An Atmospheric Composition Portal
Overview

Stefan Falke
Northrop Grumman

Beate Hildenbrand
DLR

ACC Workshop – Air Quality
ESRIN
Frascati, Italy
15 June 2009

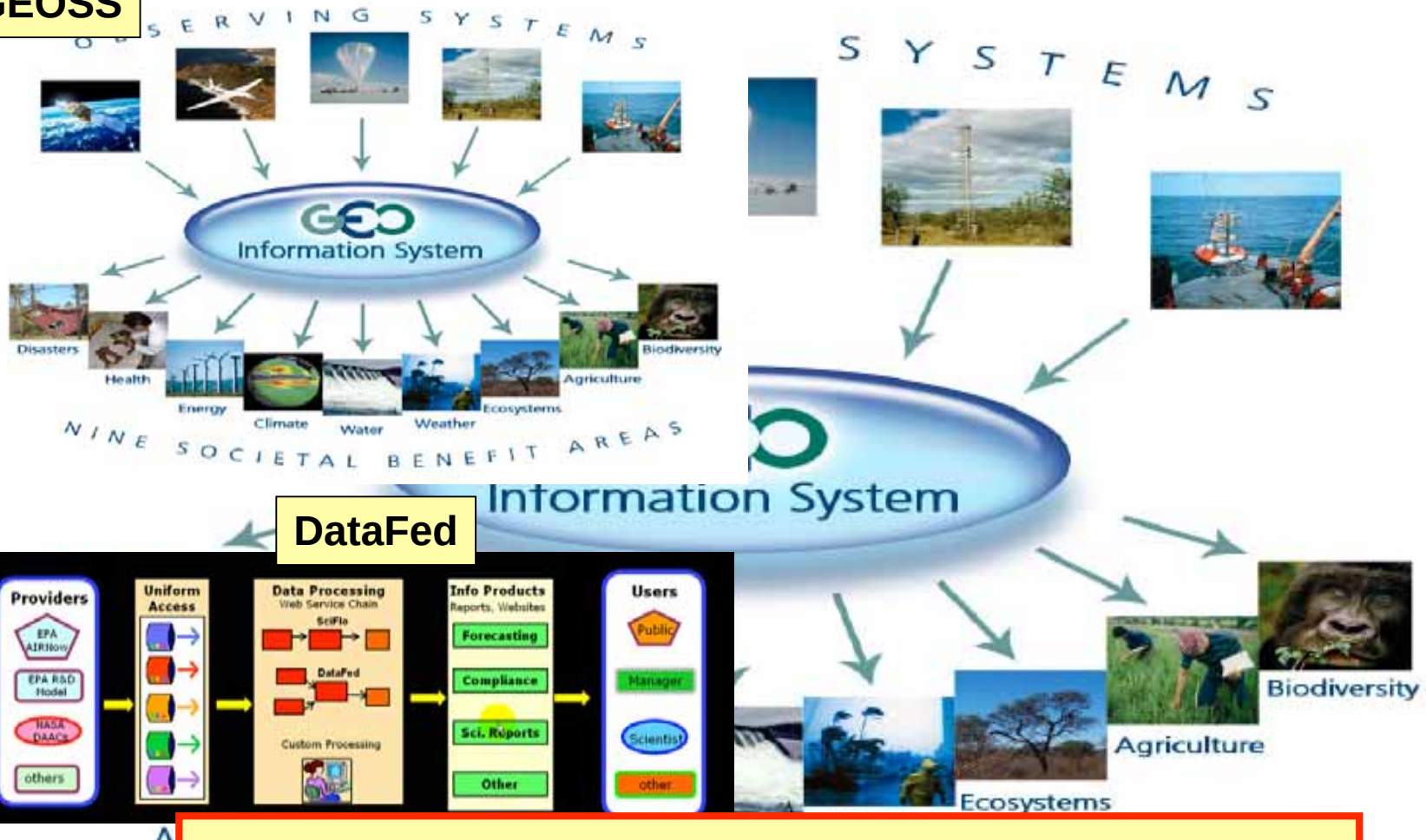
Atmospheric Composition Portal Mission Statement

- **Provide access, tools, and contextual guidance to scientists and value-adding organizations in using satellite-based atmospheric composition data, information, and services.**
- **Connect existing infrastructure efforts to achieve interoperability and application of atmospheric composition data, information and services worldwide.**
- **Identify the unique requirements and common (shared) features of the AC and GEOSS users to provide a value-added and complementary capability**.

