



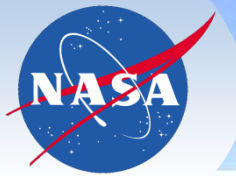
Applied Sciences at NASA: Air Quality Program Overview

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Earth Science Serving Society



Applied Sciences Program

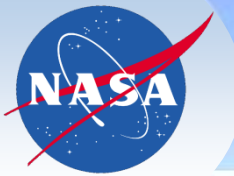
Program Plan 2009-14 (Draft)

- Goal 1: Identify and demonstrate new applications of NASA Earth observations and science to improve the nation's ability to manage its natural resources, plan for the future, and respond to environmental threats.**

- Goal 2: Improve the nation's capacity to use space-based observations in everyday decision making.**

- Goal 3: Foster communication between scientists and end users to ensure that NASA science and observations are optimized to serve both science and society.**

- Goal 4: Help the nation confront the challenges and impacts of climate change through informed policy making and the development of effective adaptation and mitigation strategies.**



Air Quality Program

Strategic Functions

The AQ Program seems to serve **three** primary functions for Applied Sciences, ESD & NASA:

Science advances and Technology transfer

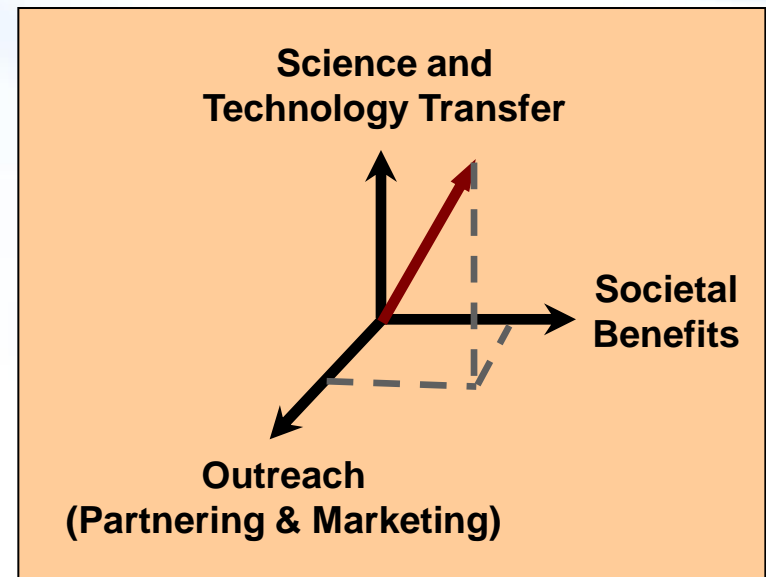
Applications projects can further scientific techniques (e.g., data assimilation, data fusion); interoperability standards drive technology; projects reduce perceived risk of its use and support transfer to private sector; operational use can provide testing and feedback on research algorithms and products; promote innovation.

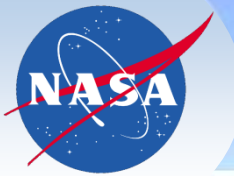
Societal Benefits

The Program serves the nation and society by helping partners improve their decision making – natural resource management, public safety and health, disaster warnings, etc.

Outreach, Partnerships, and Marketing

Projects facilitating partners' sustained use of Earth science products helps induce demand for Earth science data and research. Applications of the products to policy and management issues shows the relevance of Earth science to key stakeholders.





