AQ Applications Team Meeting

Purpose

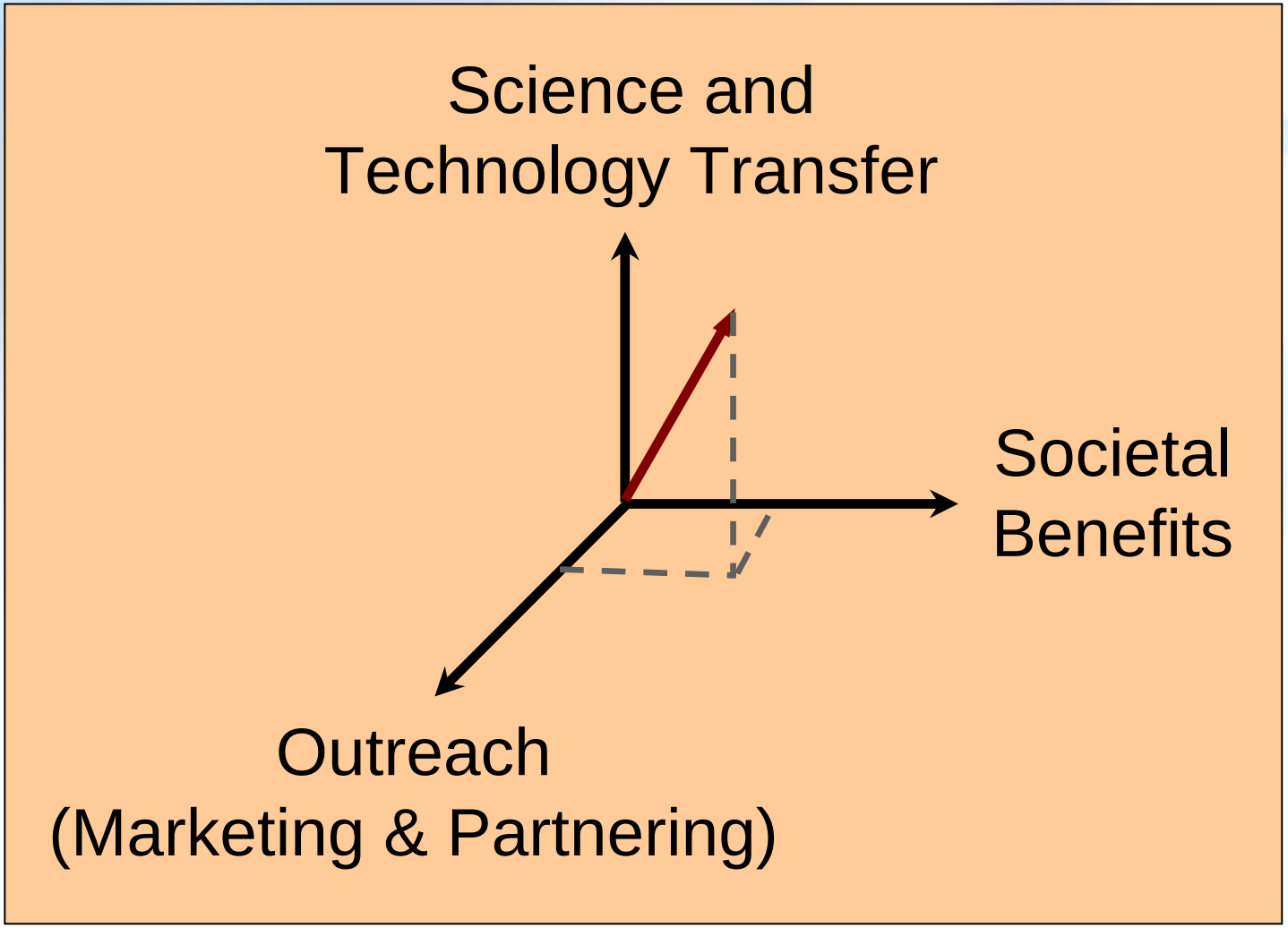
A forum to learn about all aspects of the program, identify collaborative opportunities, and support the program leadership in considering potential directions.

