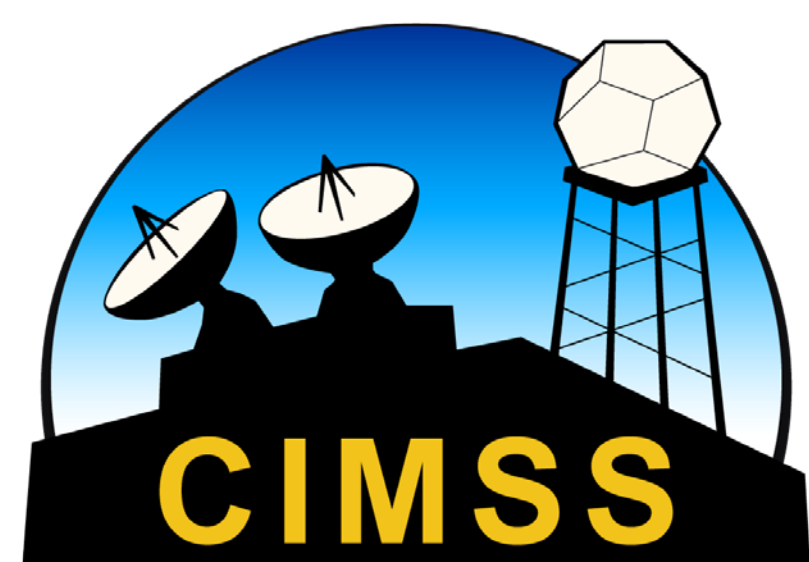




Improved NO_x Emission Inventories via OMI and GeoTASO

Getting the Word Out

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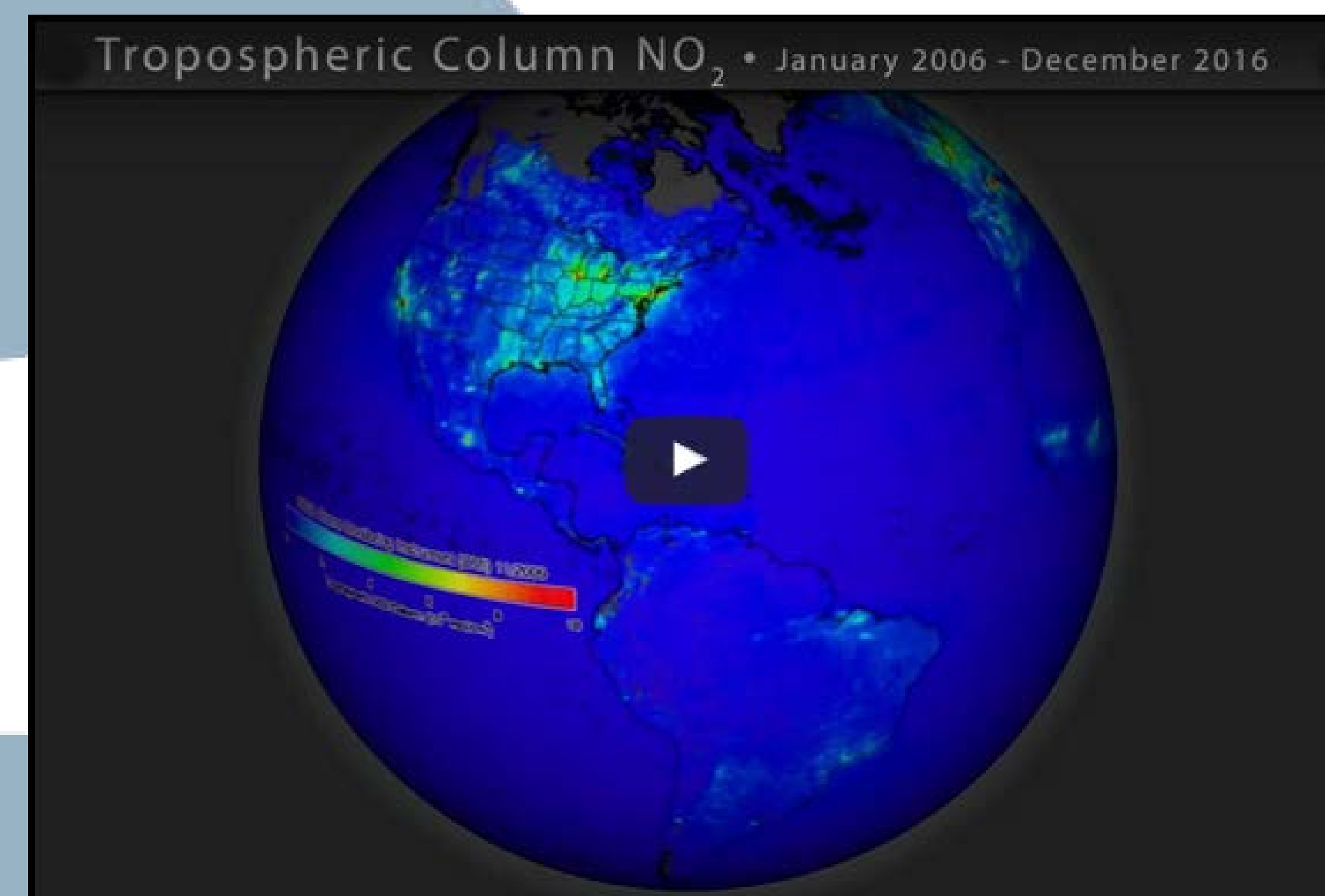


