

ACCP Virtual Air Quality Workshop

AQ Rules & Regulations

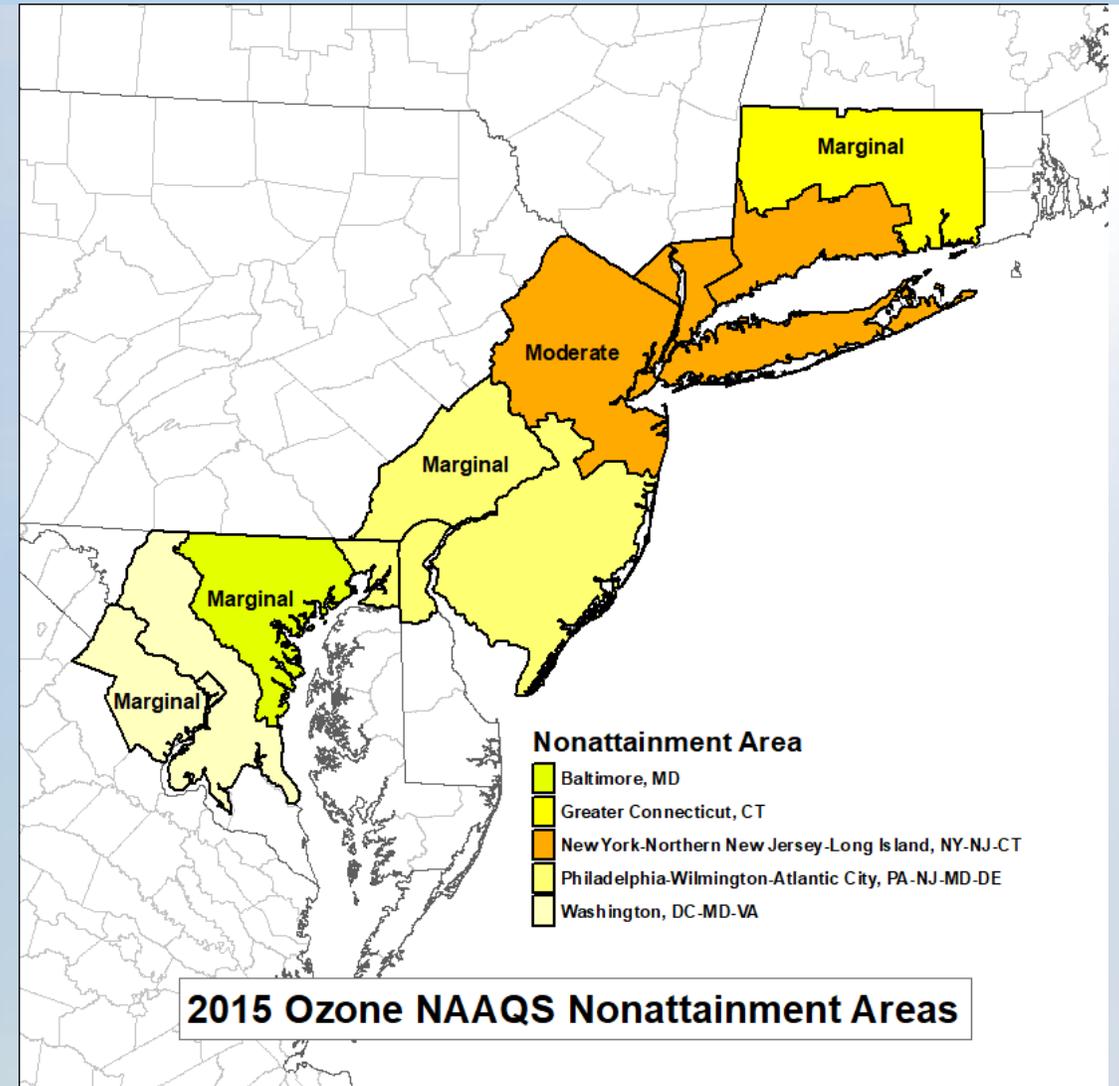
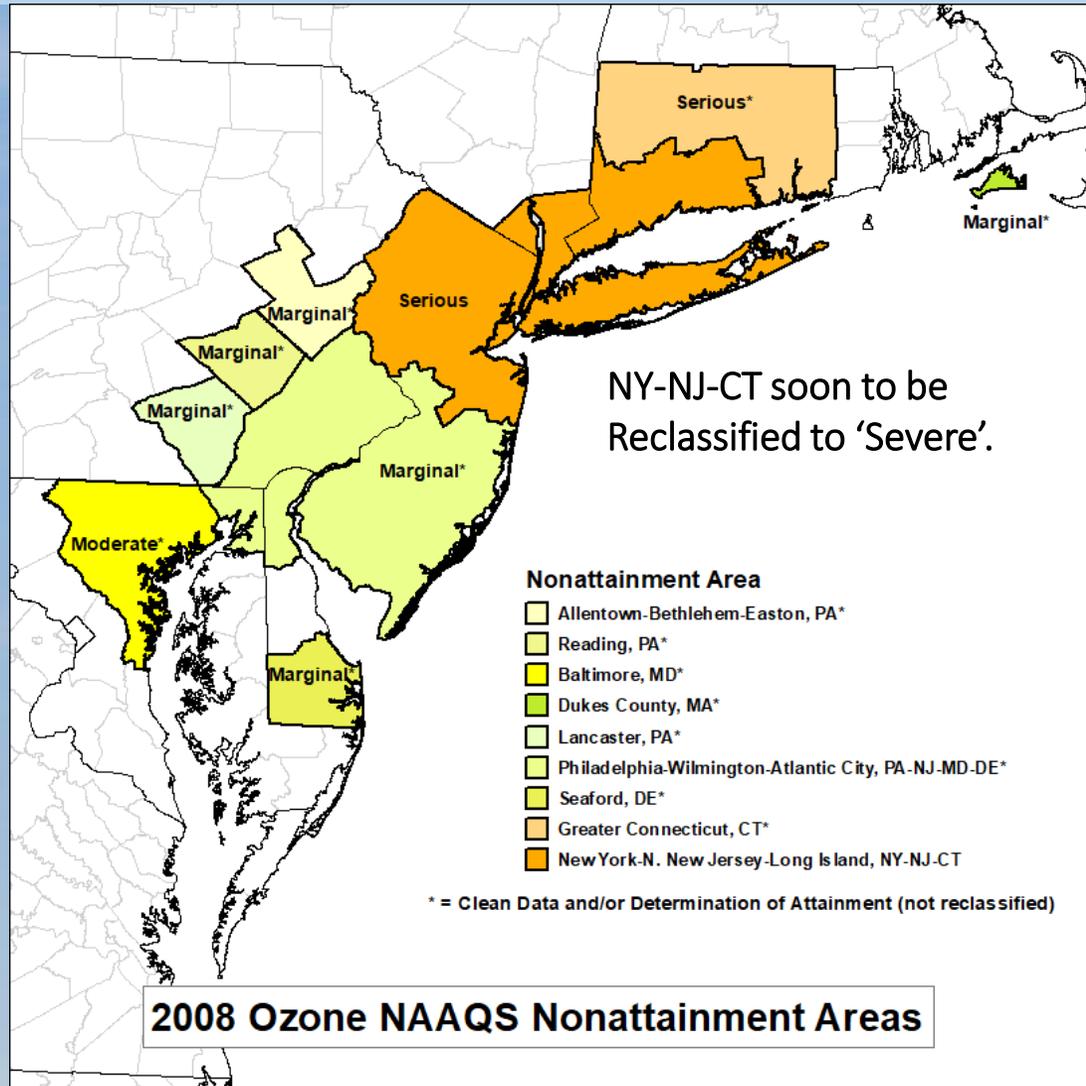
March 17, 2021



