

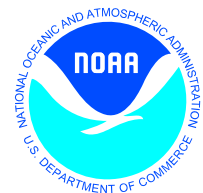
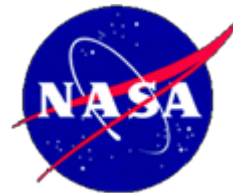


US GEO

Air Quality Assessment and Forecast System

Near-Term Opportunity Plan

Steve Fine (NOAA) and Rich Scheffe (EPA)



- Group on Earth Observations
 - Global Earth Observation System of Systems
 - Vision: realize a future wherein decisions and actions for the benefit of humankind are informed via coordinated, comprehensive and sustained Earth observations and information
- U.S. Group on Earth Observations (USGEO)
 - Integrated Earth Observation System (IEOS)
- Near-Term Opportunity (NTO) Plan
 - IEOS products and services that could be delivered in next 2-5 years.
 - Audience: US GEO and the public
 - Incorporated ideas from existing plans
 - Included existing, planned (existing funding), and proposed (gaps) activities
 - Primarily focused on ozone and particulate matter
 - Constraints: ≤15 pages, tight timeline
 - Start August, 2005
 - Majority of writing finished by October, 2005
 - Approved by Committee on the Environment and Natural Resources
 - Published September, 2006

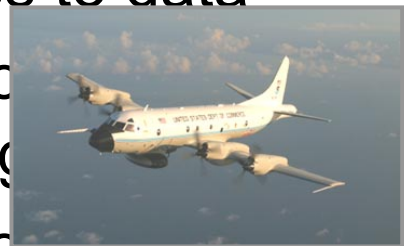
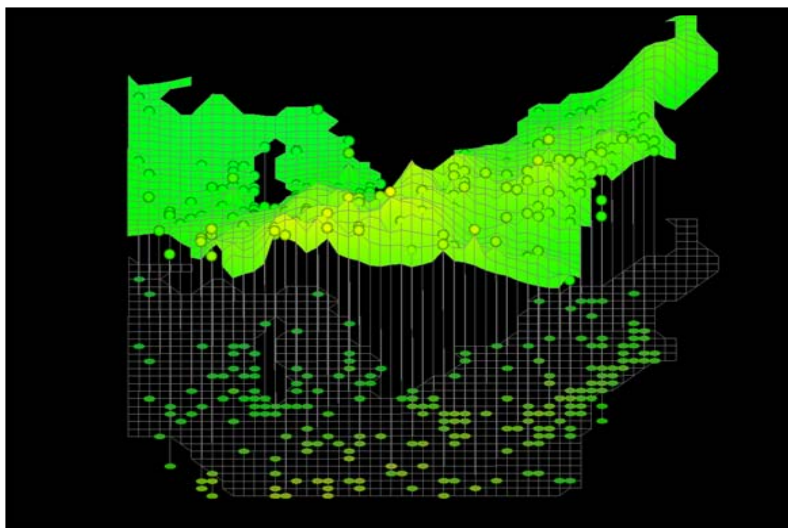


Air Quality NTO Team

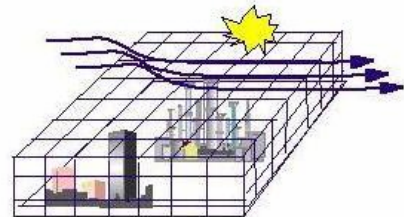
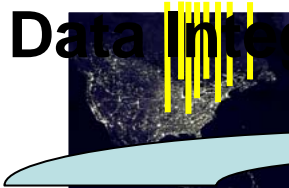
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	Rick Petty	
EPA	Fred Dimmick	
	Rich Scheffe	Co-Lead
NASA	Bruce Doddridge	
	Lawrence Friedl	
	Ron Hooker	
NIH	Mary Gant	
	Sally Tinkle	
NOAA	Steve Fine	Co-Lead
NSF	Pat Brezonik	
USAF	Neil Wyse	
USDA	Ray Knighton	



