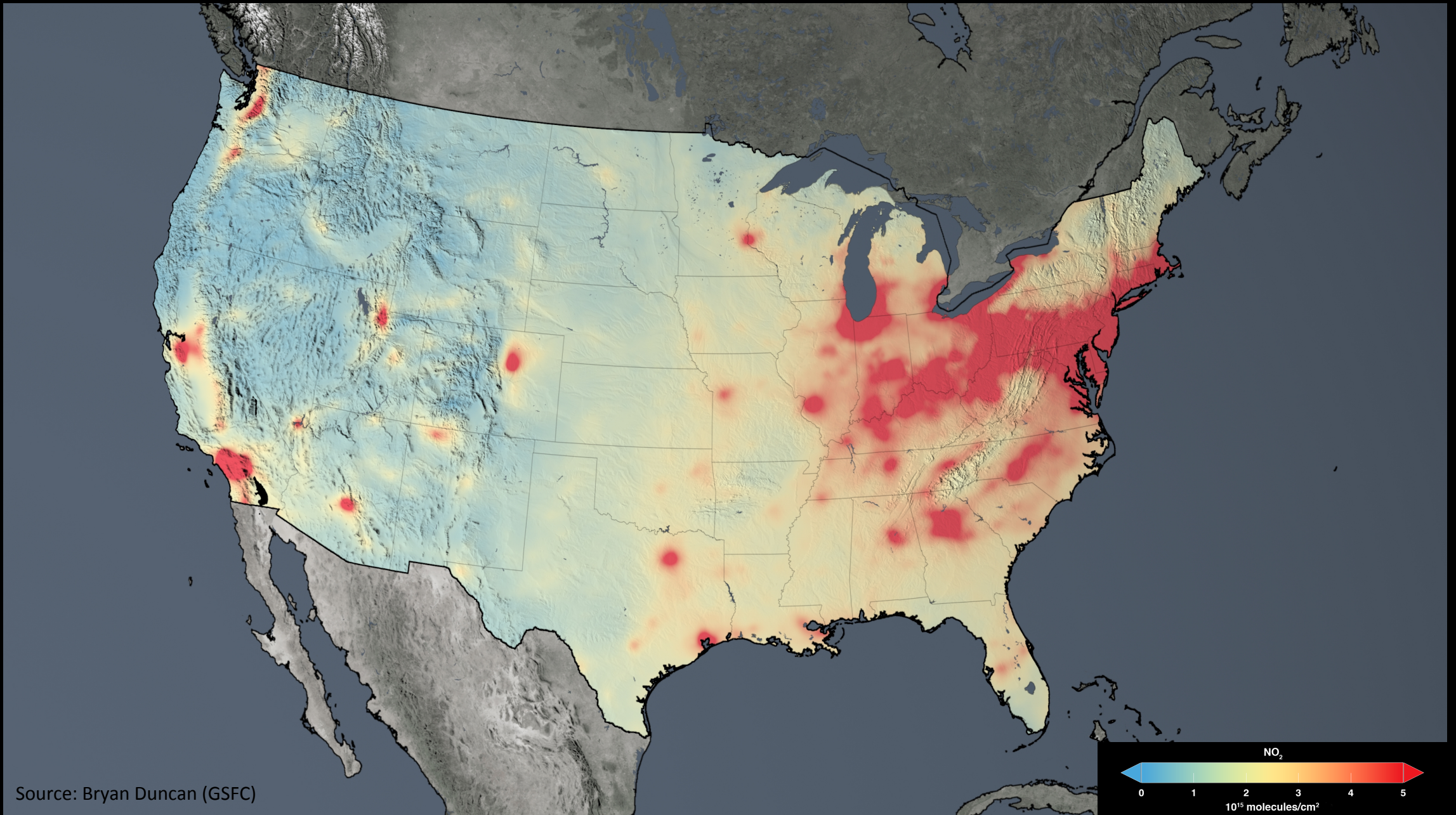


NASA's Planned Air Quality Missions – Need to Engage Stakeholders

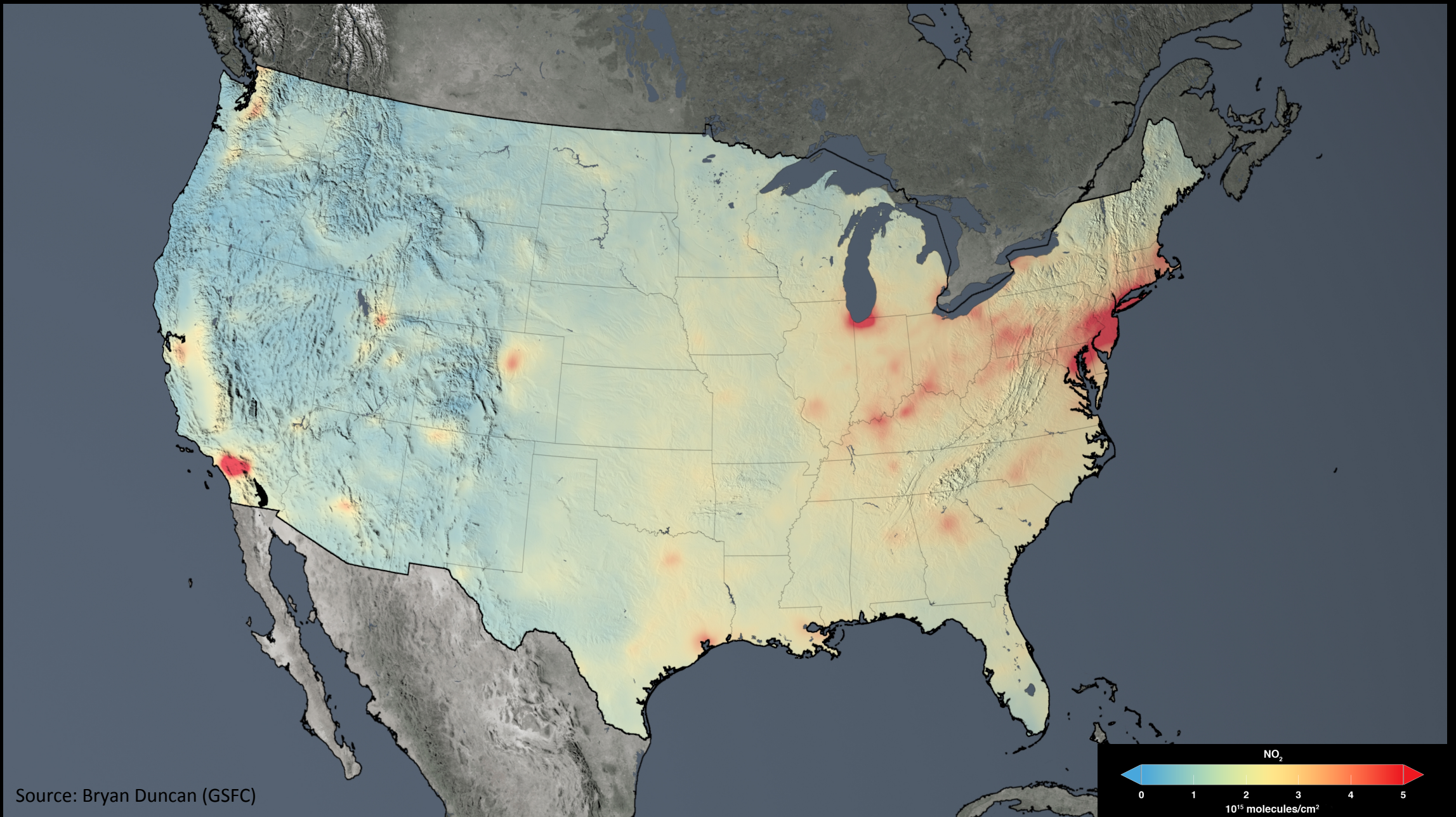
Barry Lefer
Tropospheric
Composition
Earth Science Division
NASA Headquarters