Michael Geigert
Bureau of Air Management



Connecticut has Ozone Attainment Challenges



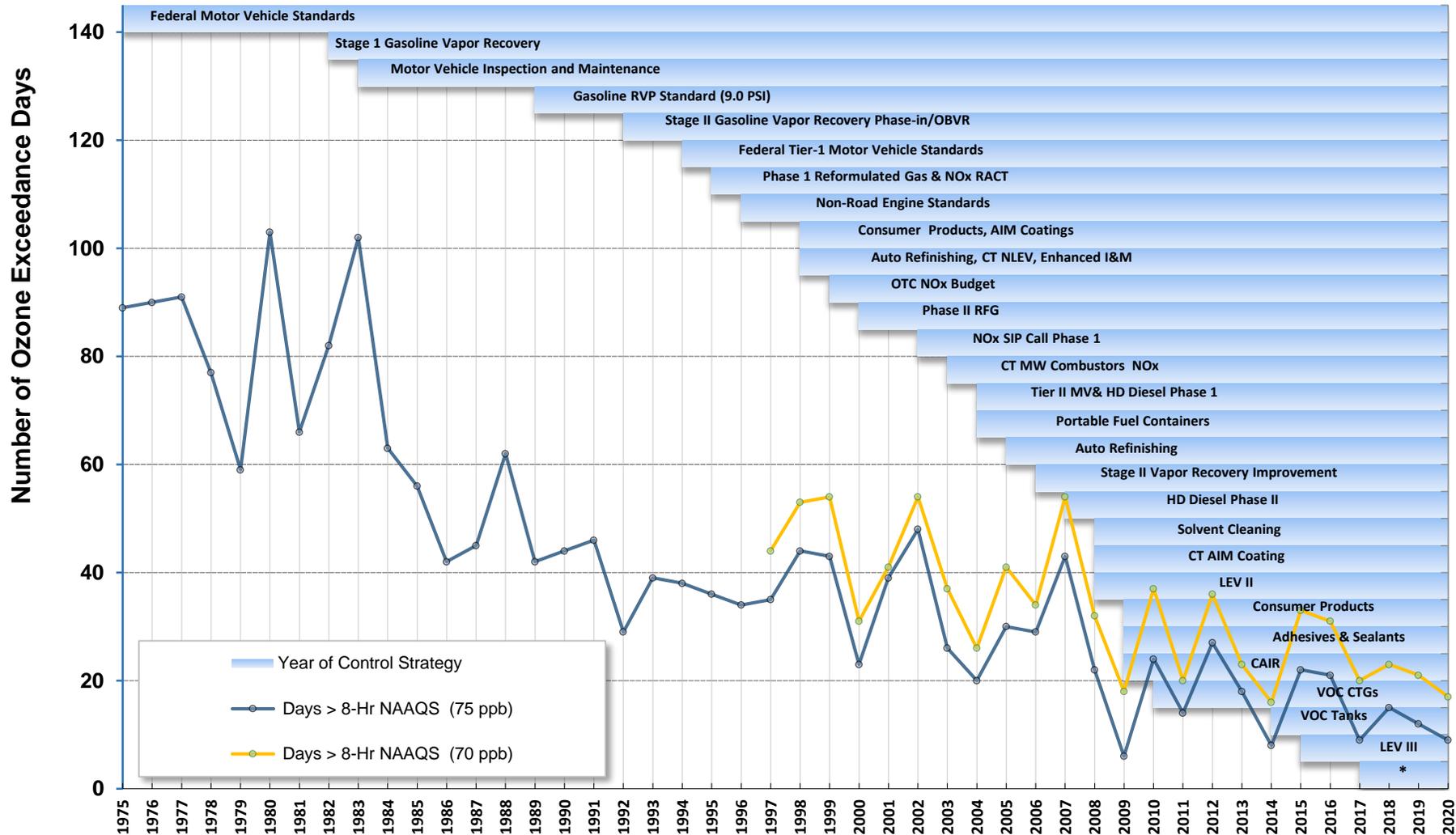
- Besides being in nonattainment for the 2015 ozone NAAQS, the NY-NJ-CT area is in 'Serious' nonattainment for the 2008 NAAQS. All other areas in the region have 'clean data' for the 2008 NAAQS.

Air Quality Rule Development

- In developing SIPs (State Implementation Plans), both the emission source category and the potential to control those emissions are important factors.
- Satellite data helps assess model performance (CMAQ and CAMx), visualizing areas of high emissions/ concentrations. This informs us about possible areas to target controls.
- Nitrogen Dioxide (NO₂) satellite data has been very useful for showing high emission areas and tracking trends.
- Visible satellite images and AOD products have been useful in tracking wildfire smoke plumes and the impact on our air quality.
- Satellite products were critical for our successful exceptional event request regarding the elevated ozone levels from the 2016 Fort McMurray wildfires. Excluding this data lowered the design values at several sites and saved us an additional SIP submittal.
- The 2018 Long Island Sound Tropospheric Ozone Study (LISTOS) aided by the NASA GeoTASO and GCAS instruments gave us the first high resolution images of upwind NO₂ emission plumes.
- Satellite NO₂ plumes from EGUS, MWCs and traffic patterns help reinforce our regulatory efforts and drive public support with visible evidence.

Ozone Exceedance Day Trends with Controls

Connecticut 8-Hour Ozone Exceedance Day Trends and Implemented Control Strategies

