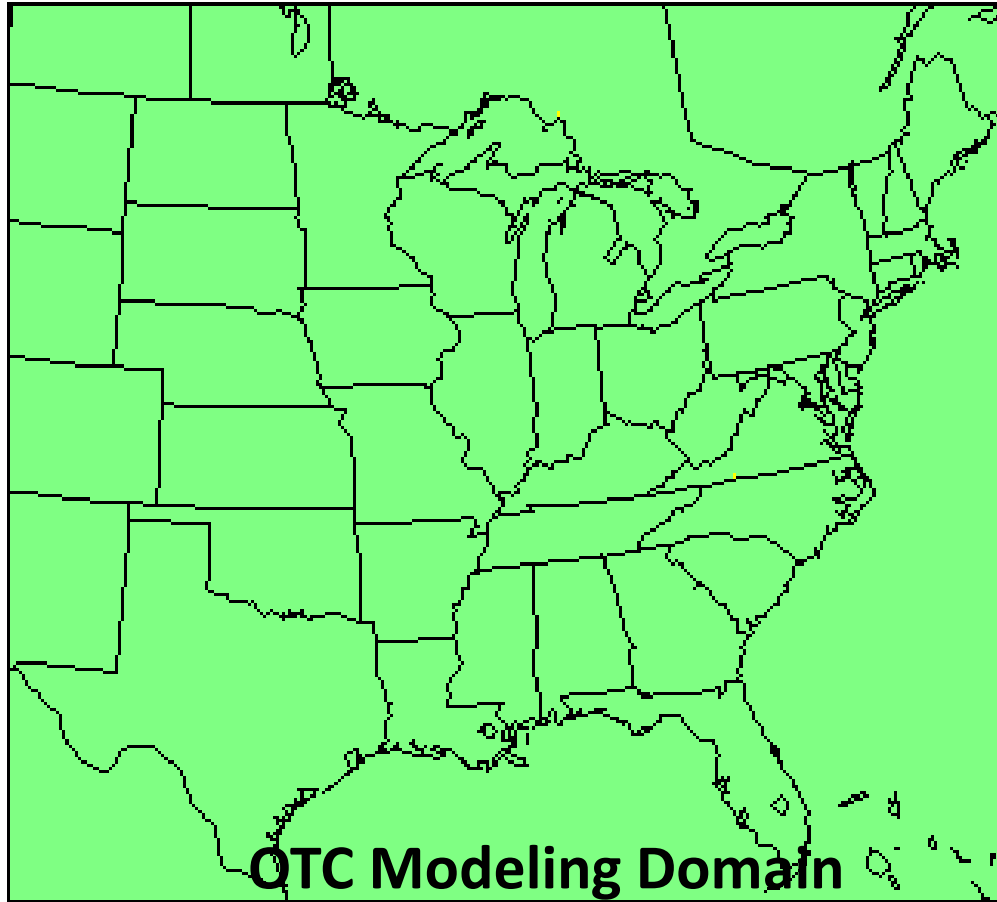
Number of Exceedance Days – 2015 NAAQS

Maximum exceedance day monitor value within each nonattainment area

Based on 2015 NAAQS Nonattainment Areas



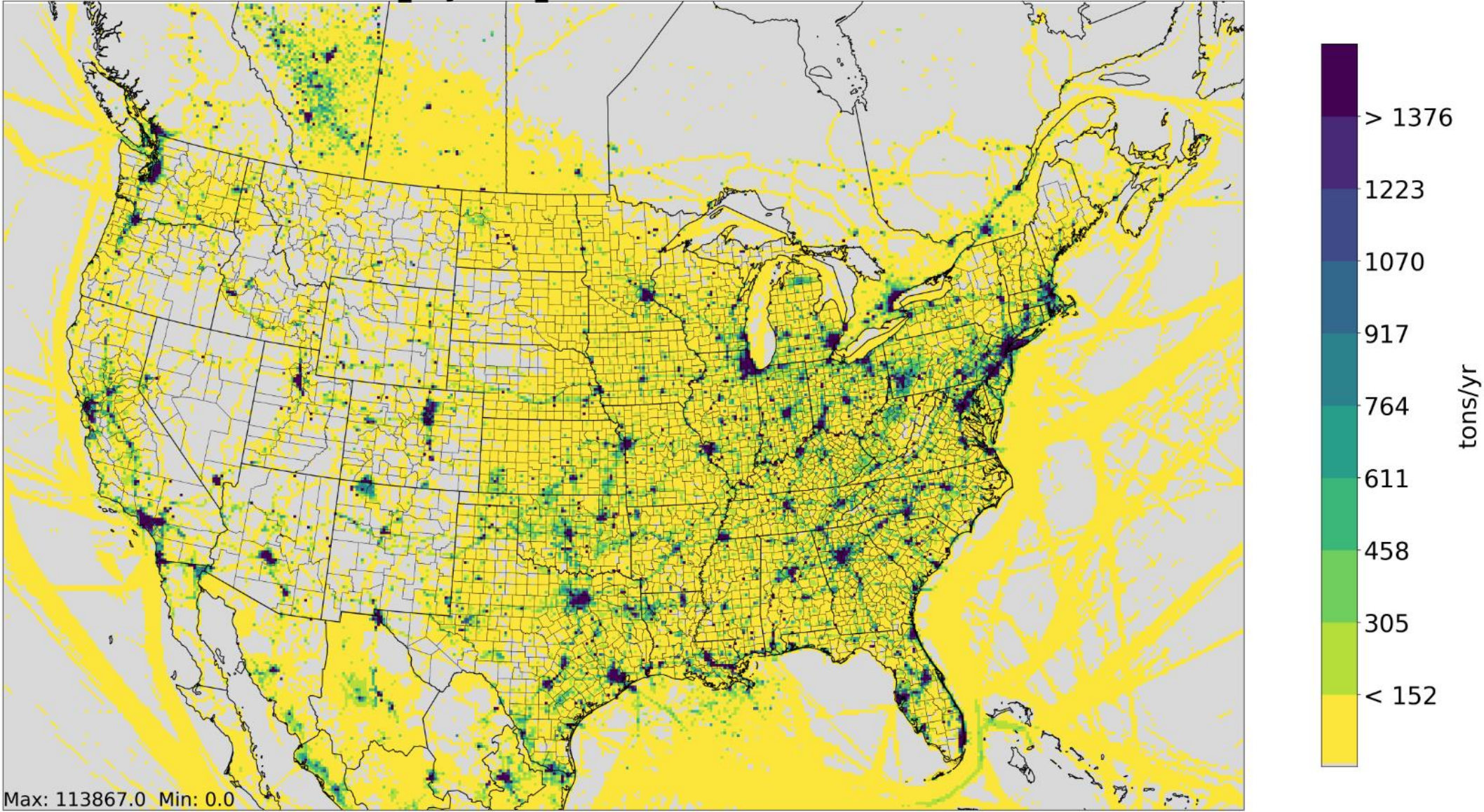
2016 Based Modeling Platform



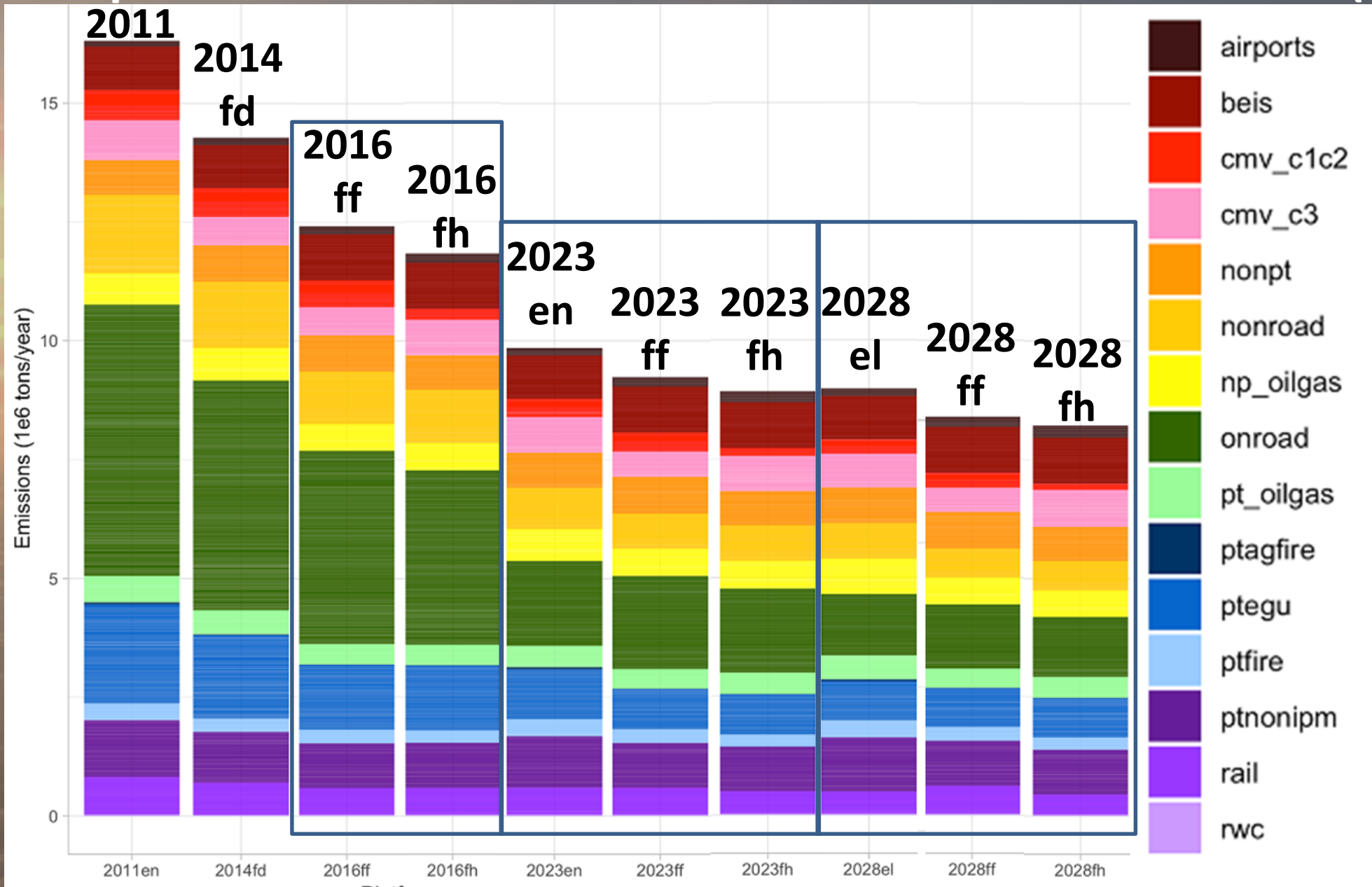
- 2016 meteorology and emissions
 - Collaborative effort between EPA and states
- CMAQ/BEIS/ERTAC main platform
 - CAMx capable
 - MEGAN biogenic emissions available
- April 1 – October 31 ozone season
 - Episodic period: July 15-August 14
- Platform undergoing performance testing
- Planning base case modeling for:
 - 2016
 - 2023
 - 2023 contribution modeling
 - 2016/2023 Peak Energy Day Modeling
- Potential modeling for:
 - 2023 Control Case
 - Another future year