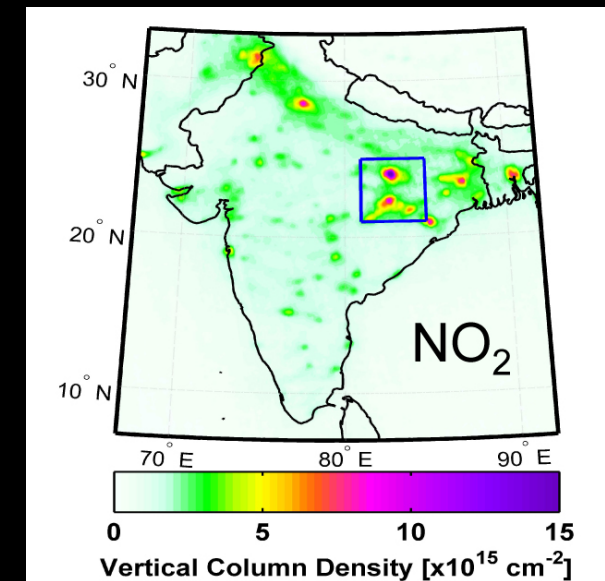
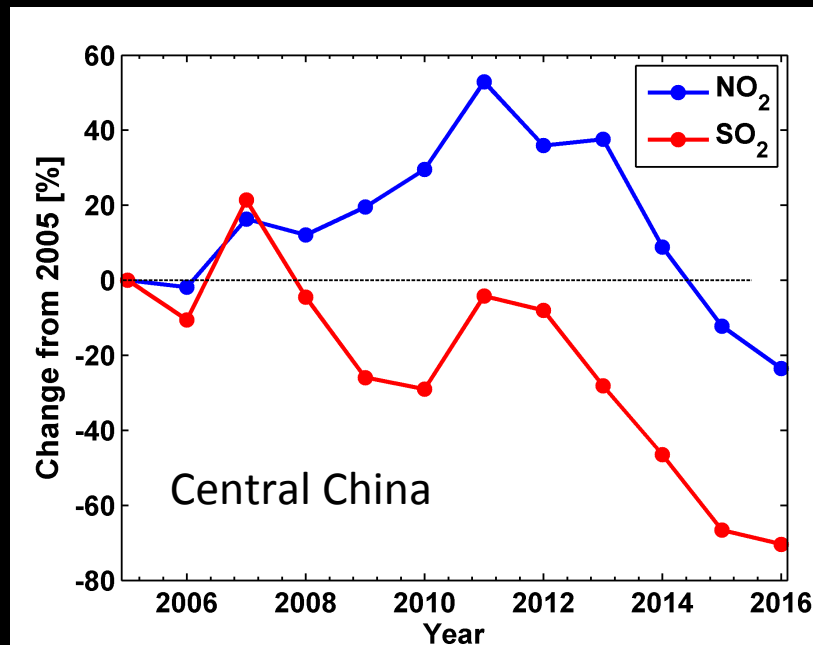
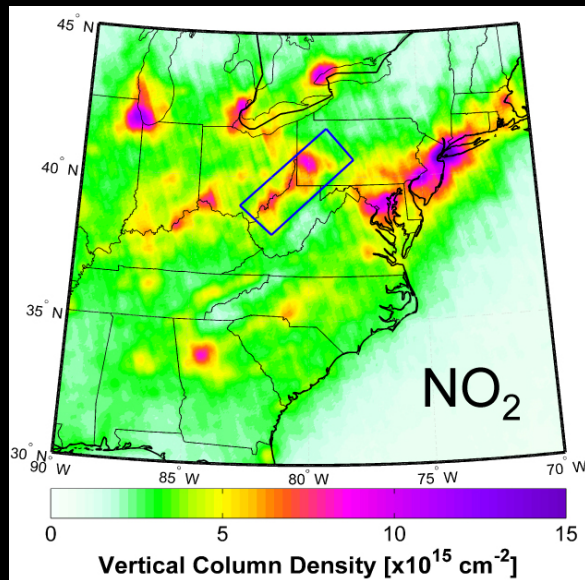