The purposes of the meeting are to:

- Present the Air Quality Program's projects and activities
- Provide networking opportunities for Air Quality project teams
- Review interagency air quality collaborations and major international activities
- Discuss programmatic strengths, weaknesses, gaps, and opportunities
- Provide ideas and input on possible future directions for the program

Air Quality Applications Program

Strategic Functions & Balance



Air Quality Applications Program

Opportunities & Planning

Goals and Objectives

Ideas for New Initiatives & Project Opportunities

Crosscutting Needs Across Projects, US Agencies, or International Activities

Key Studies & Workshops

Communications & Outreach
- Scientific community, AQ professionals, Public, etc.

Resources and Interagency Activities

AQ Applications Team Meeting

Expectations

<u>Expectations for the Team Meeting</u>

The Earth Science, Applications, and Air Quality communities view the NASA AQ program as part of its assets to serve the nation and society

Honest, frank feedback on all aspects of the program

Input & items for the program to consider in its priorities and planning

- Strengths & weaknesses
- Suggestions and alternatives
- Issues and factors
- Key gaps & good practices

<u>Enhancements from the Team Meeting</u>

Collaborations to pioneer innovative approaches

- Applications
- Programmatics
- Technical approaches
- Partnerships

Continue to support research to operations transitions, induce demand for Earth science observations and research, and demonstrate socio-economic value of Earth science

Air Quality Applications Program

Considerations

Solicitations

Project Focus

Communications

New Initiatives

Missions, Models, Technology

Applied Sciences Program

Solicitation Schedule

REASoN CAN	**(Announced 2003)**	**Runs FY04 – FY09**
Decisions CAN	**(Announced 6/05)**	**Runs FY05+ – FY08+**
ROSES 2005	**(Announced 3/06)**	**Runs FY06 – FY09**
ROSES 2006	**No solicitation was planned**	
ROSES 2007	**(Awards 10/07)**	**Runs FY08 – FY10**
ROSES 2008	**(Awards 10/08)**	**Runs FY09 – FY11**
ROSES 2009	**(Awards 10/09)**	**Runs FY10 – FY12**
ROSES 2010	**(Awards 10/10)**	**Runs FY11 – FY13**

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Applied Sciences Program

Solicitation Approach

Review the Applied Sciences Approach

Currently: Project funding at ~$300K/year for 3 years

Considerations:

- More, smaller projects? Fewer, larger projects?
- Include mechanisms for testing prototype ideas
- Other factors

Air Quality Applications Program

Project Focus

To date, projects have focused strongly on decision support

As the program matures and partners utilize the Earth science products more routinely, what roles or changes does the AQ Applications Program need to make:

- Address risk reduction more in satellite transitions?
- Invest in strengthening algorithms?
- Expanding user community?
- Strengthening activities with existing partners?
- Increase use of small-scale prototypes?

Air Quality Applications Program

Ideas for Possible Initiatives

Earth System Science Fellowships (ESSF)

- Funds for graduate students to pursue Earth science research.
- Approximately $36K per student per year for 3 years