2016 Total Annual Anthropogenic NOx Emissions

2016fh_16j total_anthro 12US1 annual : NOX



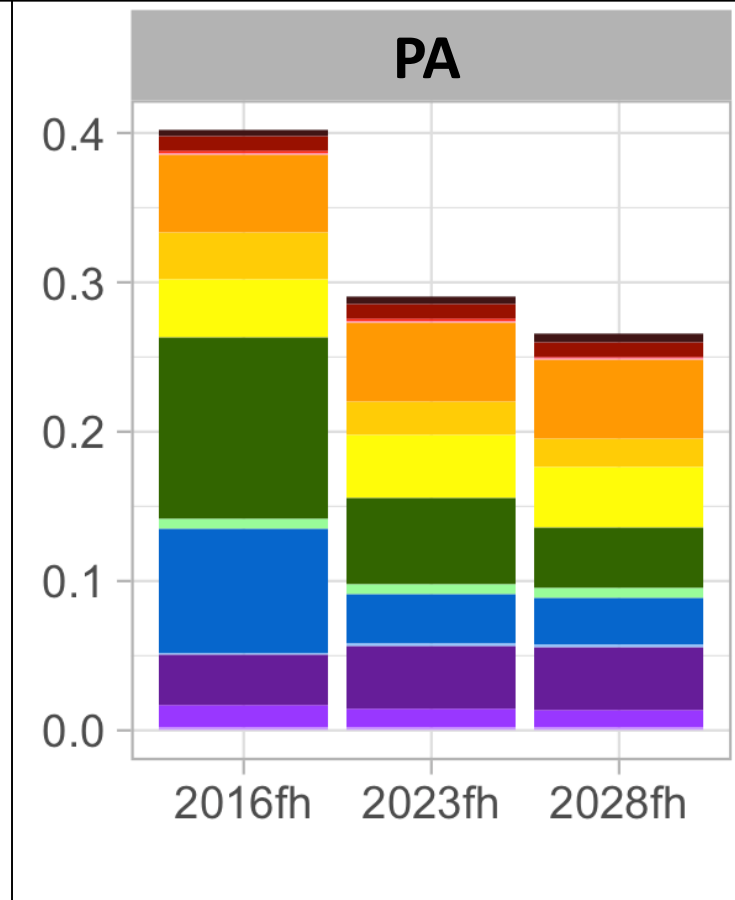
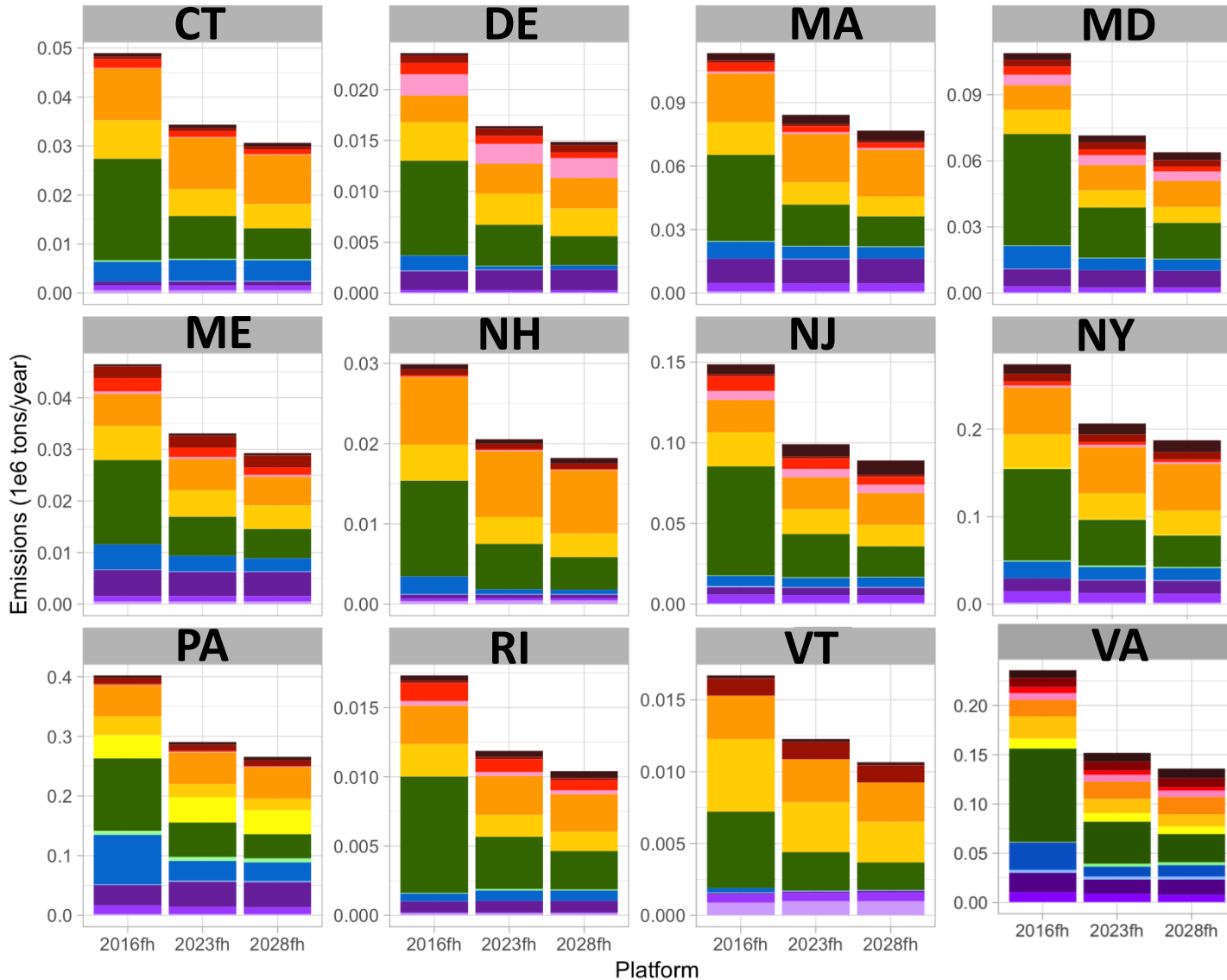
Comparison of EPA Emissions Inventories (US)