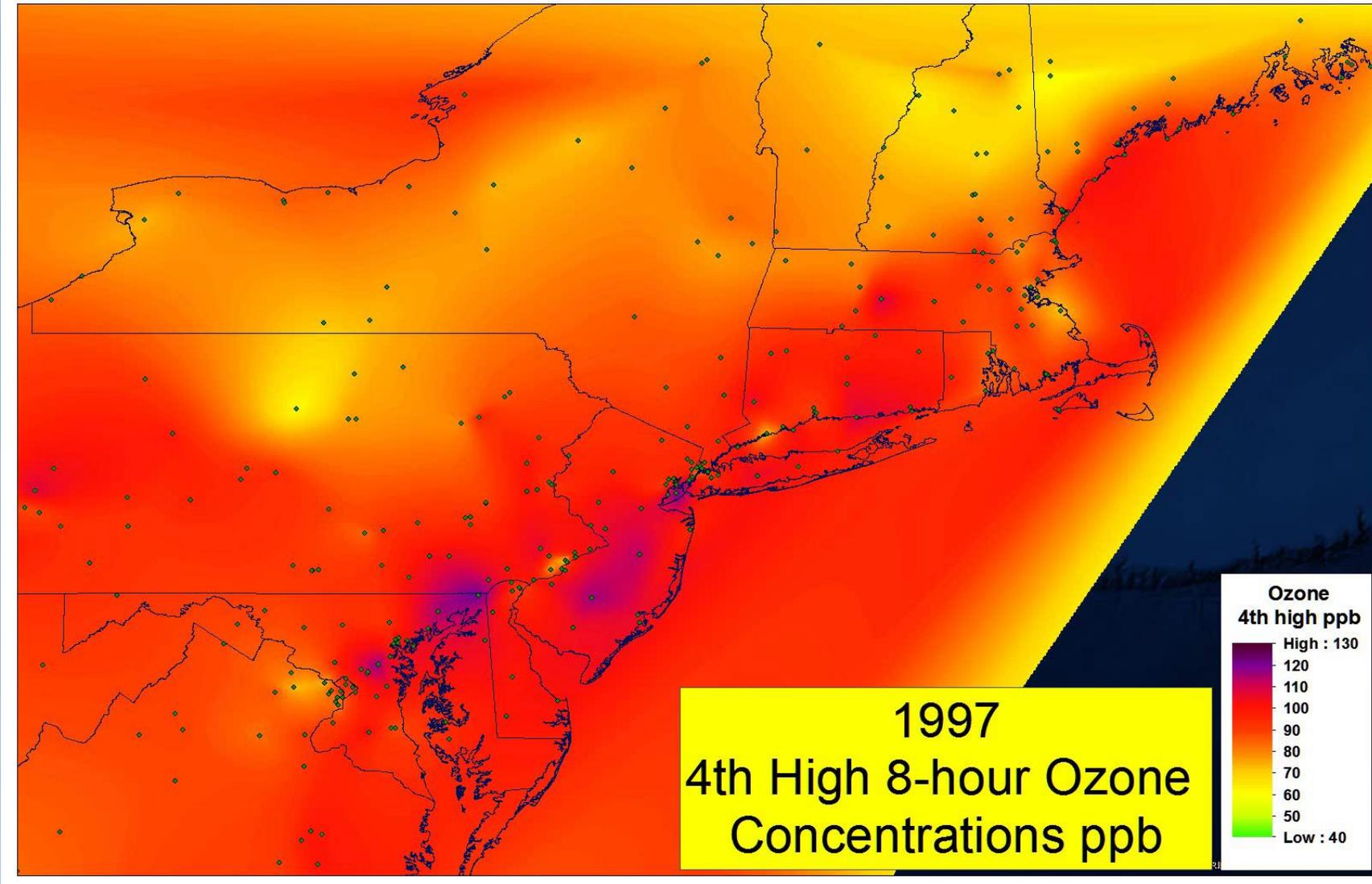


*NOx RACT Fuel Burning Sources, Consumer Products ,AIM ,NOx Reductions MWC and Federal Tier 3 Motor Vehicle /Fuel Requirements

Controls have made a difference over the years, especially the NOx SIP call, but it is becoming increasingly difficult for CT to find meaningful sources to control.

Note the dip in 2009 following the economic recession and a very cool summer.