The overall goal of this HAQAST Tiger Team project is to support National Weather Service (NWS) air quality forecasts, the Environmental Protection Agency (EPA) and Centers for Disease Control (CDC) data services, and the Lake Michigan Air Directors Consortium (LADCO) State Implementation Planning (SIP) modeling efforts. Despite dramatic reductions in ozone precursor emissions, many areas bordering Lake Michigan continue to violate federal air quality standards. This problem has persisted for decades and is one of the most challenging air quality issues in the region. At the same time, recent studies suggest that NO_x emissions are overestimated in the National Emissions Inventory (NEI). These overestimates can affect model predictions of ozone and nitrate aerosol concentrations, leading to systematic biases. Applying NO₂ retrievals from the NASA Ozone Monitoring Instrument (OMI) and the airborne NASA Geostationary Trace gas and Aerosol Sensor Optimization (GeoTASO) is improving NO_x emission estimates, which will translate to more accurate ozone forecasts



CONNECTING TO STAKEHOLDERS:

PI Dr. Brad Pierce briefed the Sheboygan County Chamber in April 2017, sharing objectives and measurement strategies for the Lake Michigan Ozone Study (LMOS).

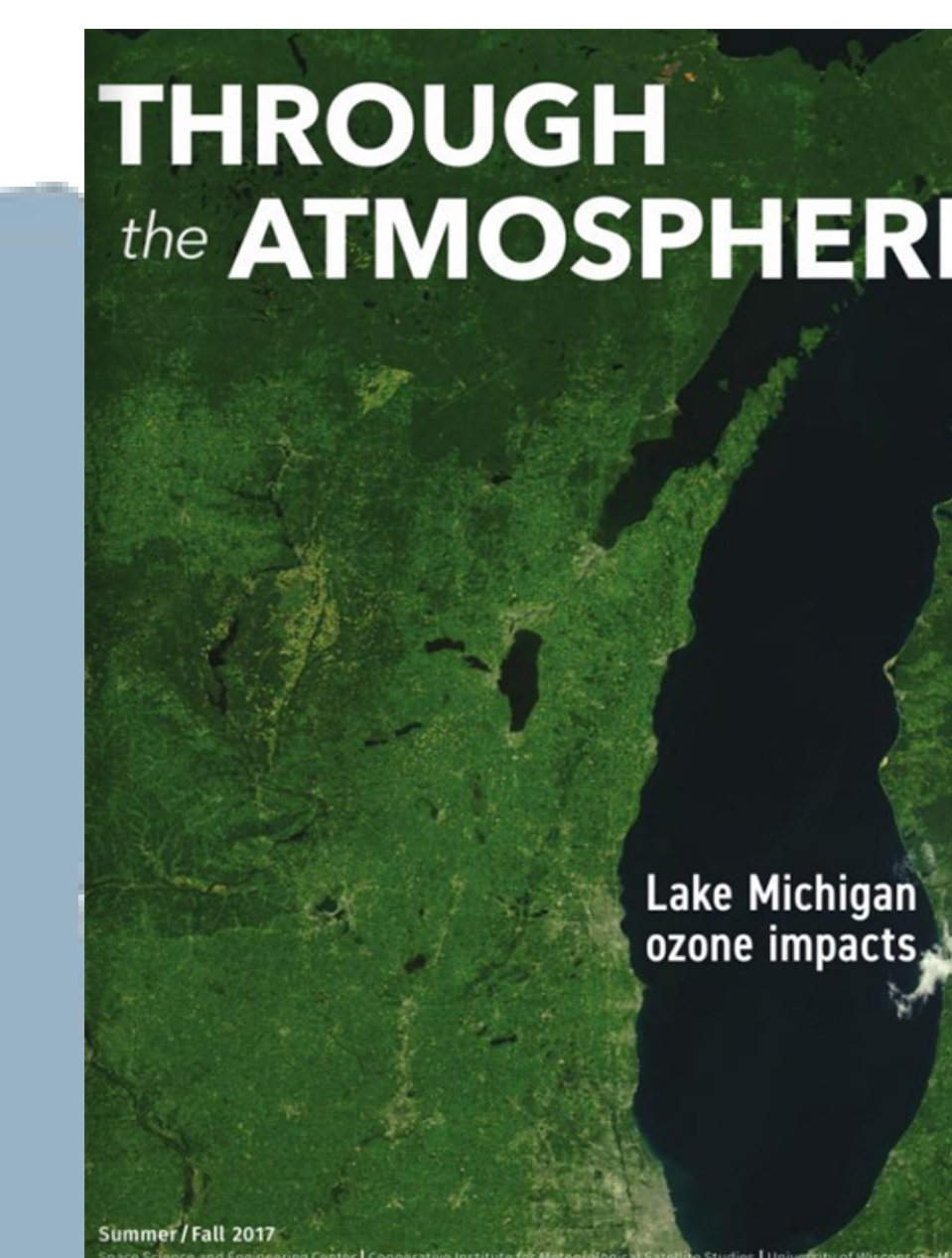


SOS DATASET: A 10-year (2006-2016) high-resolution monthly mean tropospheric NO₂ column data set generated by the NASA OMI Science Team for NO₂ was developed for display on NOAA Science On a Sphere (SOS) exhibits.



IN THE NEWS: News coverage to date includes

- WPR Blog post summer 2017
- WPR on-Air Interview summer 2017
- SSEC on-line article summer 2016
- SSEC on-line article summer 2017
- SSEC print newsletter Summer/Fall 2017



OPEN HOUSE: Numerous team members staffed an Open House in Sheboygan on Saturday, June 17, 2017, enabling first hand interactions between interested citizens and NOAA, NASA, EPA and university scientists. The public could visit the SSEC SPARC mobile lab, the EPA/NOAA research vessel, and the EPA mobile lab. The goal was to raise awareness on how the project uses satellites, ground based and aircraft measurements to better understand air quality along the western shore of Lake Michigan.



MEET the LMOS SCIENTISTS! Dr. Betsy Stone compiled a presentation introducing the contributors to the summer 2017 LMOS data collection effort.