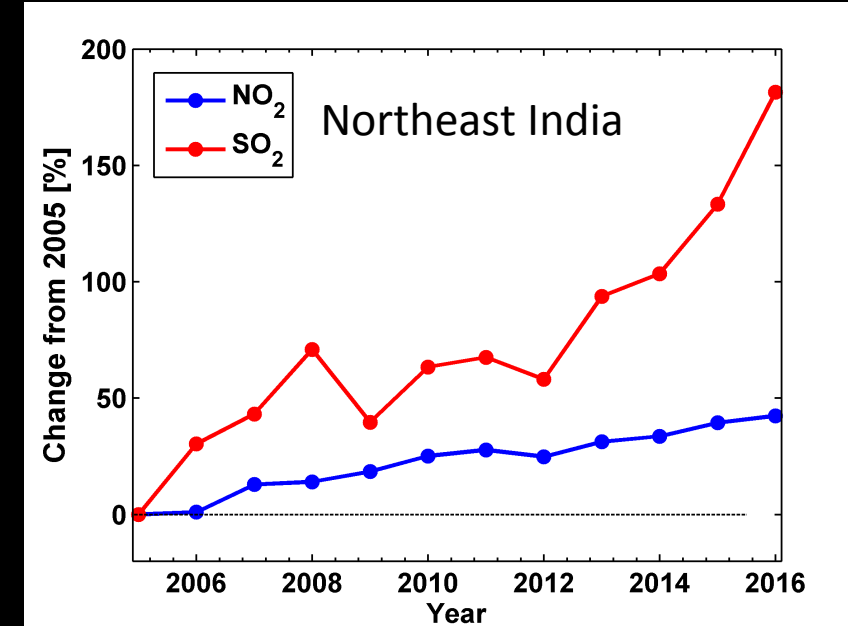
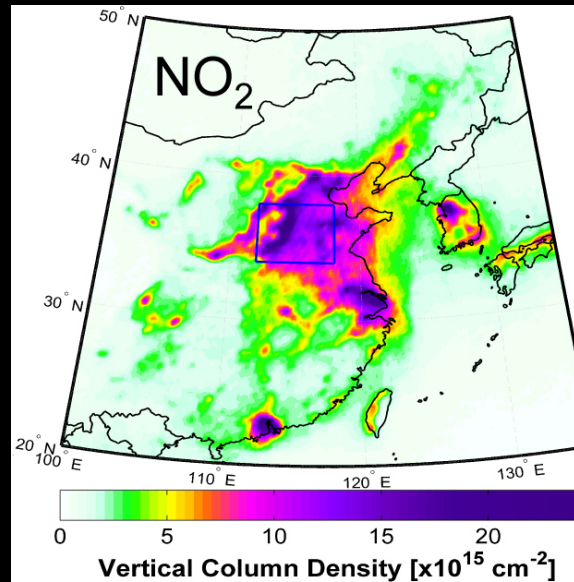
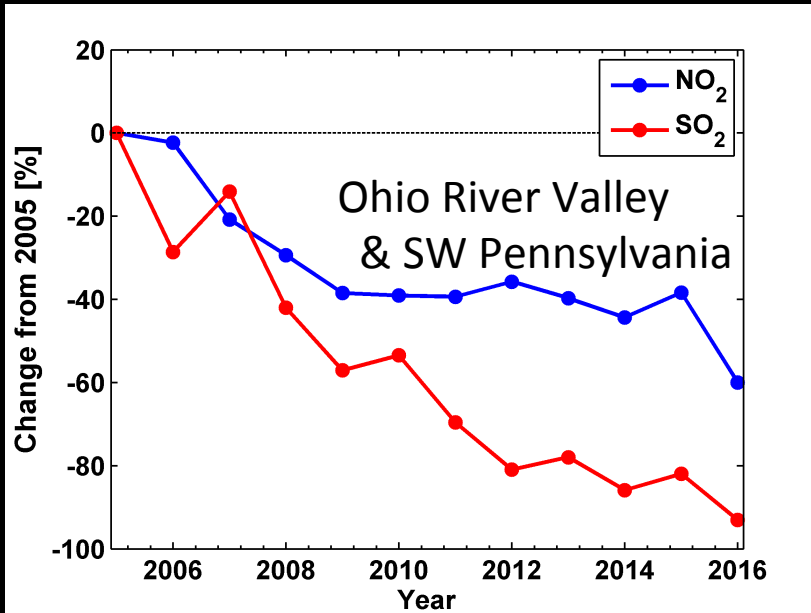
OMI NO₂ for United States (2005)