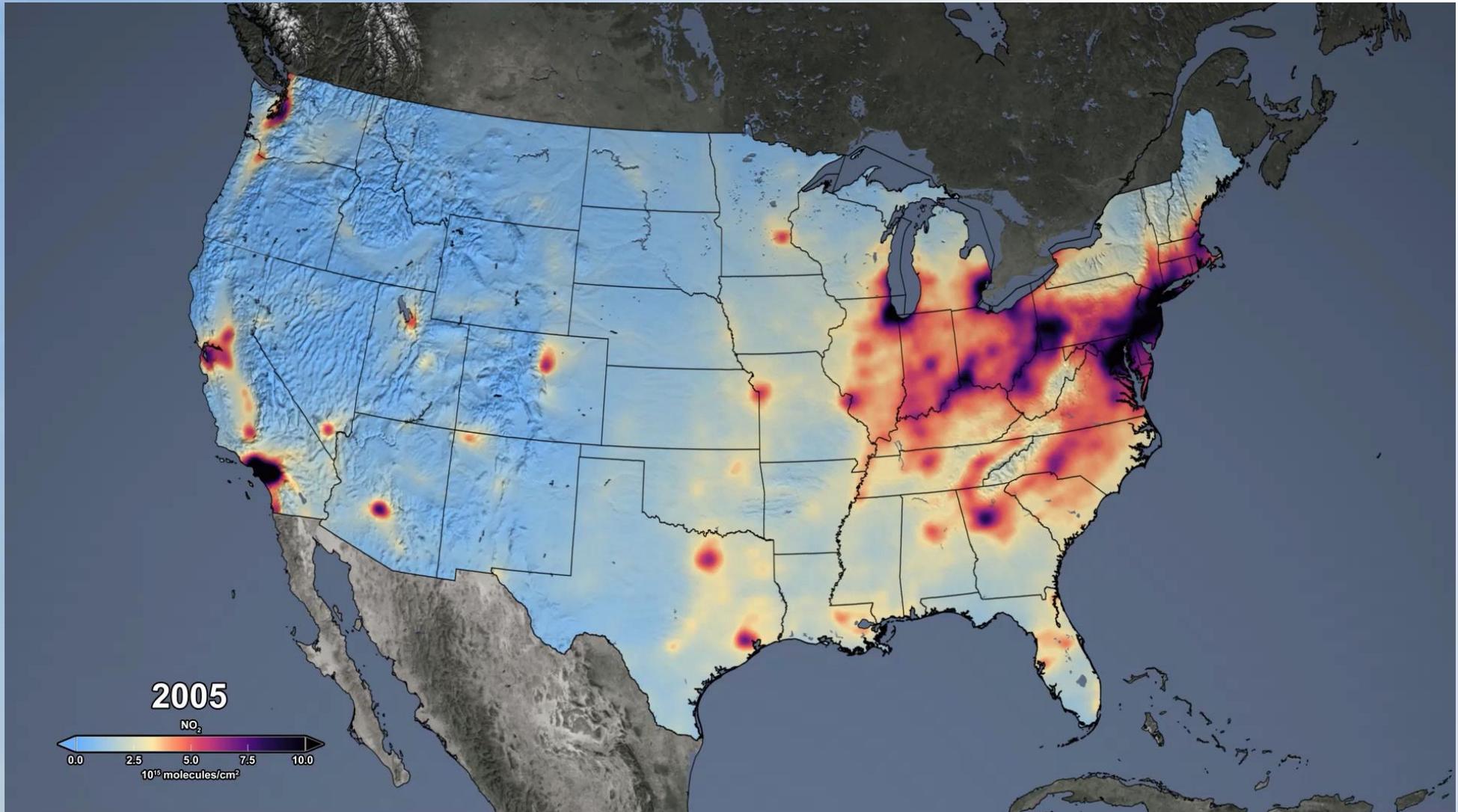
Ozone 4th High Trends 1997-2020



The 3-year average of the annual 8-hour ozone '4th highs' determine the design values. Besides the emission reductions achieved over the years, weather patterns and the economy also influence the ozone levels that are monitored.