Products/Service



Data Integration and Access

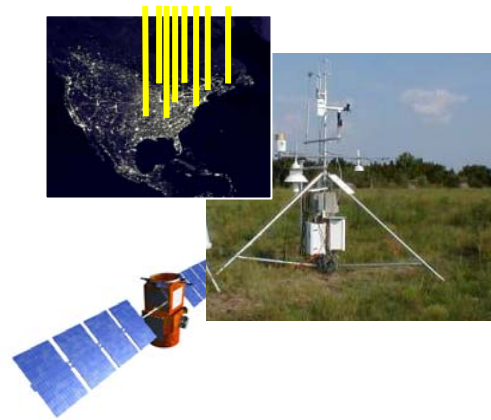
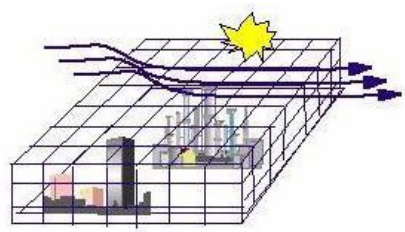
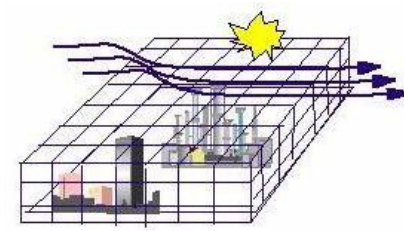
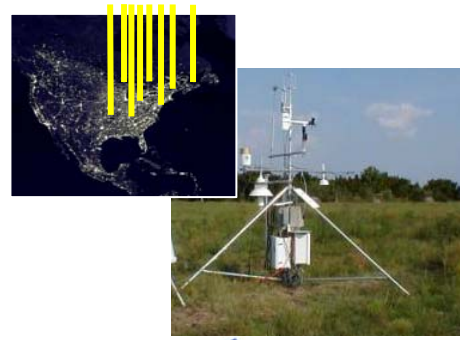


Benefits

- Provide uniform access to data
- Support management
- Support population-based studies
- Identify gaps in data and observing

Benefits

- Better AQ forecasts
- More targeted mitigation efforts
- Reduced exposures to poor AQ

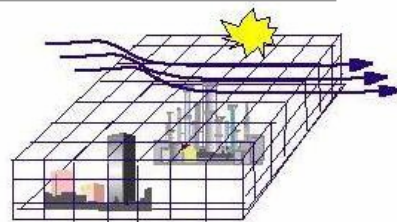


Benefits

- More effective and targeted AQ policies and plans
- Improved AQ forecasts



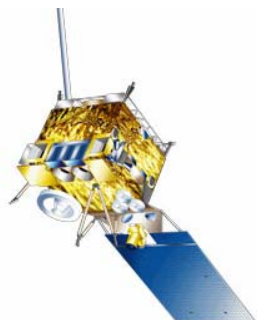
Top-Down



Improved Inventories



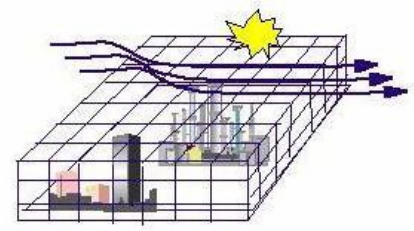
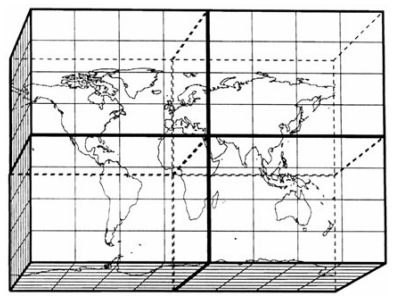
Bottom-Up



Benefits

- Improved AQ policies, plans, and forecasts
- Timely and safe permits for prescribed burns

Assessments



Benefits

- Stronger tools for assessing impact of intl. transport
- Improved scientific basis for future agreements on hemispheric transport