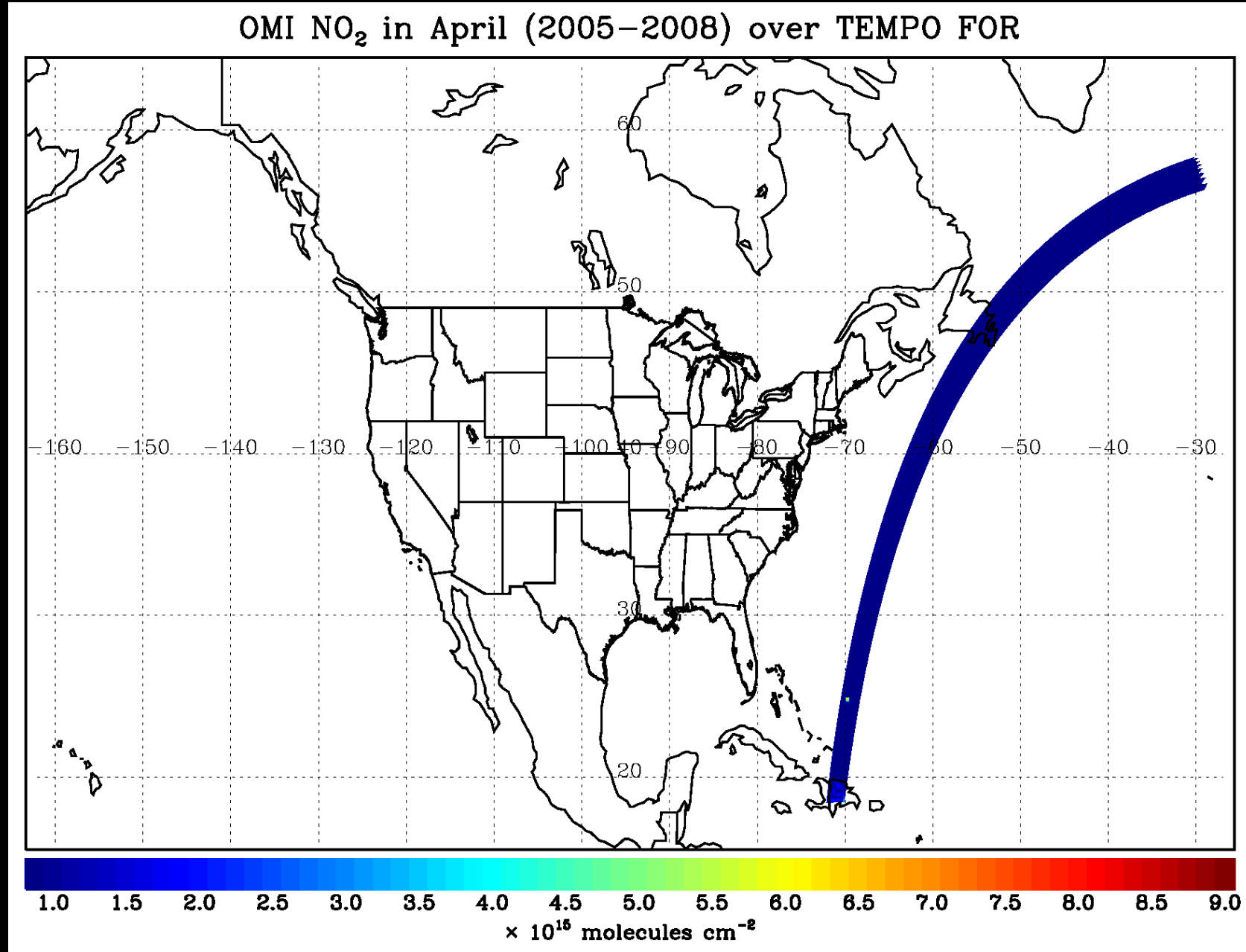
OMI NO₂ for United States (2014)