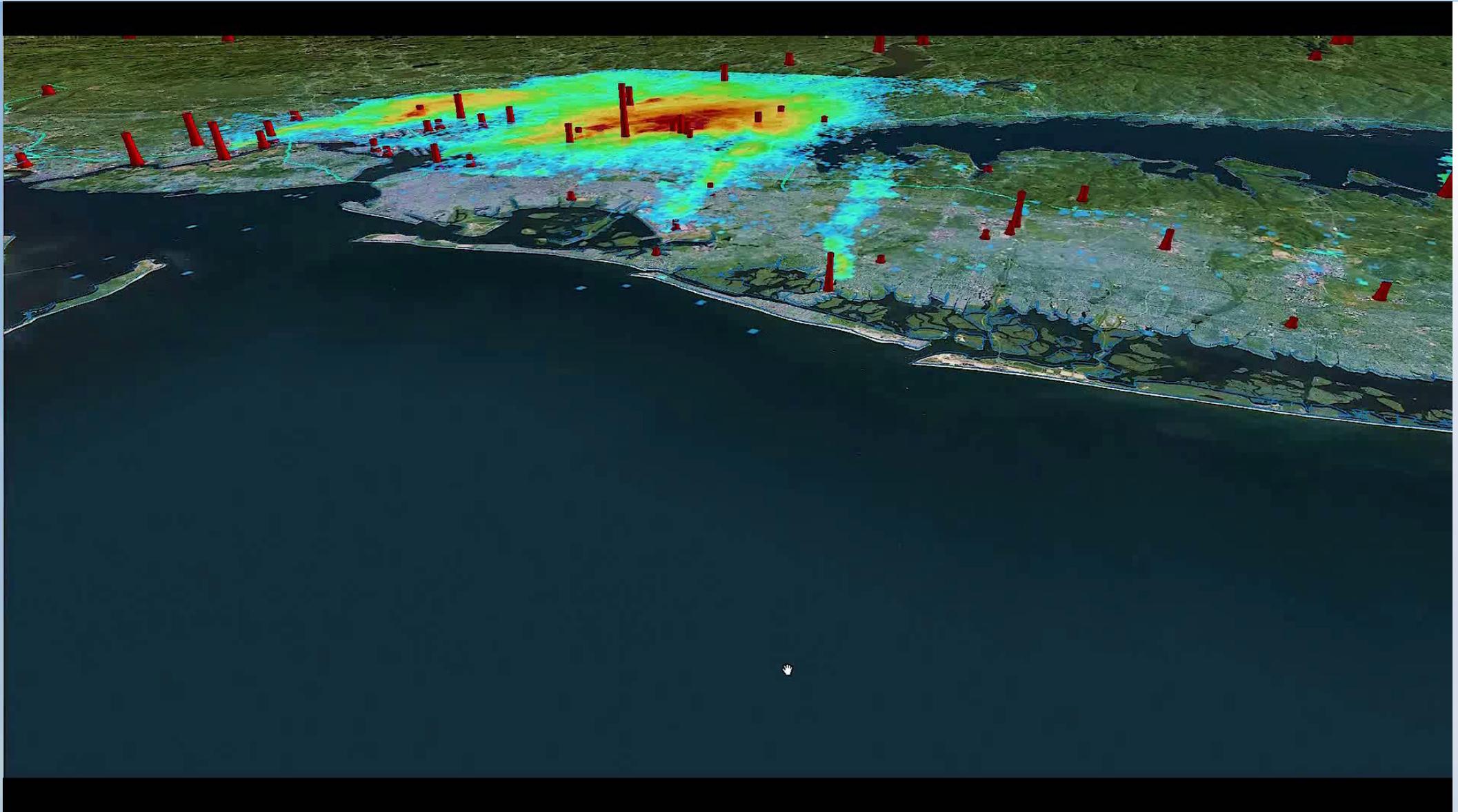
OMI NO₂ Trend 2005-2019

[Video Credit: NASA Goddard Space Flight Center](#)