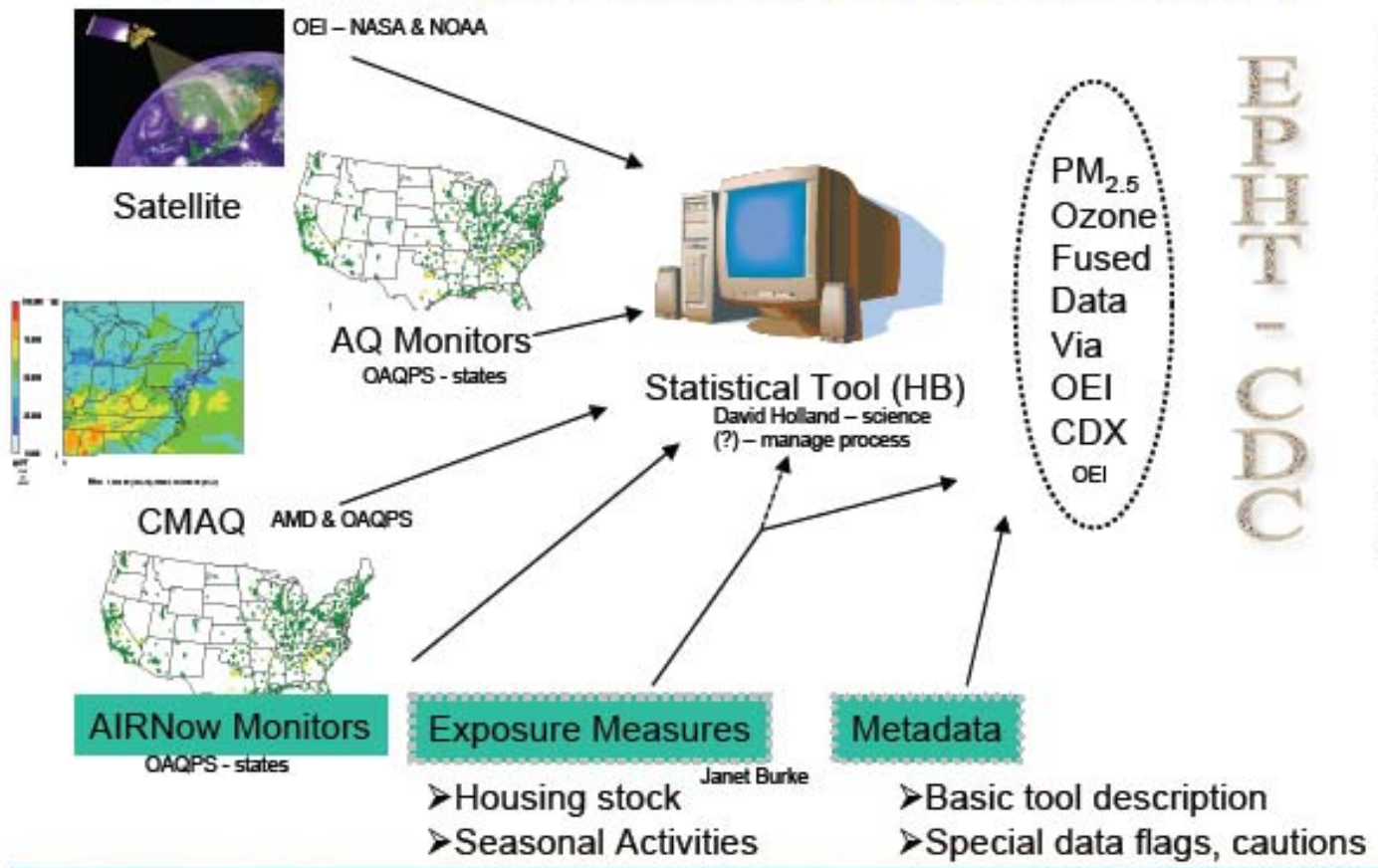
- Combining Models and observations to improve surface AQ characterizations
 - PHASE evolution: Development of an IAG between EPA-CDC covering 2001-2005
 - Daily ozone and PM2.5 surface estimates at 12 km resolution
- 3D-AQS/AMI 3D - CAIR: NASA, UMBC, EPA, NOAA
 - Exploring practical applications of AOD and integration with vertical profile (LIDAR) and surface observation systems
 - “gap” filling surface layers
 - Characterizing aerosol transport
 - Source attribution
 - Accountability perspective
- Emission Inventories: NASA-NOAA-EPA-RPOs
 - MODIS driving development fire emissions in the National Emission Inventory (NEI) through fire identification
 - 2005 first case based on 2002 methodology developed by RPOs
- Long Range Transport
 - HTAP- Keating...
 - Interplay between climate inducing transport alterations
 - Overlap of emissions, modeling and observation systems
 - Discussions (proposals) on developing integrated model evaluation observation data base
- Bi-directional Modeling (linking chemistry and meteorology)
 - NOAA WRF- Chem and NOAA-EPA CMAQ-WRF development,
- Forecasting (covered in depth here)
- Midcourse check on progress



Air Quality NTO Plan

http://usgeo.gov/docs/nto/Air_Quality_NTO_2006-0925.pdf

Current Effort: Advanced Monitoring Initiative
PHASE Toolkit Being Built to Develop Fused AQ Estimates Routinely