OMI NO₂ Trends (Annual 2005 to 2016)

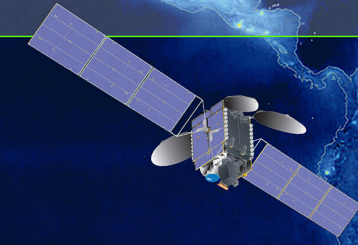
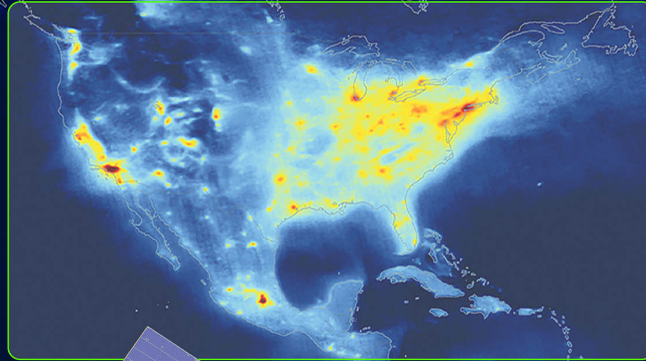


Tropospheric Emissions: Monitoring of Pollution (TEMPO)



Future Global Air Quality Monitoring Constellation

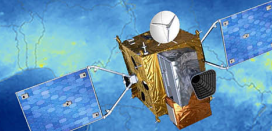
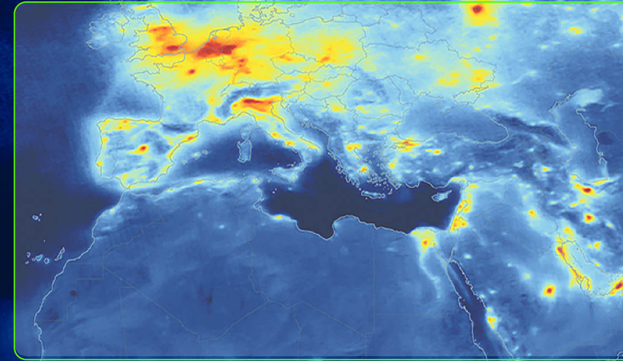
TEMPO (*hourly*)
Tropospheric Emissions:
Monitoring of Pollution



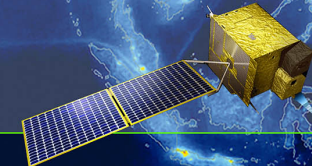
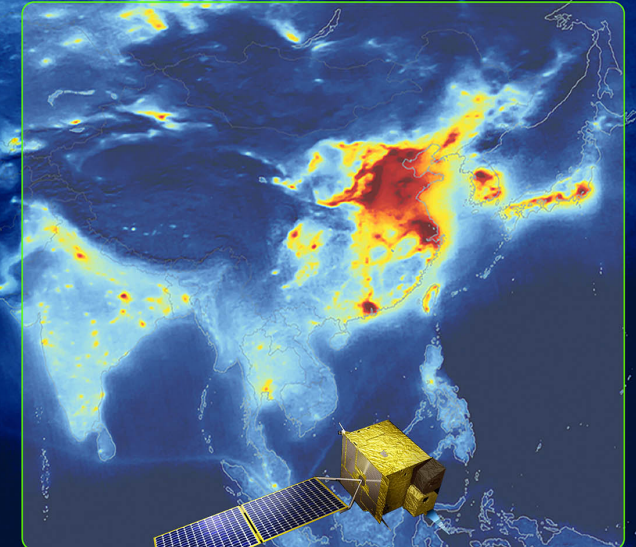
Sentinel-5P (*once per day*)