Common Frameworks

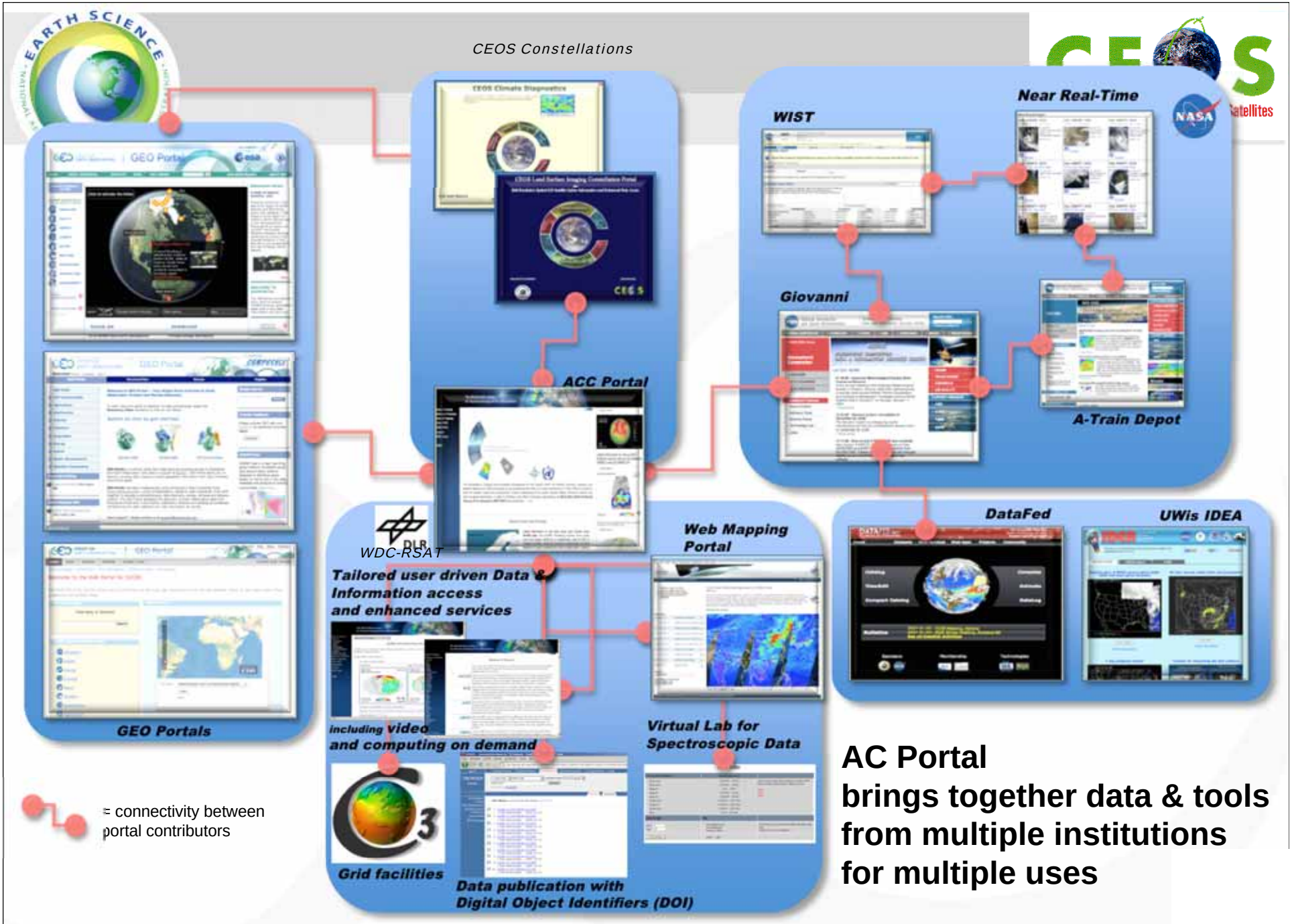
Committee on Earth Observation Satellites

GEOSS



DataFed

and many others…


CEOS Constellations
GEO Portals
ACC Portal
WIST
Near Real-Time
Giovanni
A-Train Depot
DataFed
UWis IDEA
WDC-RSAT
Tailored user driven Data & Information access and enhanced services
Web Mapping Portal
including video and computing on demand
Virtual Lab for Spectroscopic Data
Grid facilities
Data publication with Digital Object Identifiers (DOI)
= connectivity between portal contributors
AC Portal
brings together data & tools from multiple institutions for multiple uses

Atmospheric Composition Portal Concept

- Online tools for data access, visualization and analysis
- Easier to use mechanisms for sharing information and analytical results
- An online environment in which to interact with remotely sensed data providers and other data users on shared interests such as data quality, retrieval methods, data integration, applications, etc.

