National Aeronautics and Space Administration

NASA

EXPLORE EARTH

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Utilizing Earth Observations for Improved Air Quality and Health Decisions

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NASA EARTH FLEET

CURRENT OPERATING MISSIONS

NISTAR, EPIC (DSCOVR)

GRACE-FO (2)

ICESAT-2

SUOMI NPP

LANDSAT 8

OCO-2

CALIPSO

SMAP

CYGNSS (8)

CLOUDSAT

LANDSAT 7

GPM

TERRA

AURA

AQUA

INVEST/CUBESATS

RainCube
TEMPEST-D
CubeRRT
CSIM-FD

ISS INSTRUMENTS

SAGE III
TSIS-1
OCO-3
GEDI
LIS
ECOSTRESS

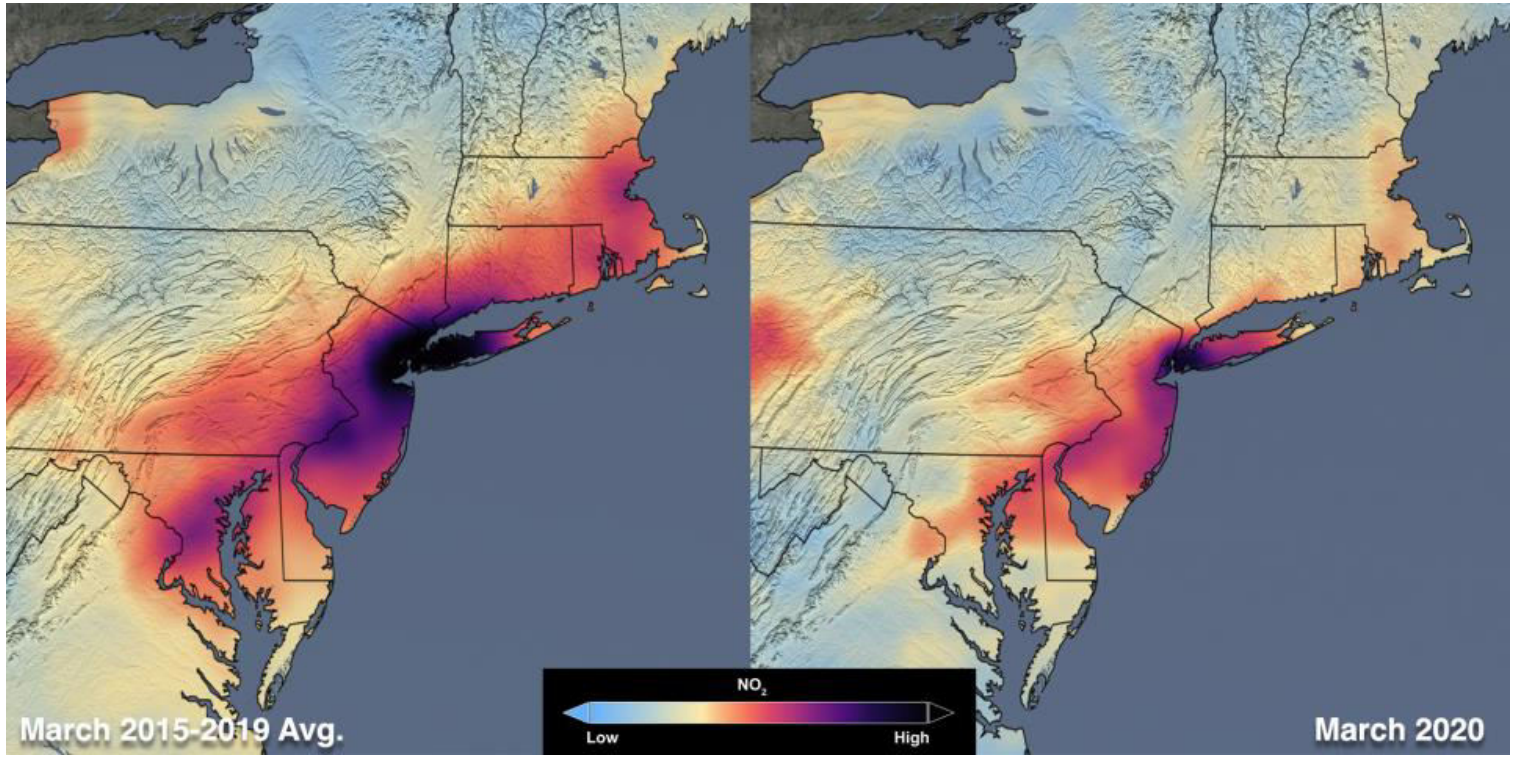
03.31.20

Air Quality Changes in Response to COVID-19 Mitigation Efforts

• Nitrogen dioxide (NO_2) is a pollutant that is unhealthy to breath and contributes to the formation of unhealthy levels of surface ozone pollution. It is primarily emitted from tailpipes and smokestacks.