Sentinel-4 (*hourly*)



GEMS (*hourly*)
Geostationary Environmental
Monitoring Spectrometer

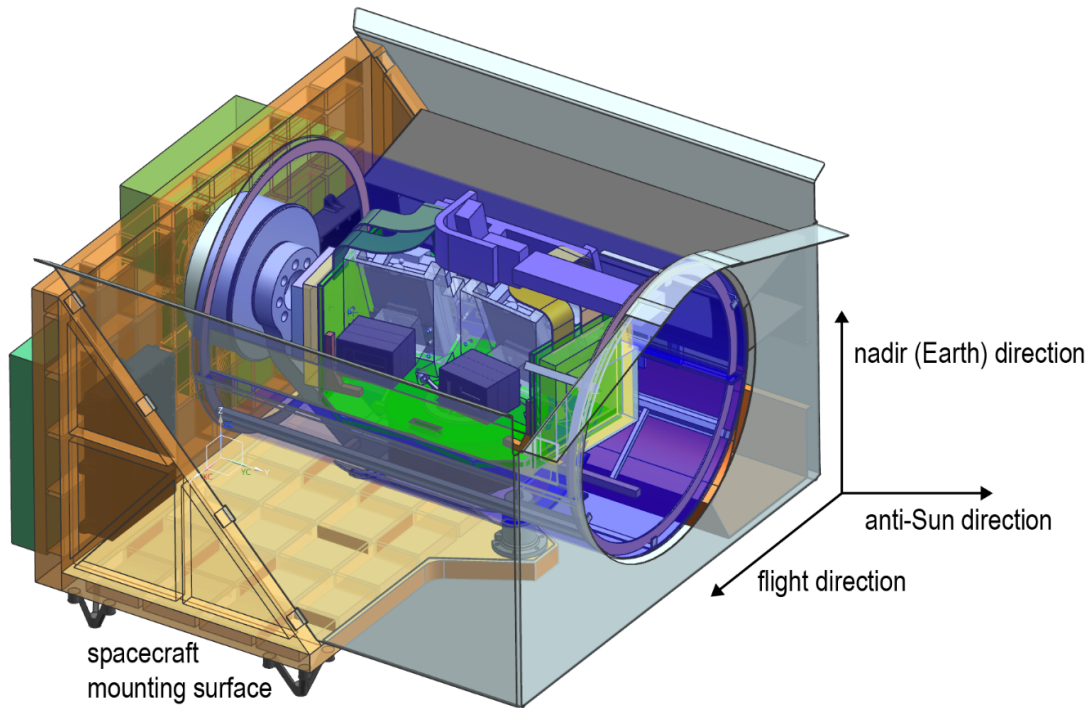


GaoFen-5 (*once per day*)



Multi-Angle Imager for Aerosols (MAIA)