Comparison of EPA Emissions Inventories (OTR)

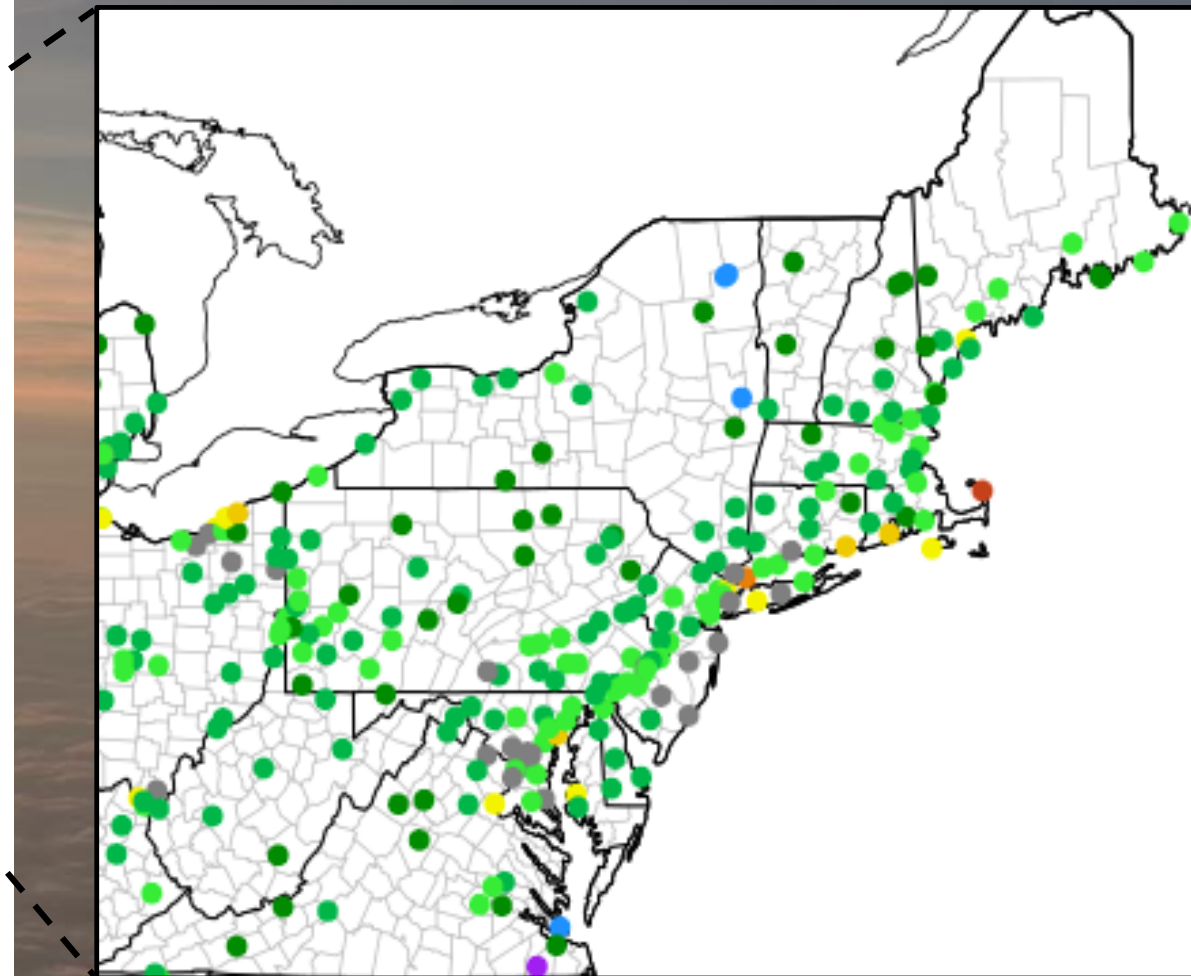