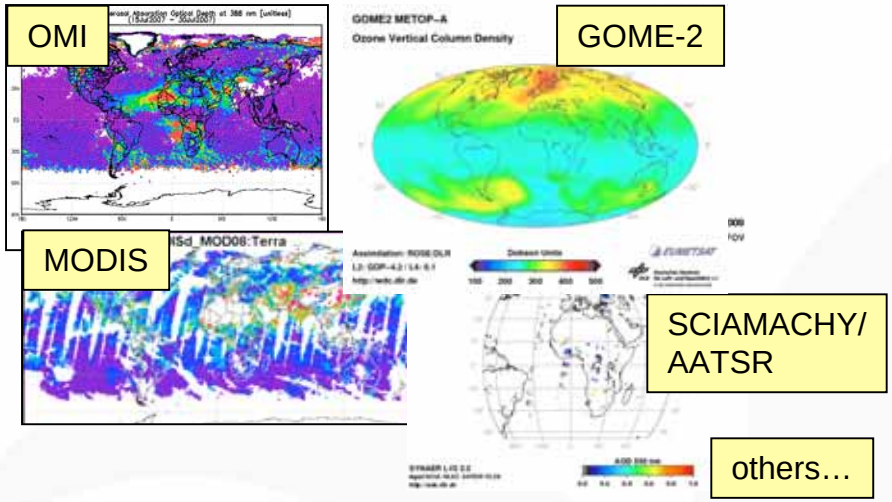
Approach

- Use WDC-RSAT as AC portal foundation and develop AC Portal as part of a GEO Task
- Interoperate with other AC and Air Quality portals and information systems (e.g., Giovanni, DataFed, ETHER, and others)
- The CEOS ACC group is guiding the requirements and goals for this task
- A Technical Team has been formed to review existing technologies and capabilities and to define the AC Portal technical approach