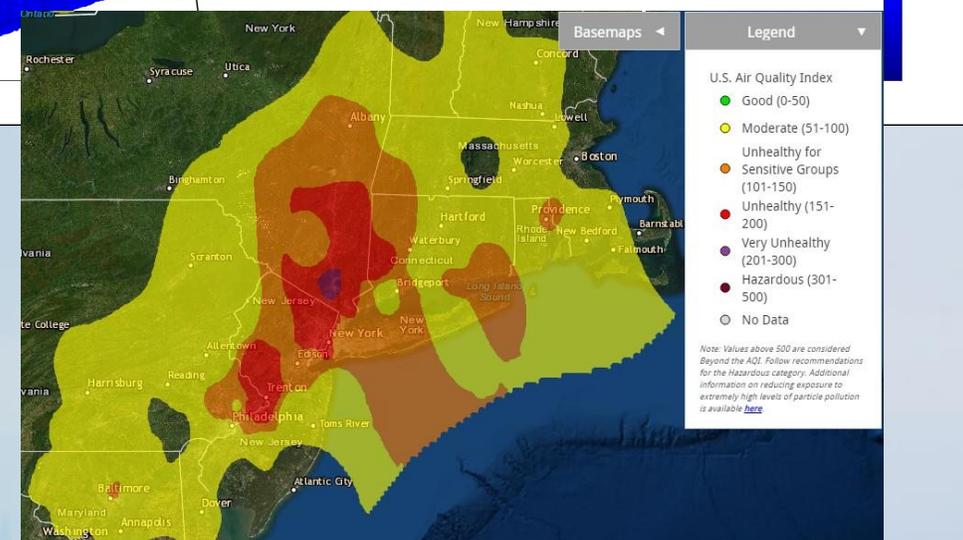
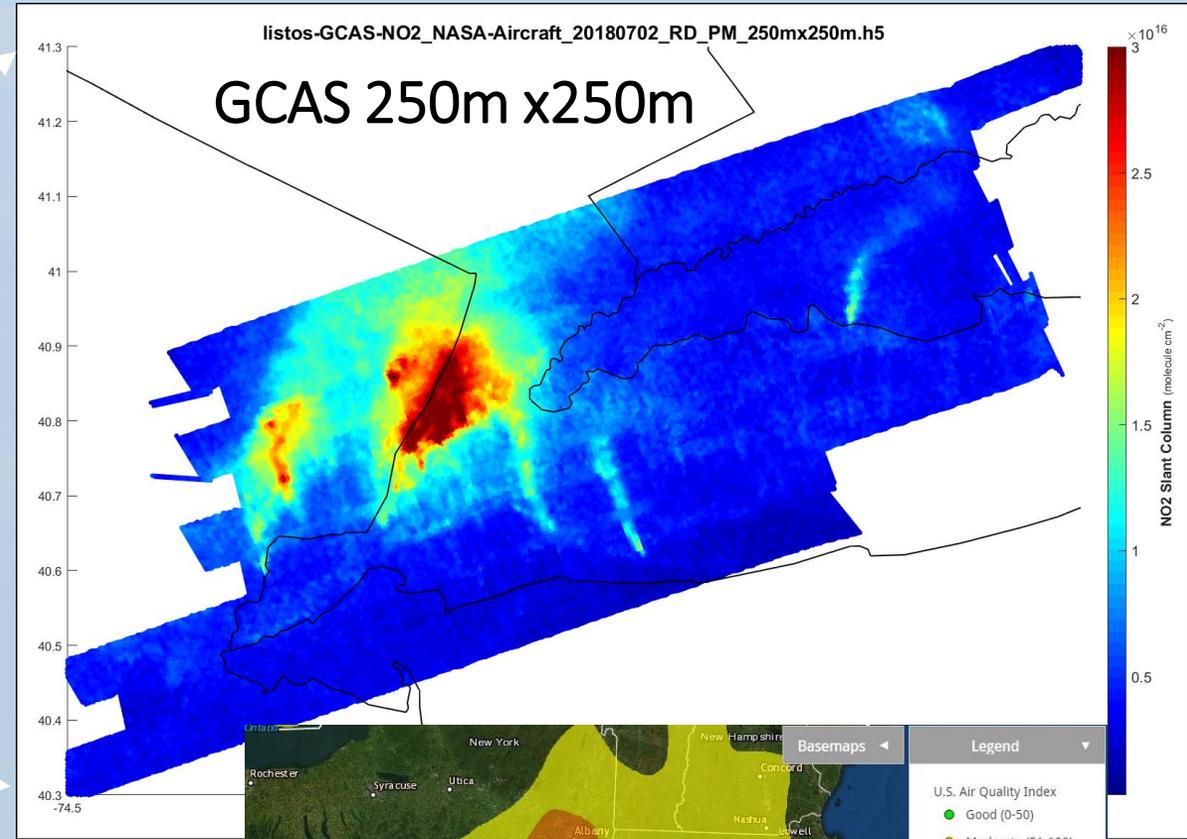
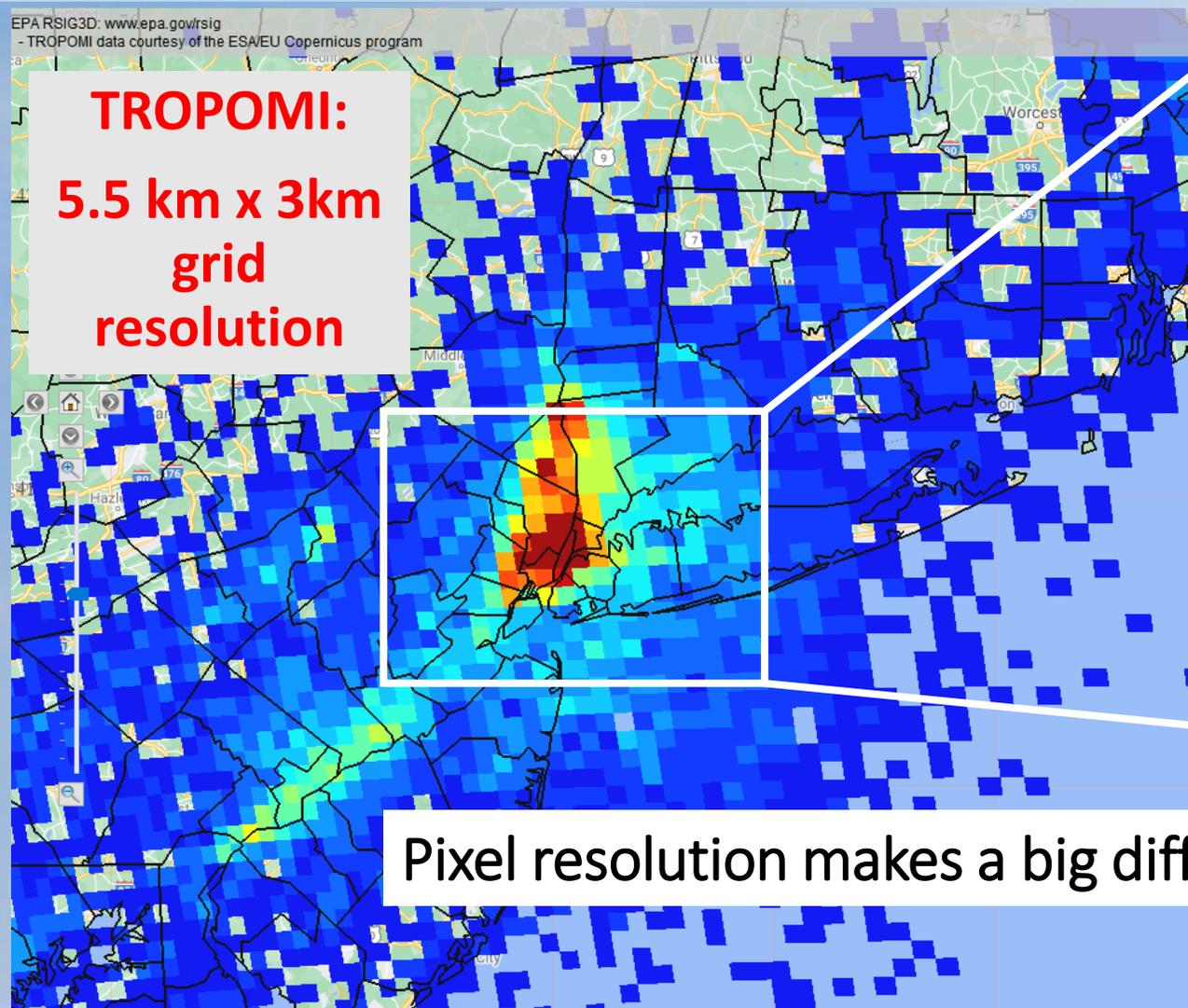
These types of trend plots are very valuable to regulators. Controls are making a difference.