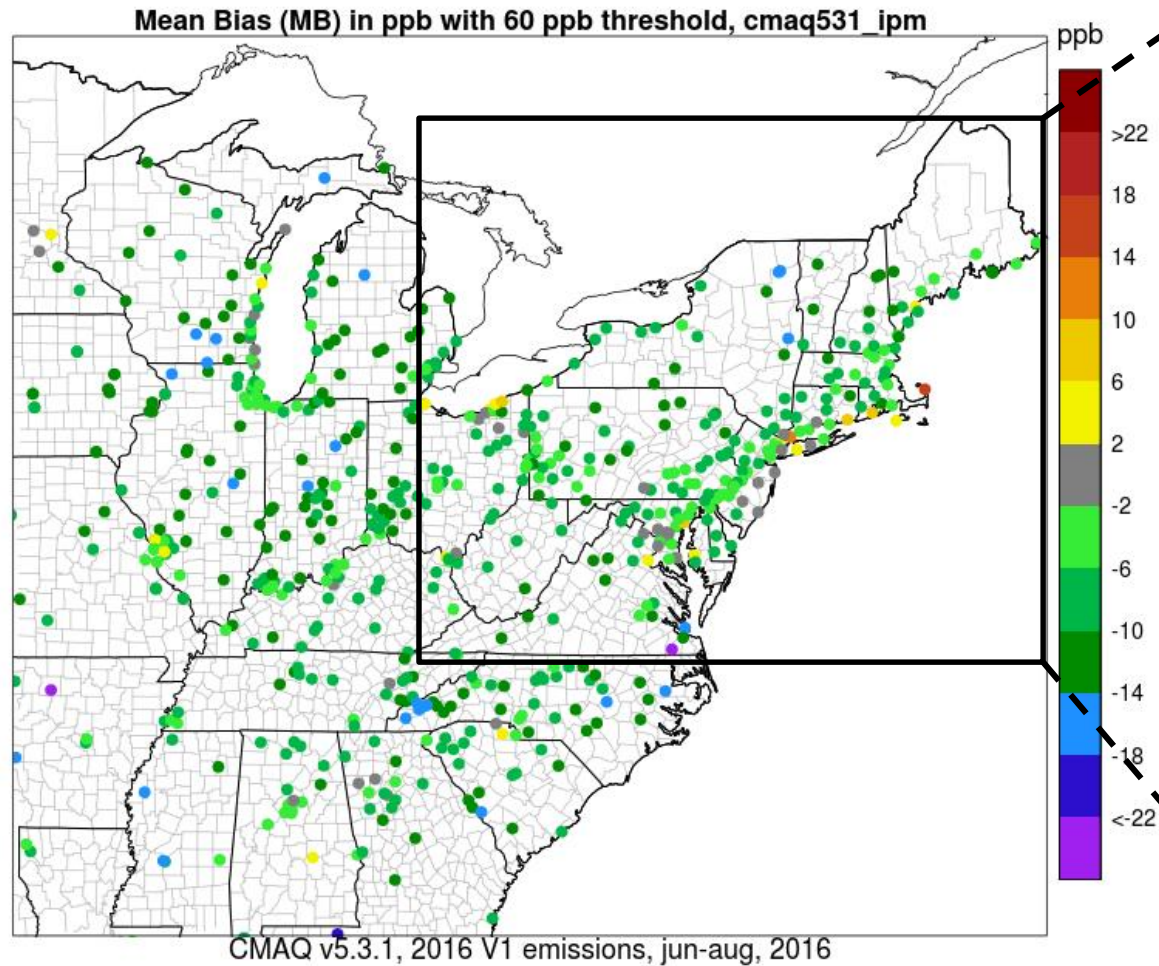
2016v1 Platform Emissions Summary