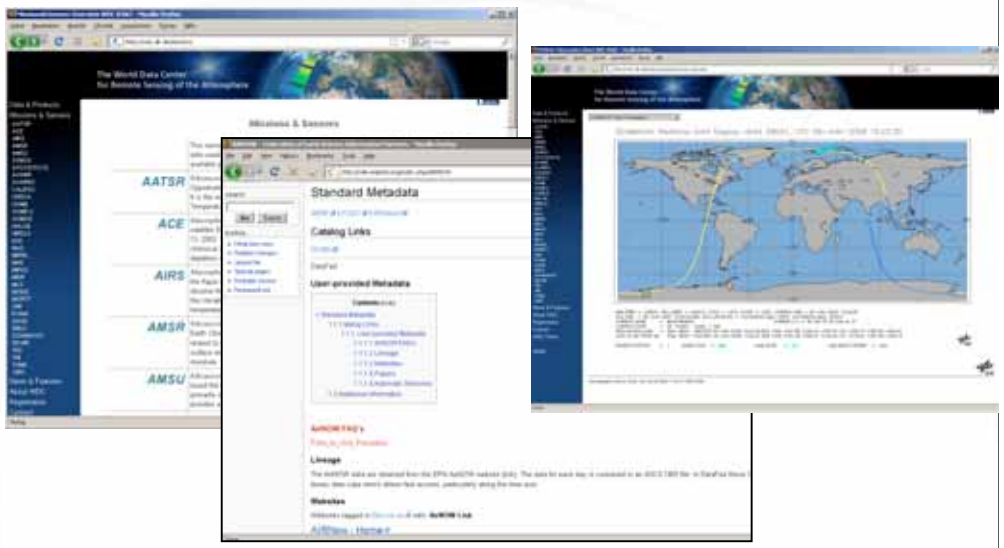
Features of an AC Portal

Committee on Earth Observation Satellites

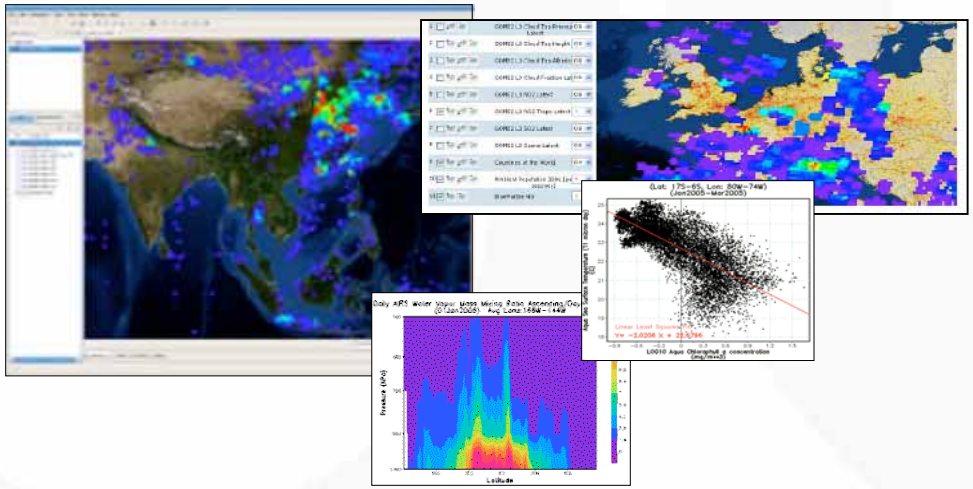
improved access to data



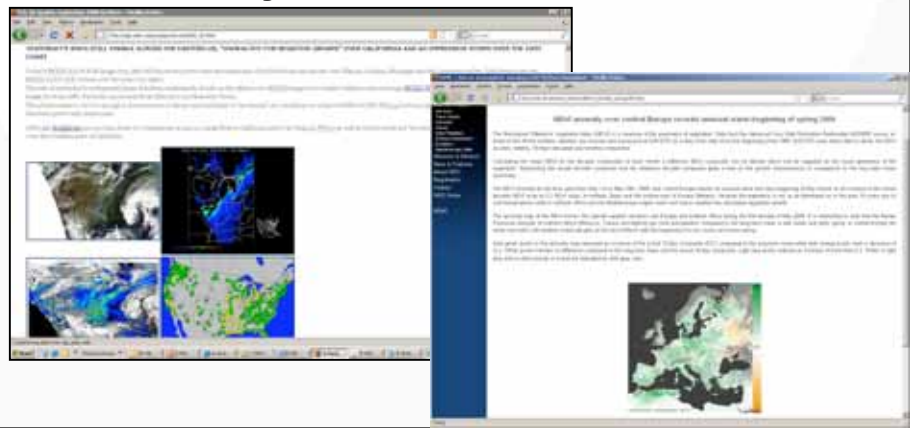
information to help understand and use data



tools for processing and analysis



forums for exchanging analyses and other information



Anticipated AC Portal Users

- **Atmospheric Science Researchers**

- **Value-adding organizations**

  Organizations that process (aggregate, filter, combine or analyze) remote sensing data for particular applications and users

Users can be characterized by their:

Domain Groups: Air Quality, Climate, Stratospheric Ozone

Data Needs: Real-time, Forecast, Archived data

Information Context Needs

- Processes used, assumptions made in deriving AC data products
- Understanding applicability of AC data products in their domain
- Data quality and fitness for purpose
- Availability of data products
- Previous uses of AC data products

Atmospheric Composition Portal Milestones (tentative)

- **Conceptual AC portal objectives & design** May 2009
- **Technical Team formed** May 2009
  - White paper with tools inventory and technical assessment July 2009
- **Obtain feedback from ACC-AQ Workshop and follow-up** June 2009
  - Compile comments and suggestion on collaboration website
- **AC Portal face-to-face technical workshop (Wash. DC)** August 2009
  - Matrix of existing capabilities and gaps
  - Technical approach to implementing AC Portal
    - Standards, protocols, conventions to follow
    - Define initial capability
    - Options for initial tools and data for use in prototype
- **Initial capability for an AC portal prototype** October 2009
  - Present at WGISS-28
- **Implementation plan for publically accessible beta Portal** October 2009