• Aura Ozone Monitoring Instrument (OMI) and ESA TROPOMI data show large decreases of NO_2 in areas where COVID-19 mitigation measures have been introduced. Ongoing observations of air quality have helped provide immediate examples of how Earth's systems are responding to these changes in human behavior.

• The NASA OMI team created a portal to provide scientists an easy way to see how satellite NO_2 has changed in 2020 compared to the 2015-2019 average for the same 14-day period: https://so2.gsfc.nasa.gov/no2/no2_index.html



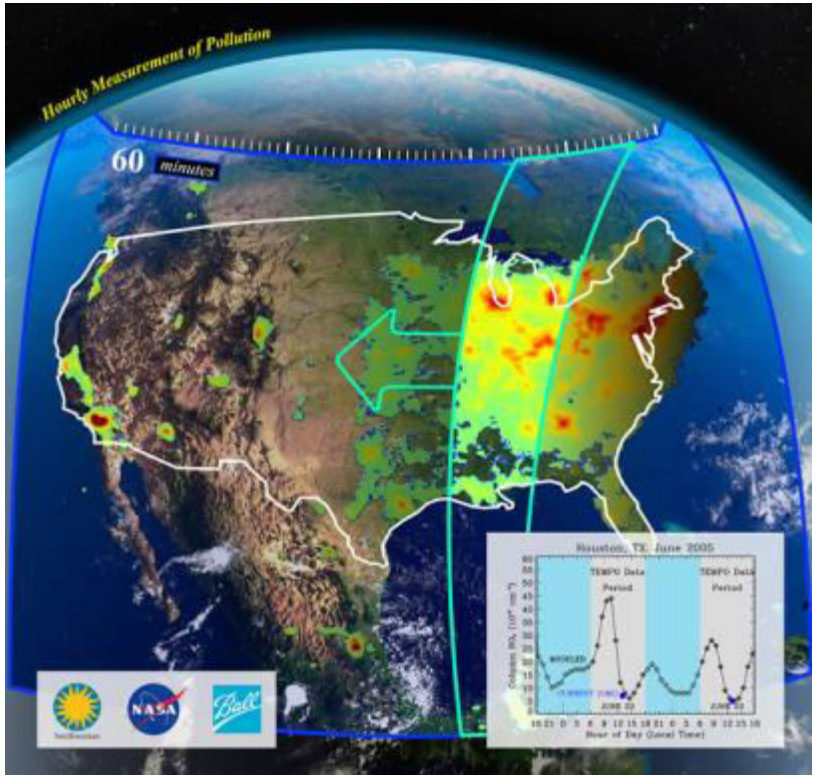
Decreases in air pollution, specifically tropospheric nitrogen dioxide (NO2), over the Northeast United States due to COVID-19 response.
Credits: NASA/Science Visualization Studio

Earth Venture Instrument-1:

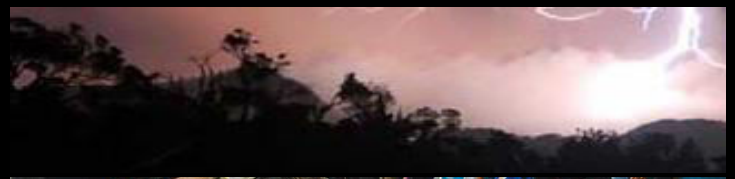
Tropospheric Emissions: Monitoring of Pollution (TEMPO)

"Monitoring the air we breathe, hour by hour"

- ***TEMPO is a pathfinder to using hosted commercial payloads from GEO***
- Tropospheric pollution observations from Geostationary Orbit
  - Ozone, NO_2, and CH_2O.
- Forms a global Air Quality constellation in GEO with Copernicus Sentinel 4 and Korean GEMS.
- The US EPA and NOAA are part of the science team.
- Instrument delivered in 2018; Launch 2022



http://tempo.si.edu/overview.html



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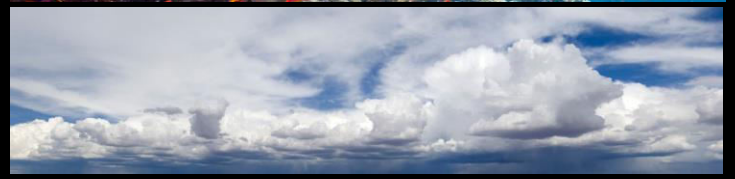

Questions:

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Health & Air Quality Applications

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http://AppliedSciences.NASA.gov