NASA GCAS NO2 from LISTOS July 2, 2018



Overlaying high resolution GCAS images on EGU sources shows air pollution sources affecting CT.

July 2, 2018 Tropomi NO2 Close-up of NYC



Resources for Regulators

- EOSDIS- [Earth Observing System Data and Information System](#). Useful web tools are available to search data files by instrument and pollutant type. Access and download data files, with spatial and temporal sub-setting. [Search TROPOMI](#)
- EOSDIS- [Worldview](#) Land Atmosphere Near-real-time Capability for EOS is NASA's main tool for visualization of near-real-time data and imagery. Useful for tracking aerosol plumes and plotting Aerosol Optical Depth (AOD)
- GES DISC [Goddard Earth Sciences Data and Information Services Center](#) (Air Quality) A NASA data center where pollution and aerosol files may be found.
- GES DISC- [Giovanni](#) An interactive visualization and analysis web tool.
- LAADS Web [Level 1 and Atmosphere Archive and Distribution System](#). Access MODIS L1, Atmosphere and Land products, and VIIRS L1 and Land products.
- HMS [NOAA Hazard Mapping System Fire](#) and Smoke Product.
- [NOAA Aerosol Watch](#). GOES 10-minute updates.

More at <https://airquality.gsfc.nasa.gov/resources>

Future Needs

- Eagerly awaiting the launch of the [TEMPO satellite](#).



March 18, 2020

[TEMPO LAUNCH PROVIDER ANNOUNCED](#)

The TEMPO instrument, a NASA satellite instrument lead by Principal Investigator Kelly Chance from the Center for Astrophysics- Harvard & Smithsonian, will launch to orbit aboard a SpaceX Falcon 9 launch vehicle. The launch is planned for 2022.

- I have submitted a request for TEMPO to focus on NYC area for high resolution scanning down to 1km!
- Geostationary is the best choice to provide near time updates for atmospheric chemistry and visible aerosols etc.
- Will <1km resolution ever be possible?
- Need [Calipso](#) type vertical structure in a wider swath. [MAIA](#) ?
- Ideally, we need to know the role of transport and meteorology over LIS. This includes wind fields, mixing heights and concentrations throughout the column and even at the surface. Wishful thinking?