Next steps for needed input from AC community

- We request your recommendations in developing the AC Portal – what would be useful from your perspective?
  - **What are your data needs?**
  - **Processing, analysis, visualization tool needs?**
  - **Would visualization and analysis tools in an online environment be useful?**
  - **Do you work with metadata?**
  - **Any issues you encounter in working with remotely sensed AC data?**
- Some of the presentations this week will highlight the use of interoperable information systems for atmospheric composition science applications
- Contacts at the ACC Workshop:
  - **Beate Hildenbrand, Katrin Höppner, Stefan Falke, Ernest Hilsenrath, Greg Leptoukh, Rudy Husar**
- For more information and provide feedback and comments:
  - **http://wgiss-acig.wustl.edu**

Background Slides

Status & progress on GEO 2009-2011 Task: ACC Portal

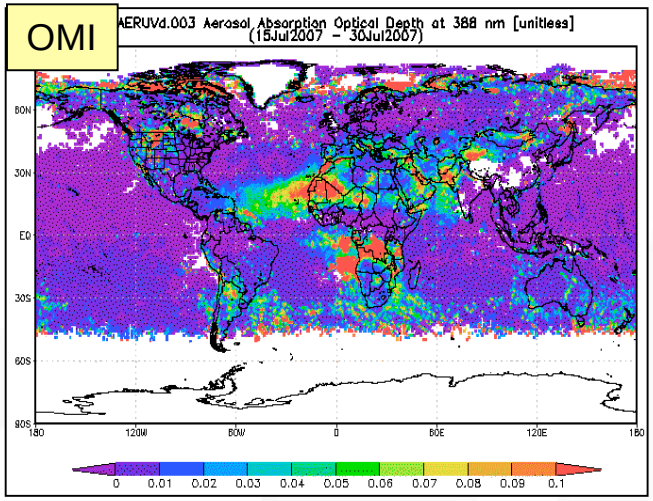
- **This task seeks to develop a web portal to support Atmospheric Composition Constellation (ACC) science and applications.**
- **Is presently identifying requirements and implement a prototype ACC portal for evaluation and eventual use by the ACC, GEOSS and other AC user communities.**
- **Other AC and Air Quality portals exist; this task seeks to identify the unique requirements and common (shared) features of the ACC / GEOSS users to provide a value-added and complementary capability.**
- **The CEOS ACC group is guiding the requirements and goals for this task.**
  - DLR and NASA are working on implementation plans for the initial ACC Portal.
  - Other ACC member agencies and interested parties are invited in the co-ordination of portal evaluation activities and the provision of portal data and tools.