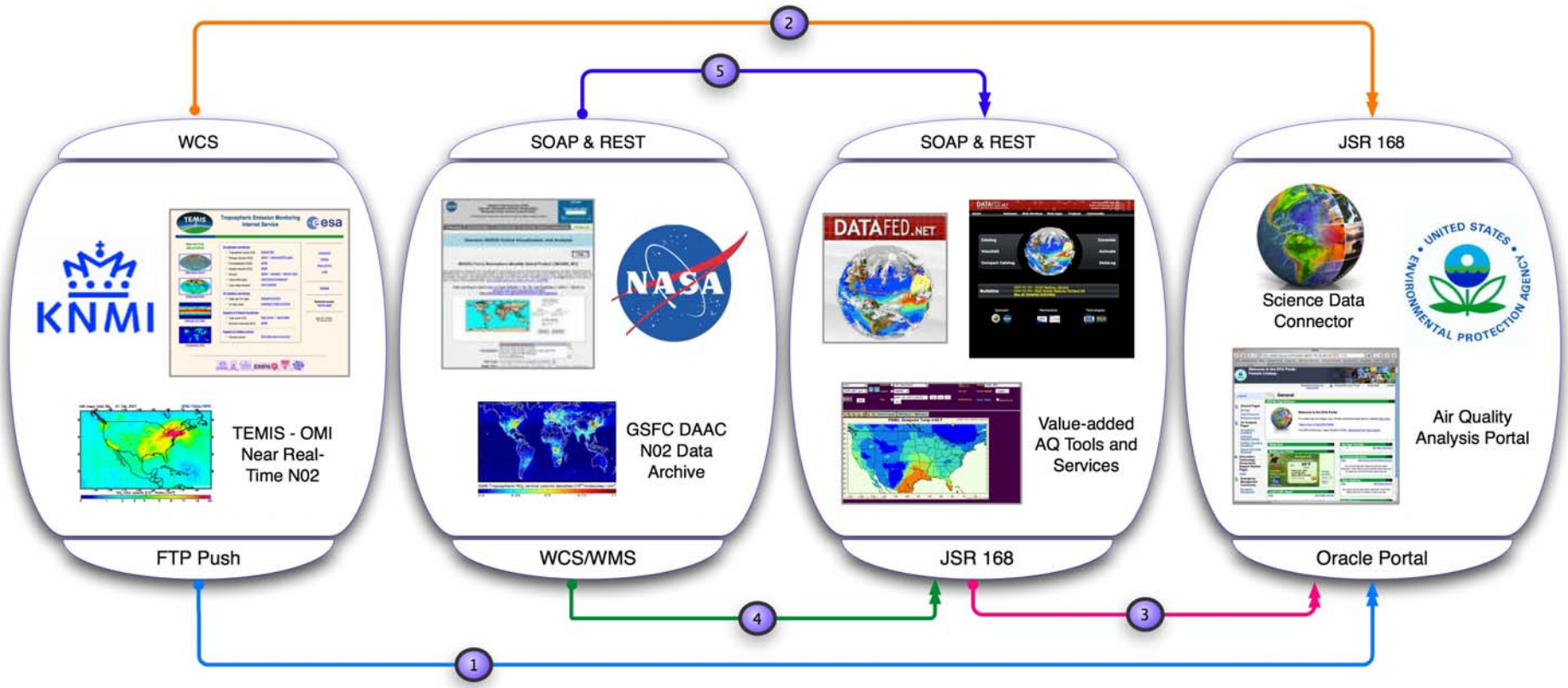
Idea: Create an Air Quality Applications Portion to ESSF

- Support graduate students pursuing PhDs and Masters related to use of Earth science observations for appropriate air quality management/policy issues
- Facilitate the familiarity and use of Earth science data in studies, work, research

Mission/Science Teams

Air Quality Web Services Data Pathfinder

ESA (KNMI) – EPA – NASA – Wash. Univ.



1. Establish a routine push of TEMIS-OMI N02 near real-time product for EPA's AQ Portal(s).
2. Develop a WCS-based feed of TEMIS-OMI N02 near real-time product.
3. DATA-FED portlet-based services for additional AQ capabilities including visualization and analysis (TBD).
4. GSFC DAAC and DATA FED provide full access to N02 science data archive @ GSFC.
5. GSFC DAAC and DATA FED collaborate on additional AQ services via SOAP or REST WS.