Pollutant: NOx, Region: Northeast

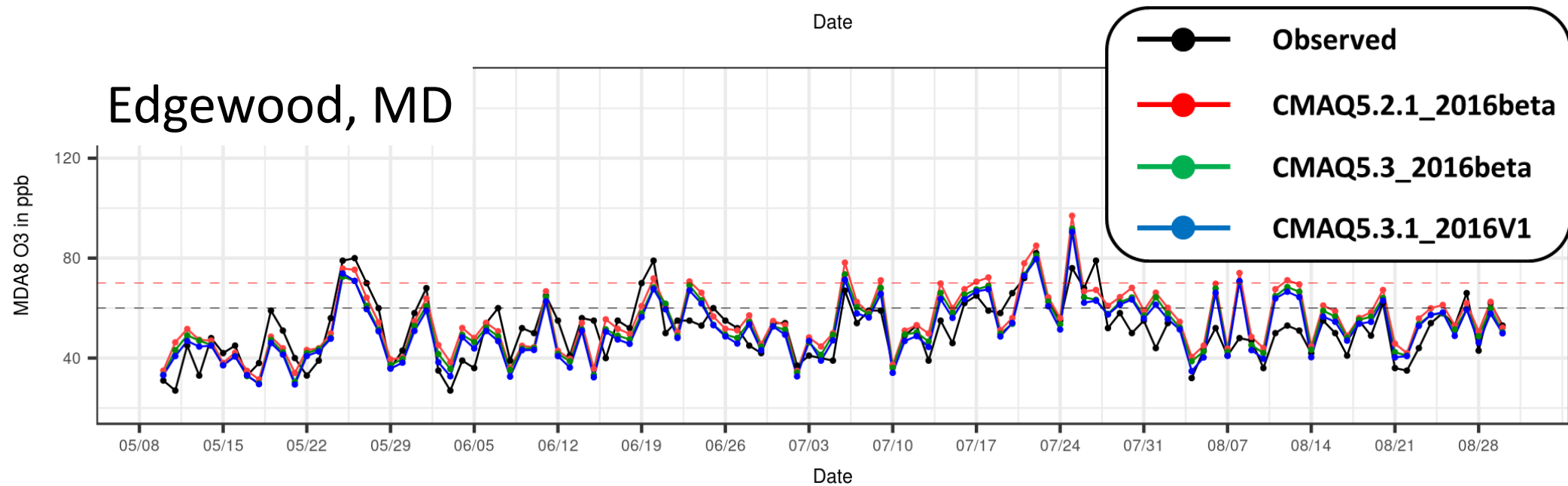
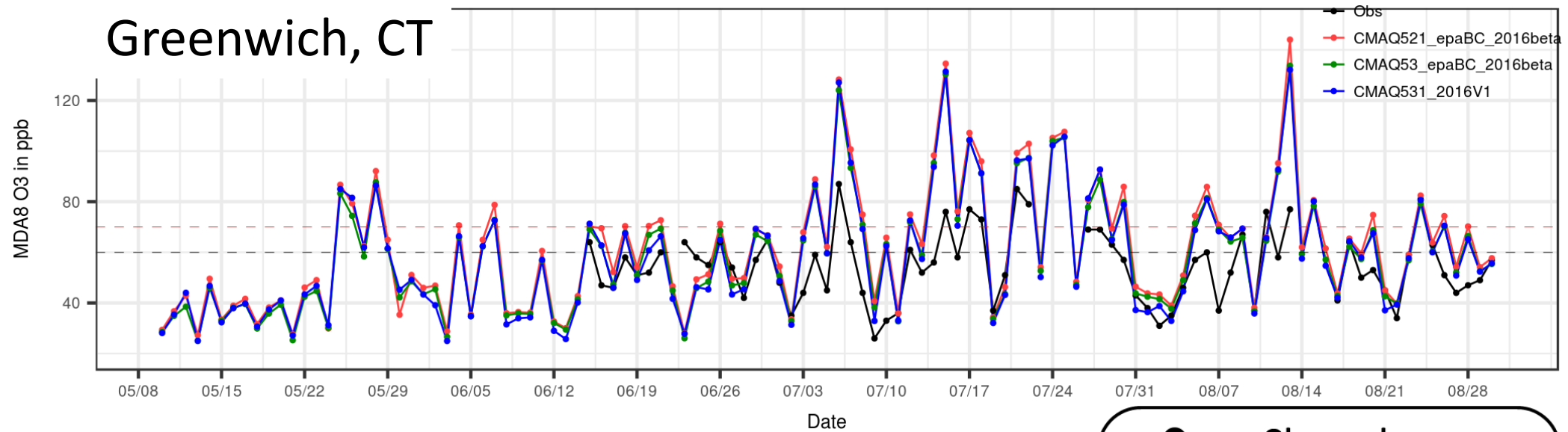