CEOS
Committee on Earth Observation Satellites

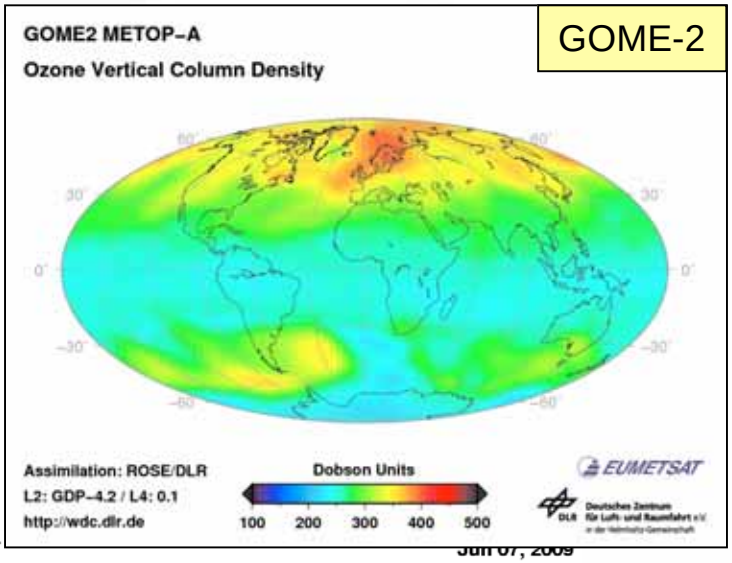
Features of an ACC Portal

- **improved access to data and data products**

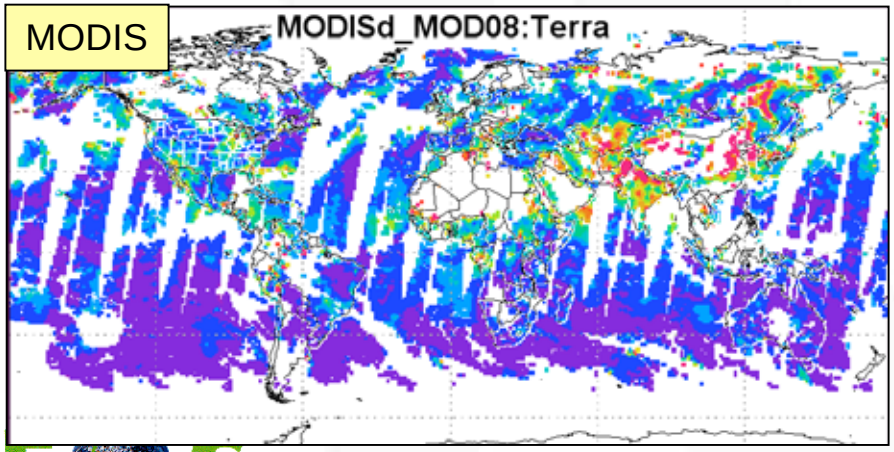
OMI



GOME-2



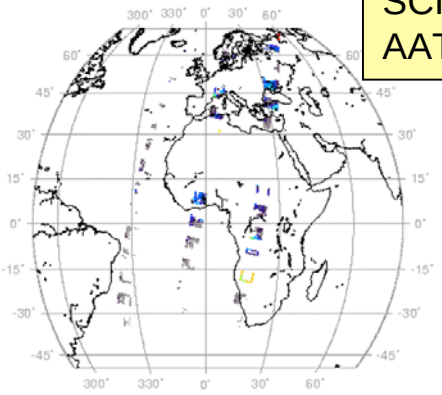
MODIS



ENVISAT

Aerosol Optical Depth 550 nm

SCIAMACHY/
AATSR

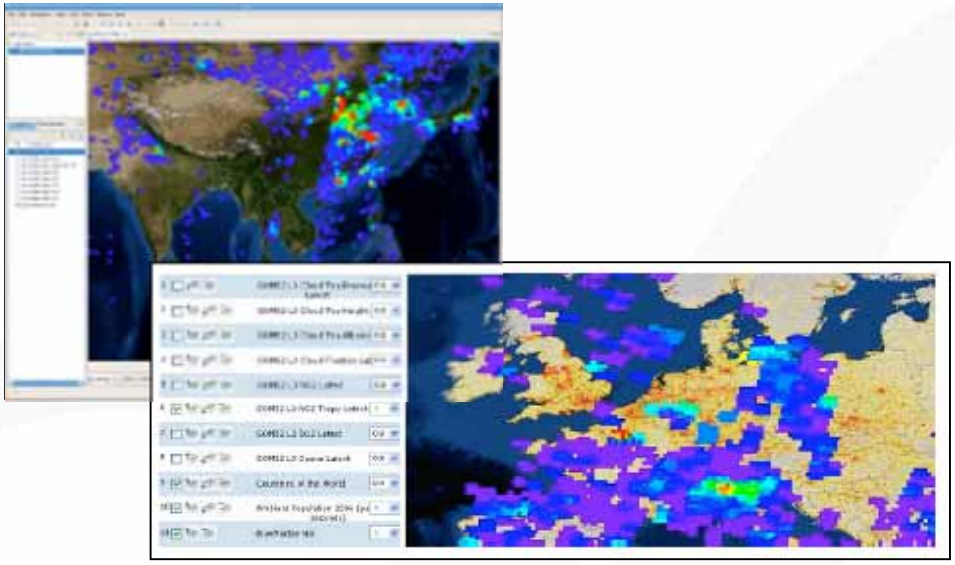


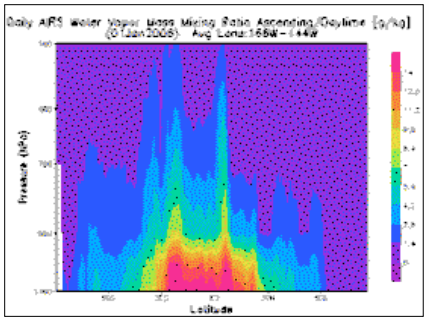
others…

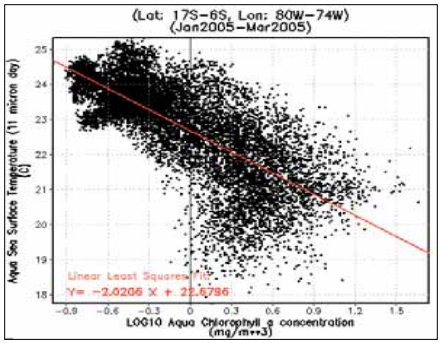
CEOS
Committee on Earth Observation Satellites