ACCESS

Lindsay-v.1o

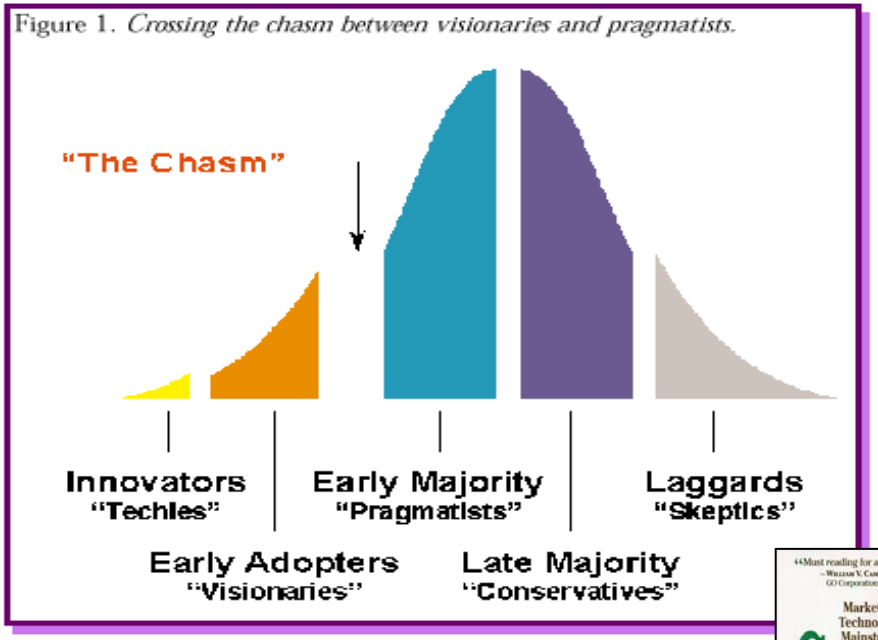
Air Quality Applications Program

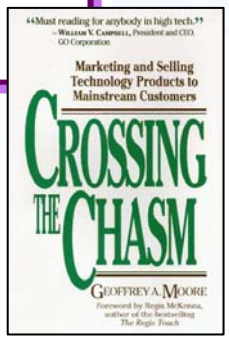
Needs & Direction

2002 – 2005: The Program worked with many federal agencies. In most cases, the Program worked with people that were either:

a) early adopters of technology; or

b) already familiar with Earth science data and remote sensing.