Satellite Observations

Air Quality Measurements

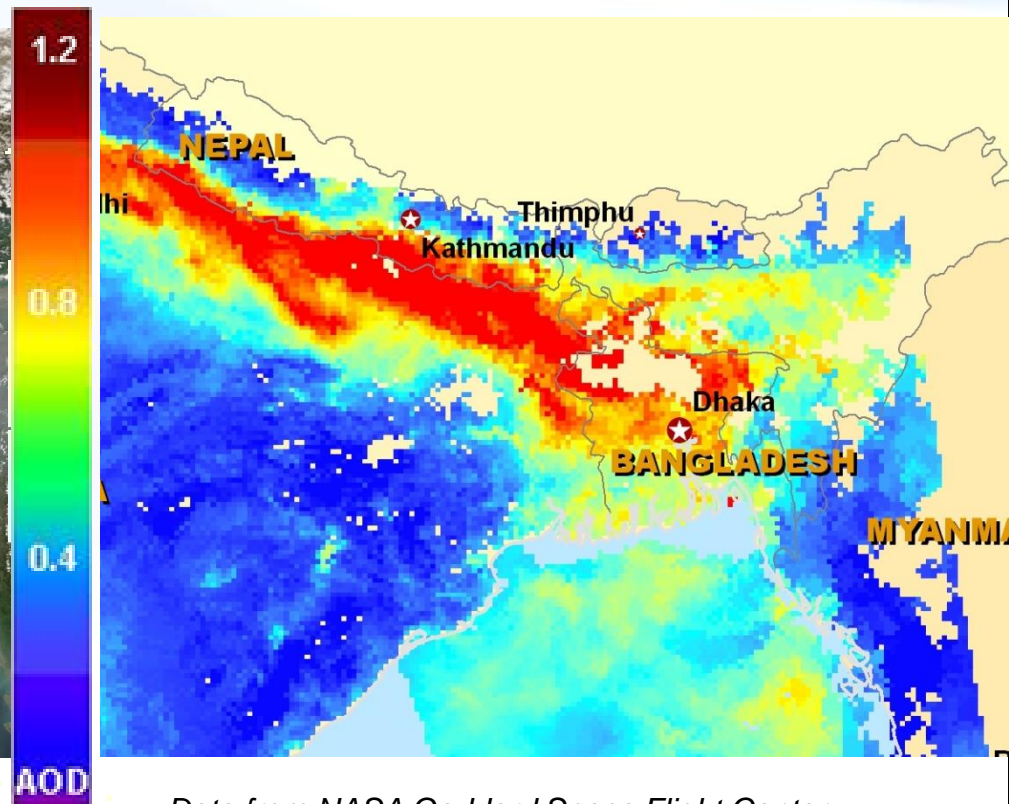
Northern India, Nepal, and Bangladesh

True Color



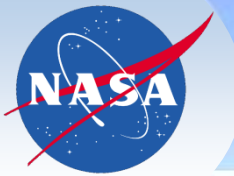
Image from NASA Earth Observatory

Aerosol Optical Depth (AOD)



Data from NASA Goddard Space Flight Center,
Image processed by Battelle

5 February 2006



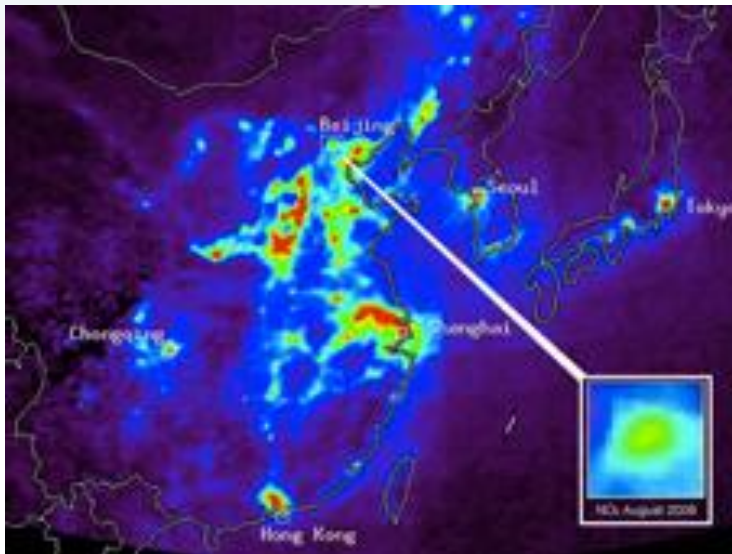
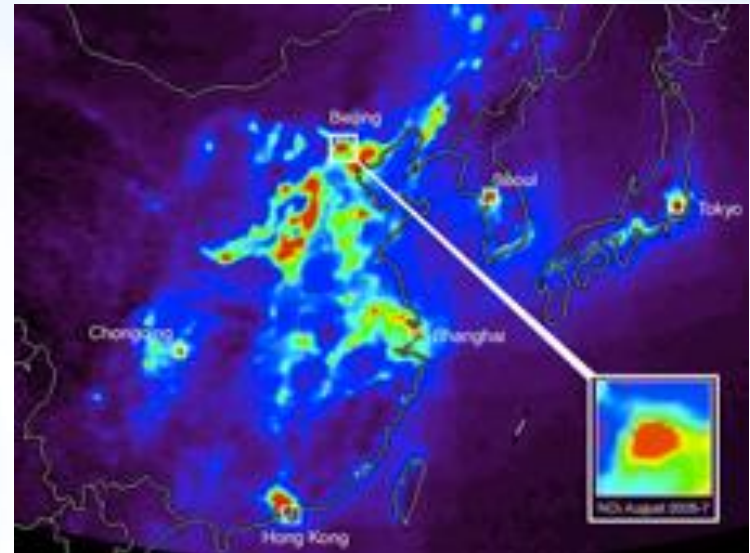
Air Quality Program