NYDEC Performance Testing Model Configuration

CMAQ v5.3.1 tested with 2016 V1 emissions and OTC derived Boundary Conditions

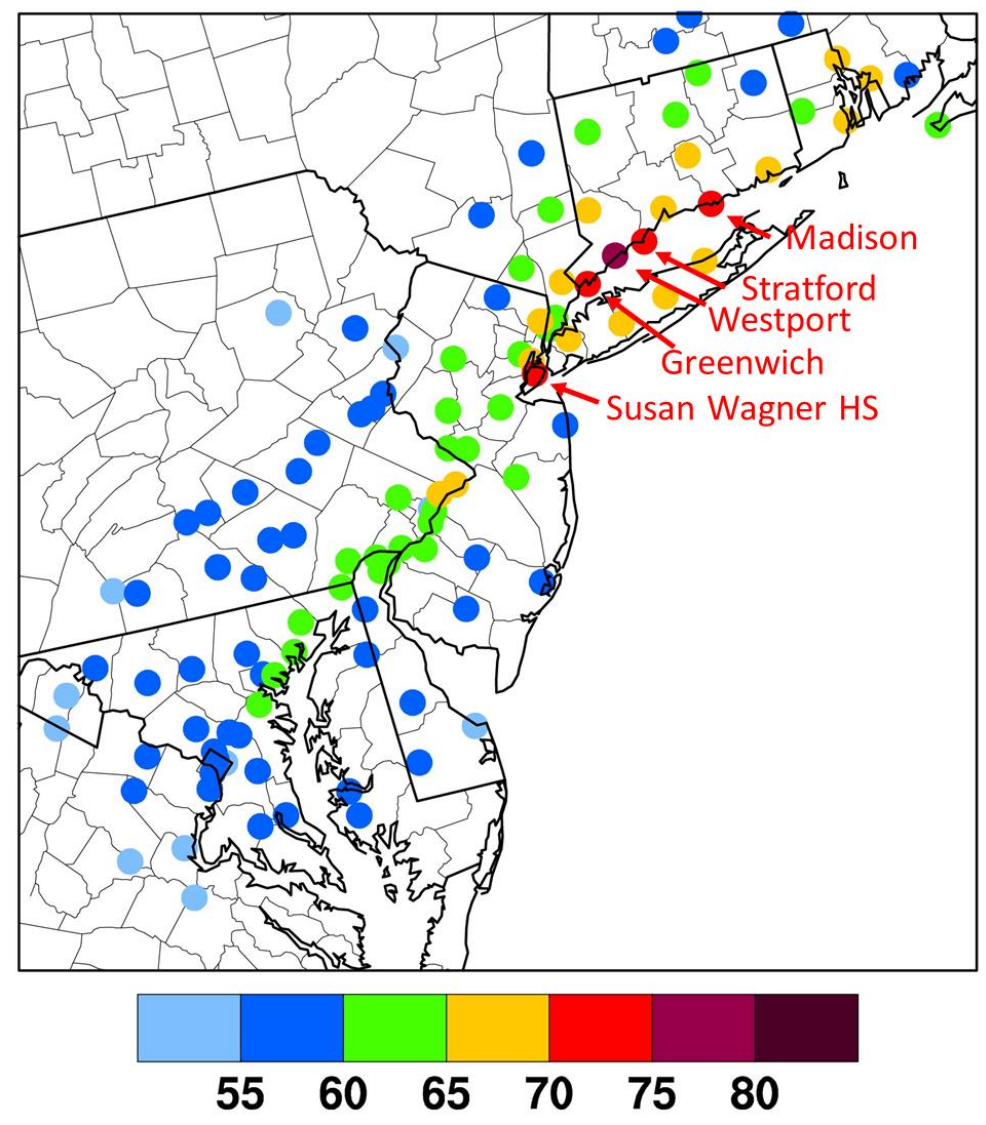


Comparisons of Modeled vs Observed Ozone time series in CT & MD



Coastal Monitors 2023 DVF

3x3 vs No Water



Local Site Name	2023 DVF IPM 3x3	2023 DVF IPM 3x3 No Water
Sherwood Island State Park - Westport	80.2	75.1
Lighthouse - Stratford	74.7	74.4
SUSAN WAGNER HS	74.1	69.8
Hammonasset State Park - Madison	71.8	70.5
Greenwich Point Park - Greenwich	71.4	78.4
Criscuolo Park - New Haven	69.1	68.0
FALL RIVER	68.3	62.8
Fort Griswold Park - Groton	67.8	71.3
Bayonne	67.8	64.4
BABYLON	67.3	66.5
FRANCIS SCHOOL East Providence	67.0	60.5
HOLTSVILLE	66.7	64.0
WHITE PLAINS	66.6	67.6
QUEENS COLLEGE 2	66.4	65.1
RIVERHEAD	66.3	66.5