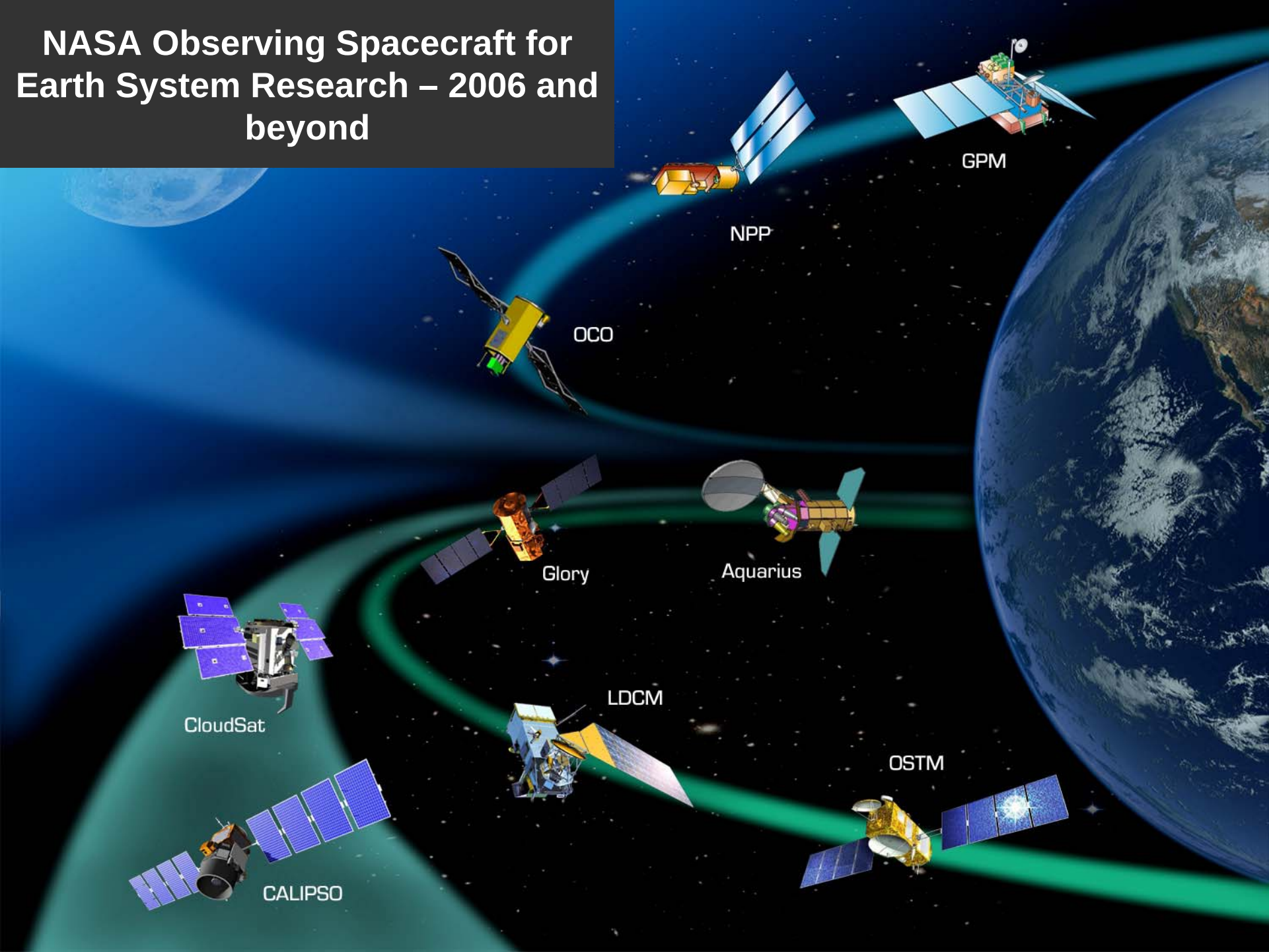




2006: The Program identified a need to build on these initial users and cultivate use by their peers within their respective agencies.

2007+: The Program may need to access the "next level" of users – people that may have heard about and seen their peers use the Earth science products but don't necessarily know how to use the products themselves.

NASA Observing Spacecraft for Earth System Research – 2006 and beyond



Air Quality Applications Program

Five Years and Counting

Air Quality Applications Program

PI/Project Manager Discussion

Program Schedule, Events, and Timeline

Review of Reporting Requirements

- Status Reports
- Benchmark Reports Discussion

Project Collaborations

Project Fact Sheets, Descriptions, and Success Stories

Other Programmatic Issues

Air Quality Applications Program

Communications

What methods and venues to communicate opportunities for use of Earth science research?

- Project Descriptions for meetings, conferences, etc.
- Visualizations
- *Earth & Sky* radio spots
- Analyses of socio-economic benefits from projects

- Review articles
- Special issues of journals

DRAFT for comment only - Not for Distribution

Science Mission Directorate
Earth Science Division

Applied Sciences Program
Air Quality Applications

Three-Dimensional Air Quality System

Applying NASA Satellites and Ground LIDAR to Improve Air Quality & Public Health

2007 Satellite Image of Fires over U.S.

Assessing air quality above the ground

CALIPSO

Summary

U.S municipalities and states use information from the U.S. Environmental Protection Agency's (EPA) Air Quality System (AQS) and AIRNow monitoring system to assess airborne particulate levels, make air quality forecasts, and implement measures to meet the ambient air quality standards.

This project incorporates a range of remote sensing data (AIRS, MODIS, OMI, GOES, CALIPSO, and others) to expand AQS into a three-dimensional system, providing better assessment of pollutants that are at the surface and those which are aloft.

The project also supports the Centers for Disease Control and Prevention's (CDC) environmental public health tracking network and NOAA's air quality mapping system. The University of Maryland, Baltimore County (UMBC) leads the project with co-investigators at Battelle Memorial Institute, University of Wisconsin-Madison, CDC, EPA, and NOAA.

U.S. Air Quality & Public Health

It has become increasingly apparent that air quality is affected by long-range transport (LRT) of pollutants from other regions, traveling aloft. EPA promulgated the Clean Air Interstate Rule to address transport of pollutants across state borders in the eastern half of the U.S. States must assess the amount of LRT vs. local pollution to address their compliance with EPA regulations and prepare air quality State Implementation Plans. A National Academy assessment of the EPA fine particulate matter (PM) program stressed need for integrated 3D characterization of air quality.

These measurements, coupled with sophisticated PM air quality models, will be used by state and local agencies to determine compliance with regulations. NASA data and original project data is being incorporated into the USEPA AIRQuest decision support tool for use by federal and state officials.

UMBC Battelle CDC

Air Quality Applications Program

Benchmark Reports

- Analysis of DSS performance with the Earth science results compared to the baseline (i.e., performance “with and without” the Earth science results);
- Quantitative analysis
- System configuration diagram;
- Results of feasibility evaluation(s) and issues encountered and resolved during verification and validation;
- Integration issues and interoperability issues encountered and resolved;
- Robust documentation of procedures and guidelines describing the steps to access, integrate, and utilize the Earth science research results;
- Quantitative and qualitative enhancements to the DSS and related decision making;
- Issues related to transfer and adoption by the partner agency
- Resource estimate for the user organizations’ adoption and sustained use of the Earth science products;
- Recommendations and remaining issues facing the sustained use of the Earth science data in the enhanced DSS by the partner agency and end users; and
- Quantitative and qualitative socio-economic benefits (actual or estimated) from the improved decision making enabled by the project and enhanced DSS.
- Lessons learned;