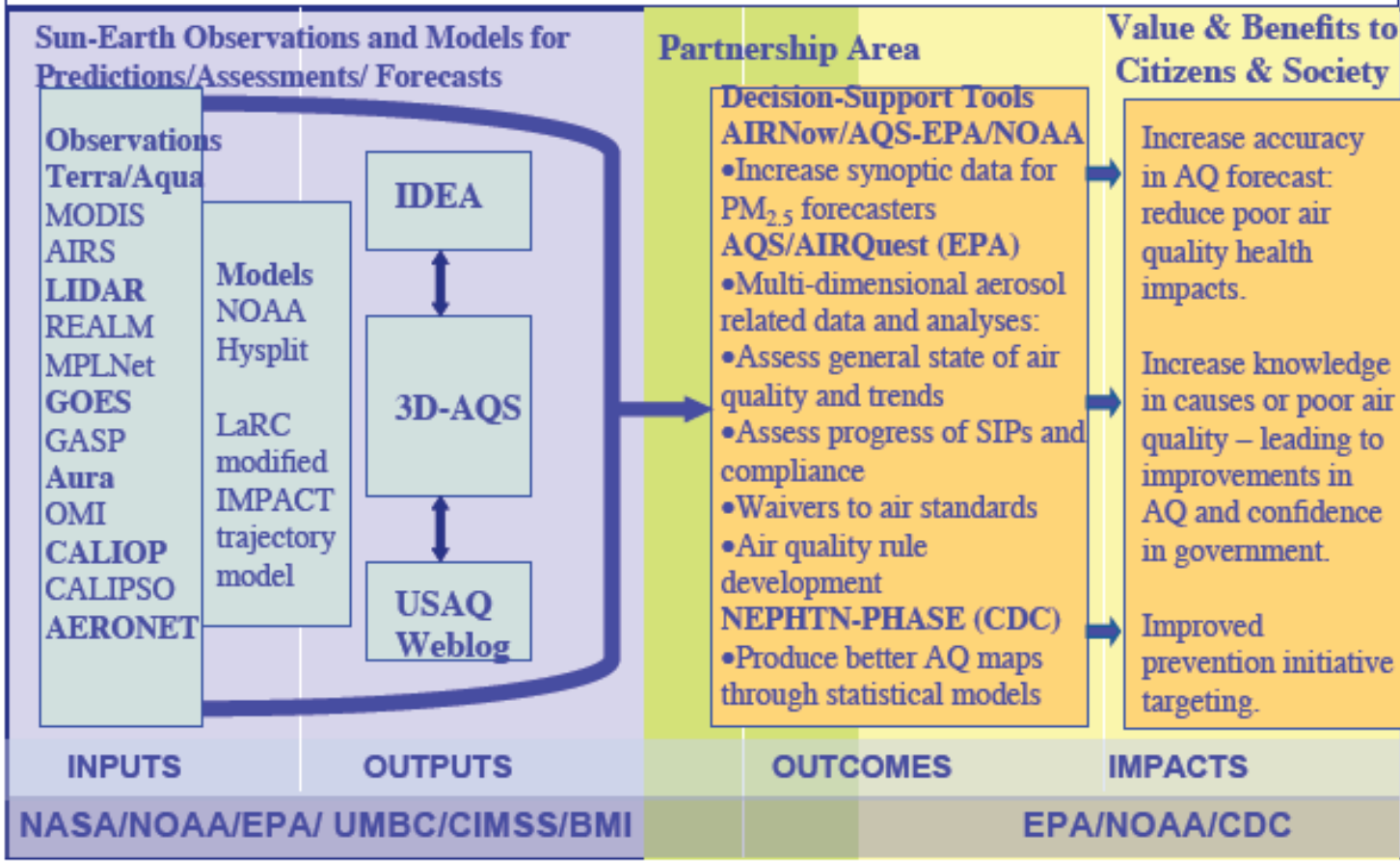




Battelle



Integrated System Solutions for 3-D AQS Impacting Air Quality & Public Health



EPA GEO: Advanced Monitoring Initiative

Selected FY06-07 Pilot Projects

- Modeling Integrated Spatial Data for Improved Public Information on Air Quality
- Use of Satellite data to evaluate PM 2.5 formation and transport in San Joaquin Valley, California
- Improving air accountability assessments: Fusing land based PM measurement networks with Satellite total column aerosol depth observations through characterizing lower troposphere vertical aerosol gradients with land based LIDAR.
- Ground-Level Ozone Concentrations Based on Satellite Observations and Ground Surface Monitoring Data in Support of Environmental Health Decisions U.S. - Mexico Border 2012 Program
- Advanced Accountability Metrics using Space-Based Observations of NO₂
- Estimation of Regional Total Sulfur and Nitrogen Loadings
- Pilot Project of an Integrated O₃ Observing System and Application to Lake Ontario O₃
- Improving Environmental Monitoring and Assessment of Air Pollution Over and From Central Asia by Integration of Observations with Models
- Delivering public health relevant air quality measures (implementing the PHASE toolkit) to improve local information for air quality and public health programs.
- Generating Accountability and Exposure Indicators Through Integration of Models, Measures and Methods
- Community of Practice for Advanced Air Monitoring and Public Health Data
- Proposal for an AIRNow Gateway System that will provide real-time data to the scientific, research, and educational communities to improve forecasting and public health protection
- Integration and Evaluation of Global Emissions Inventories in the NEISGEI Framework
- National Urban Morphological Database and Web Portal Access Tools for Advanced Urban Dispersion and Air Quality Modeling