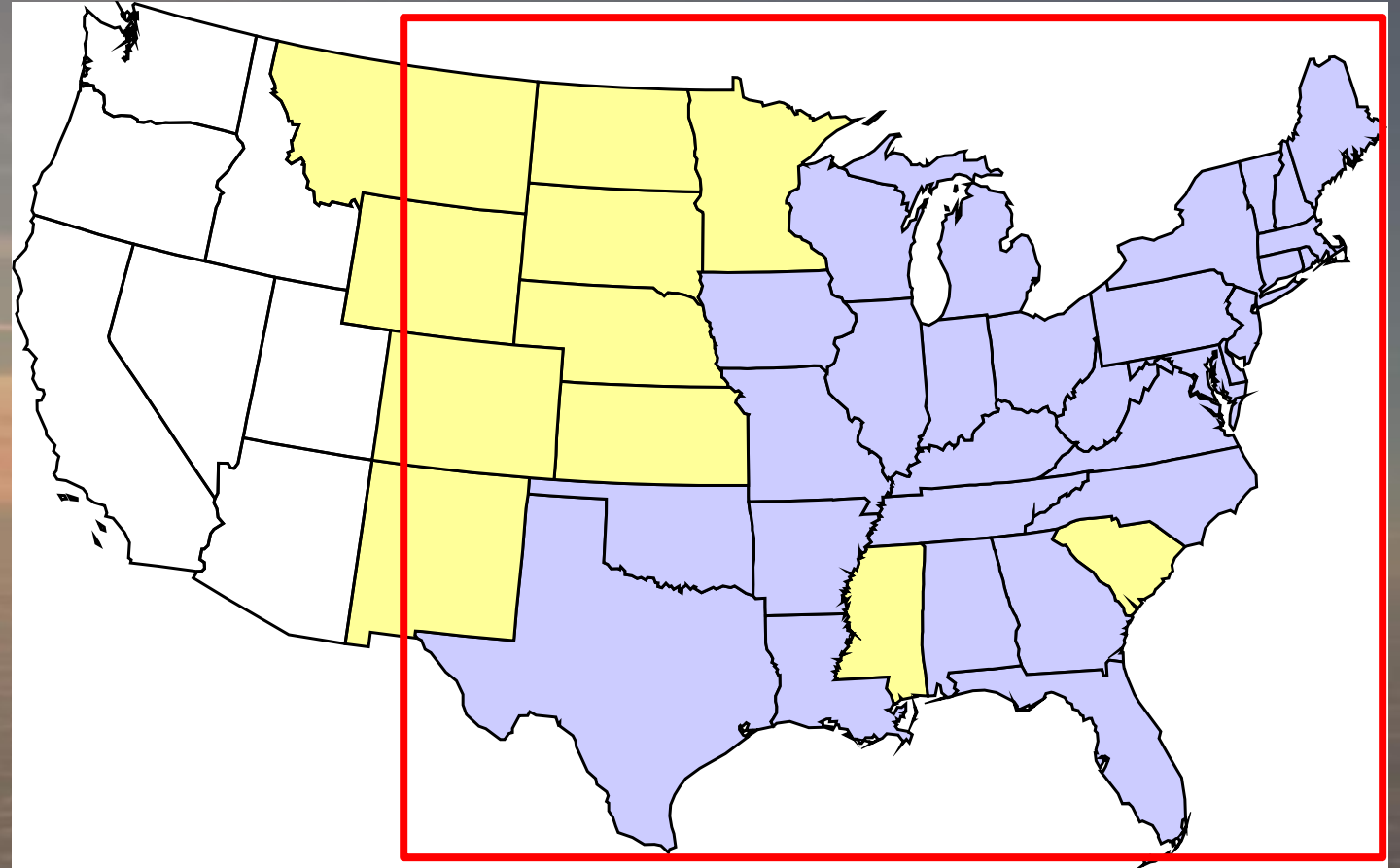
Proposed 2023 Emission Tags

Blue States

- Area-nonpoint
- CMV-c1c2c3
- EGU-ERTAC
- NonEGU
- Nonroad-diesel
- Nonroad-nondiesel
- Oil&gas-nonpoint
- Oil&gas-point
- Onroad-diesel
- Onroad-nondiesel
- Airport-up to 3000'
- Rail
- EGU-peak

Full Domain

- Agriculture
- Boundary Cond
- Biogenic
- Canada
- Mexico
- Offshore-CMV
- Prescribed-fire
- Wildfire
- Other
- OffShoreRigs
- Initial Cond



Yellow State Clusters

436 Tags

Cluster	Area nonpt	CMV c1c2c3	EGU ERTAC	Non EGU	Nonroad diesel	Nonroad nondiesel	Oil&Gas nonpt	Oil&Gas point	Onroad diesel	Onroad nondiesel	Airport 3000	Rail
Set1: CO, MT, ND, SD, WY					x	x	x	x	x	x		
Set2: KS, MN, NE					x	x			x	x		
Set3: MS, SC					x	x			x	x		
Set4: CO, MT, ND, SD, WY, KS, NM, NE, MN, MS, SC	x	x	x	x							x	x
Set5: KS, NE, MN, MS, SC							x	x				15

Summary

- Preliminary 2017-19 ozone design values and exceedance days down in most areas from 2016-18
 - But the trend is still flat since 2013
 - The upcoming ozone season is more uncertain than usual
- 2016 Modeling platform nearly ready for operational use
 - Model performance has been good
- 2023 projected emission year also nearly ready
- Committee is still tracking LISTOS and OWLETS2 studies

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