PROJECT BRIEFS: Hand-outs to share with stakeholders and interested parties



NASA Health and Air Quality Applied Sciences Team

PROJECT: Improved National Emissions Inventory NO_x emissions using OMI Tropospheric NO₂ retrievals and Potential Impacts on Air Quality Strategy Development

Background

The overall goal of this HAQAST Tiger Team project is to support National Weather Service (NWS) air quality forecasts, the Environmental Protection Agency (EPA)/Centers for Disease Control and Prevention (CDC) data services, and the Lake Michigan Air Directors Consortium (LADCO) State Implementation Planning (SIP) modeling efforts.

How will NWS Air Quality Forecasts improve?

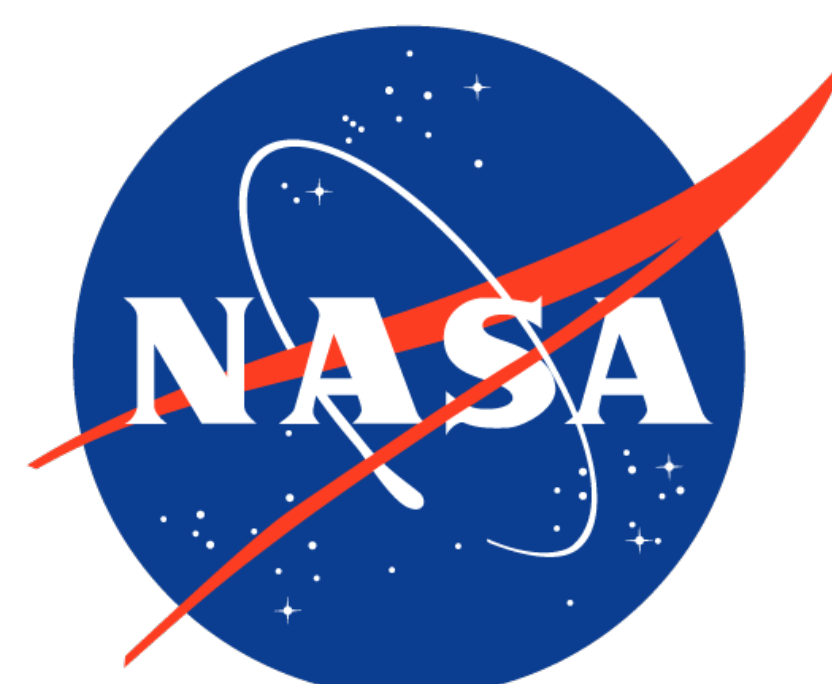
NWS air quality forecasts will benefit from better data. Improved NO₂ retrievals from the NASA Ozone Monitoring Instrument (OMI) and the *all new* NASA Geostationary Trace gas and Aerosol Sensor Optimization (GeoTASO) will help develop improved estimates of National Emissions Inventory (NEI) anthropogenic area and non- electric generating utilities (EGU) point source NO_x emissions. Improved estimates translate to forecasts that are more accurate.

How will the EPA and CDC benefit from this project?

Ground level ozone is created by chemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma. Ground level ozone can also have harmful effects on sensitive vegetation and ecosystems. Having a better handle on NO_x emissions and transport in EPA Region 5 helps the agency ensure that safe ozone standards and attainment is met. Similarly, the CDC can use the data to characterize exposure to contaminants and investigate the potential for short- and long-term adverse health effects.

How will LADCO benefit from this project?

Despite dramatic reductions in ozone precursor emissions, many areas bordering Lake Michigan continue to violate federal air quality standards. This problem has persisted for decades and is one of the most challenging air quality issues in the region. At the same time, recent studies suggest that NO_x emissions are overestimated in the NEI. These overestimates can affect model predictions of ozone and nitrate aerosol concentrations, leading to systematic biases. This Tiger Team project will help to constrain model predictions while shedding light on the unique atmospheric dynamics in the Great Lakes Region.



<http://cimss.ssec.wisc.edu/education/gl/ttnox>