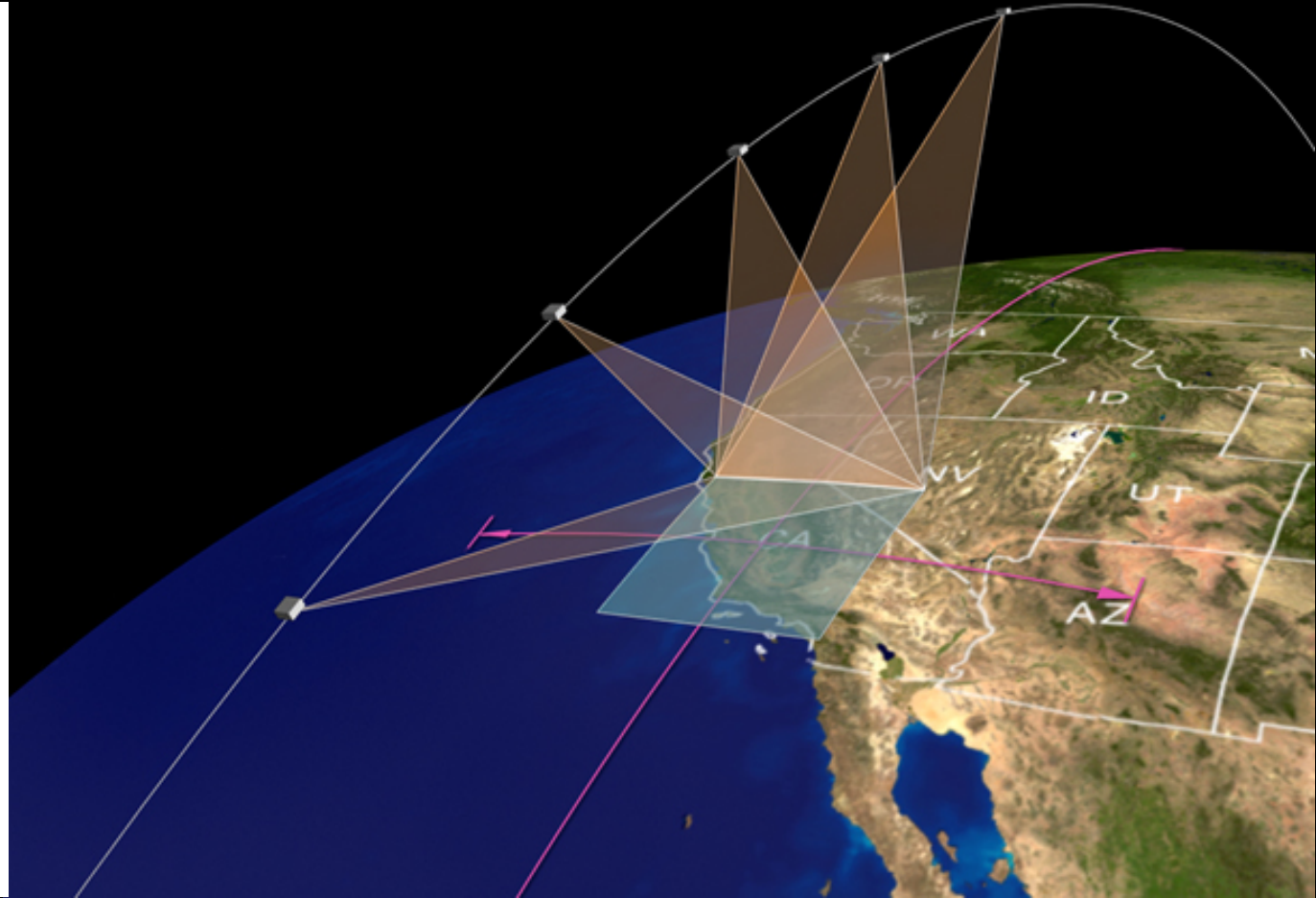
MAIA uses a twin-camera instrument that will make radiometric and polarimetric measurements needed to characterize the sizes, compositions and quantities of particulate matter in air pollution. As part of the MAIA investigation, researchers will combine MAIA measurements with population health records to better understand the connections between aerosol pollutants and health problems such as adverse birth outcomes, cardiovascular and respiratory diseases and premature deaths.



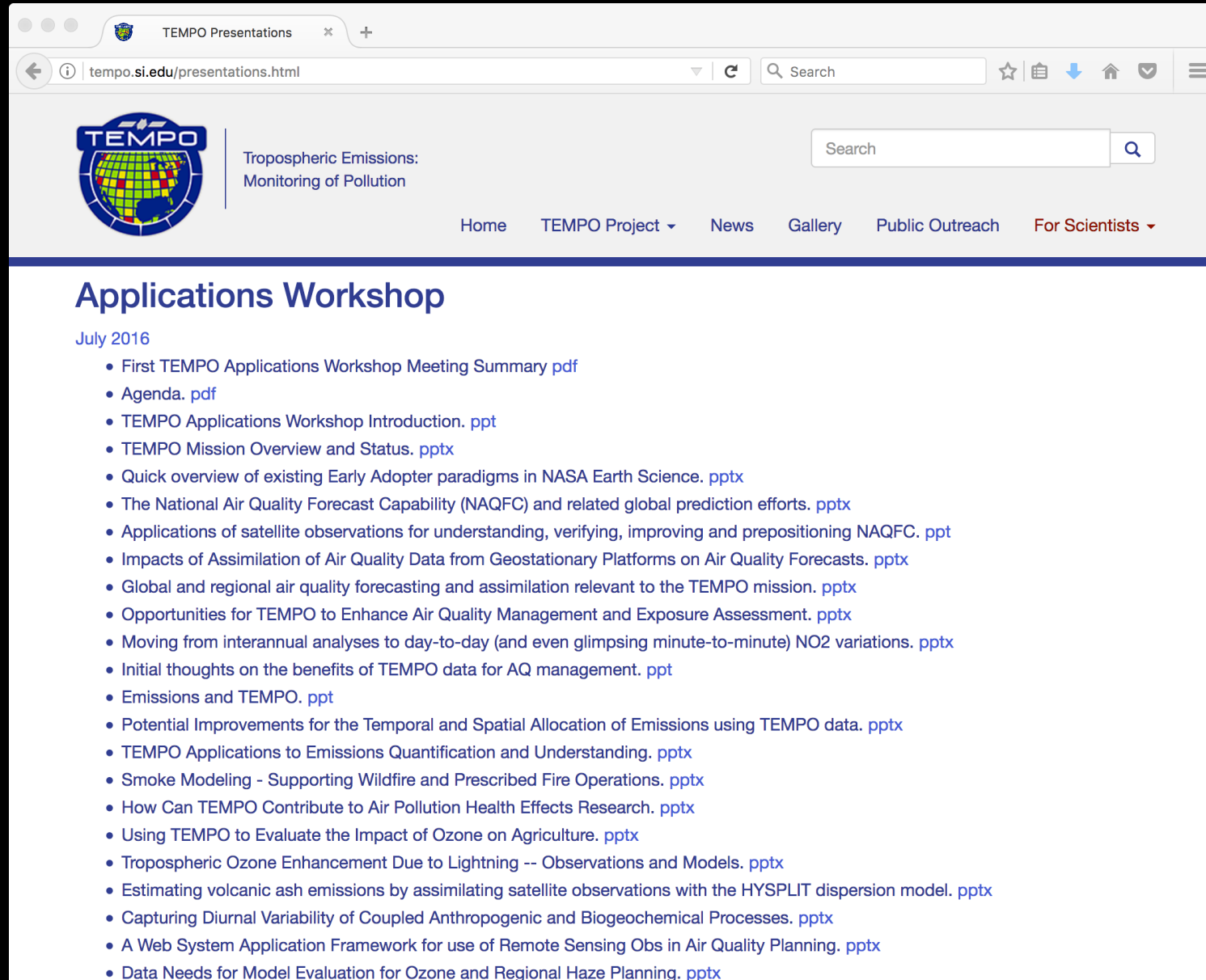
Conceptual configuration of the MAIA instrument