Beijing Olympics Air Quality

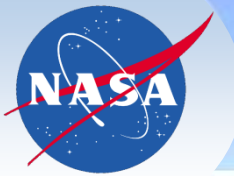
Satellite Data Reveal Impact of Olympic Pollution Controls

http://www.nasa.gov/topics/earth/features/olympic_pollution.html

This map, an average of August 2005-2007 nitrogen dioxide (NO₂) levels, shows high levels of pollution in Beijing and other areas of eastern China.



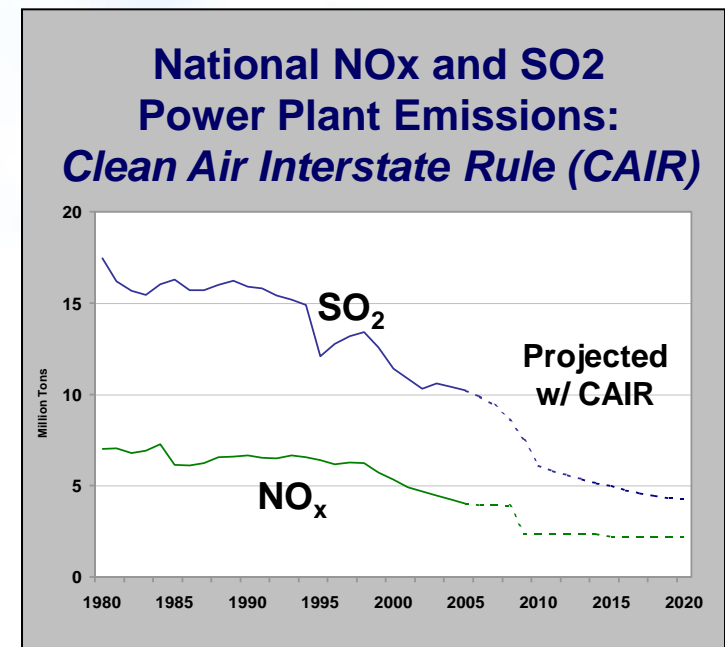
In contrast, levels of nitrogen dioxide (NO₂) plunged nearly 50 percent in and around Beijing in August 2008 after officials instituted strict traffic restrictions in preparation for the Olympic Games.



Air Quality Program

Developments and Drivers

- NOAA national forecast guidance
 - Ozone, Smote nationwide – FY10
 - Quantitative PM 2.5 predictions – FY14
 - AQ forecast to 48-72 hours
- Clean Air Interstate Rule
 - July '08 vacated; Sept./Nov. '08 petitions
- Exceptional Events Rule
- State Implementation Plans
 - New Air Quality Standards
- Long-range Transport
 - International committee examining Northern Hemisphere transport
 - NAS Study on US transport
- GEO & USGEO
 - AIRNow-International
 - AQ Community of Practice (ESIP)





Air Quality Program

Competitively-selected Projects

<u>Programmatic Themes</u>	<u>Number of Projects</u>
• Air Quality Planning	5 projects
• Air Quality Forecasting	4 projects
• Air Quality Compliance	0 projects
• Emissions Inventories	2 projects
• Climate	~ 1 project