Acknowledgment

The MAIA instrument is being developed by the Jet Propulsion Laboratory, California Institute of Technology under a contract with the National Aeronautics and Space Administration (NASA). MAIA is a Venture-class investigation within NASA's Earth System Science Pathfinder Program.



TEMPO 1st applications workshop (July 2016)



The screenshot shows a web browser window with the address bar displaying "tempo.si.edu/presentations.html". The page features the TEMPO logo, which includes a globe with a grid and the text "TEMPO" above it. To the right of the logo, the text "Tropospheric Emissions: Monitoring of Pollution" is visible. A search bar is located in the top right corner of the page. Below the logo and text, a navigation menu includes links for "Home", "TEMPO Project", "News", "Gallery", "Public Outreach", and "For Scientists". The main content area is titled "Applications Workshop" and "July 2016". It contains a list of 25 items, each with a bullet point and a link to a document (pdf or pptx).

TEMPO Presentations

tempo.si.edu/presentations.html

TEMPO

Tropospheric Emissions:
Monitoring of Pollution

Search

Home TEMPO Project News Gallery Public Outreach For Scientists

Applications Workshop

July 2016

- First TEMPO Applications Workshop Meeting Summary [pdf](#)
- Agenda. [pdf](#)
- TEMPO Applications Workshop Introduction. [ppt](#)
- TEMPO Mission Overview and Status. [pptx](#)
- Quick overview of existing Early Adopter paradigms in NASA Earth Science. [pptx](#)
- The National Air Quality Forecast Capability (NAQFC) and related global prediction efforts. [pptx](#)
- Applications of satellite observations for understanding, verifying, improving and prepositioning NAQFC. [ppt](#)
- Impacts of Assimilation of Air Quality Data from Geostationary Platforms on Air Quality Forecasts. [pptx](#)
- Global and regional air quality forecasting and assimilation relevant to the TEMPO mission. [pptx](#)
- Opportunities for TEMPO to Enhance Air Quality Management and Exposure Assessment. [pptx](#)
- Moving from interannual analyses to day-to-day (and even glimpsing minute-to-minute) NO₂ variations. [pptx](#)
- Initial thoughts on the benefits of TEMPO data for AQ management. [ppt](#)
- Emissions and TEMPO. [ppt](#)
- Potential Improvements for the Temporal and Spatial Allocation of Emissions using TEMPO data. [pptx](#)
- TEMPO Applications to Emissions Quantification and Understanding. [pptx](#)
- Smoke Modeling - Supporting Wildfire and Prescribed Fire Operations. [pptx](#)
- How Can TEMPO Contribute to Air Pollution Health Effects Research. [pptx](#)
- Using TEMPO to Evaluate the Impact of Ozone on Agriculture. [pptx](#)
- Tropospheric Ozone Enhancement Due to Lightning -- Observations and Models. [pptx](#)
- Estimating volcanic ash emissions by assimilating satellite observations with the HYSPLIT dispersion model. [pptx](#)
- Capturing Diurnal Variability of Coupled Anthropogenic and Biogeochemical Processes. [pptx](#)
- A Web System Application Framework for use of Remote Sensing Obs in Air Quality Planning. [pptx](#)
- Data Needs for Model Evaluation for Ozone and Regional Haze Planning. [pptx](#)

Combined assets from the international atmospheric science communities to implement an integrated observing system for improving our understanding of Air Quality