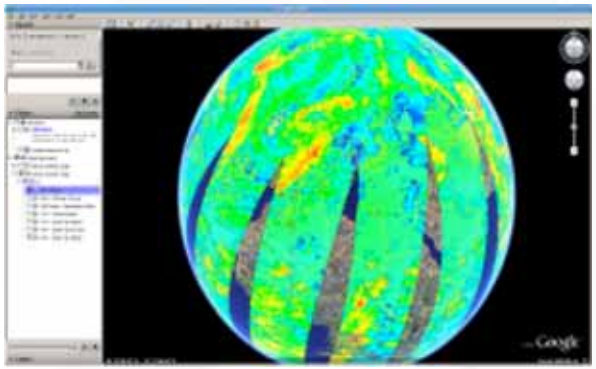
Features of an ACC Portal

- tools for processing, analysis and visualizing





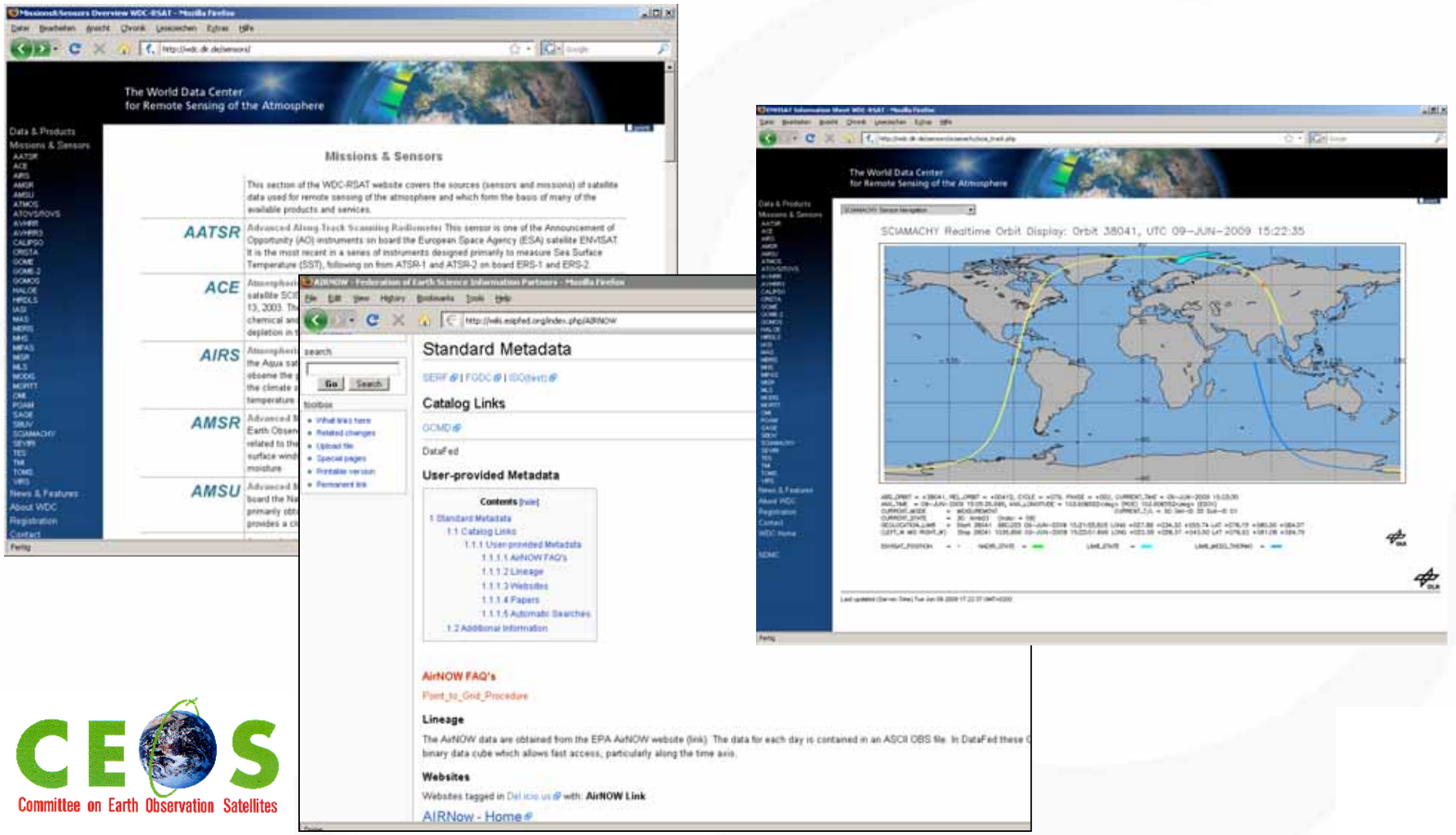




Committee on Earth Observation Satellites

Features of an ACC Portal

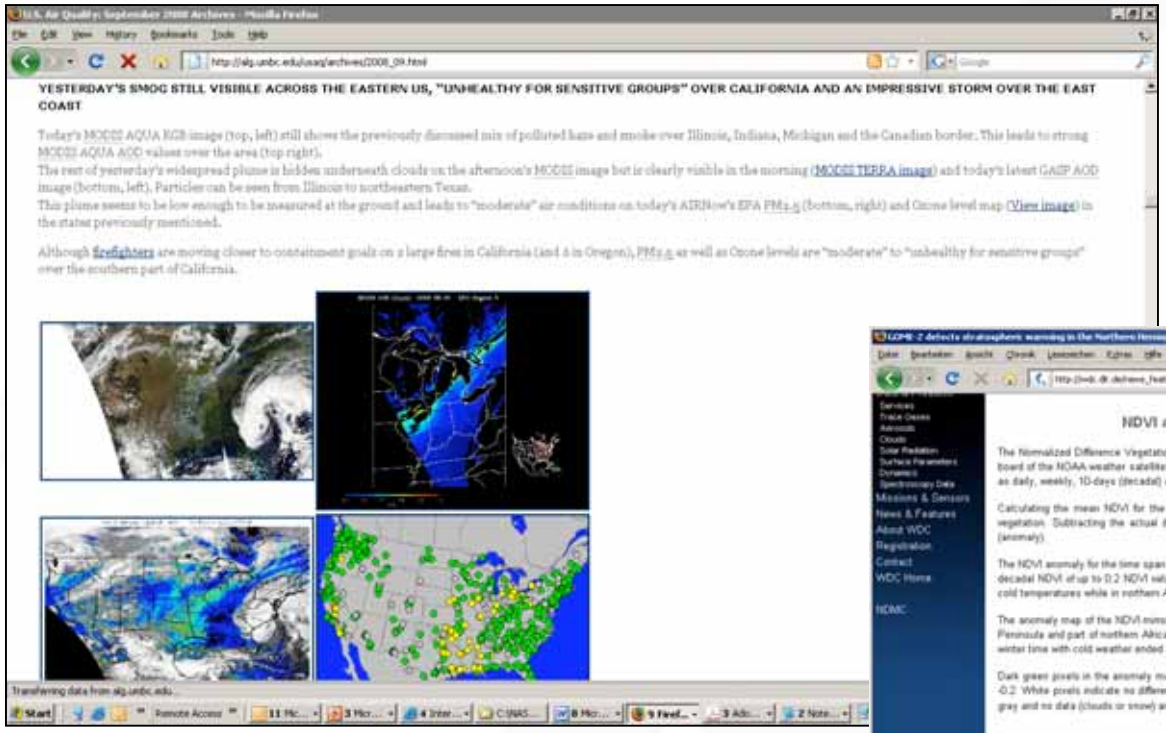
- information to help understand and use data



Committee on Earth Observation Satellites

Features of an ACC Portal

- forums for exchanging analyses and other information



CEOS
Committee on Earth Observation Satellites

Desirable ACC Portal Features

Interoperable web services – Use of standards-based interfaces to share data, services and tools from WDC-RSAT, BEAT/VISAN, Giovanni, DataFed and other related AC service providers, including support of distributed

- **Data Access** – Spatial, temporal and other queries to AC data returning data in multiple, standard formats
- **Visualization** – Provide completed visualization results and access to tools to conduct visualization
- **Processing & Analysis** – Provide completed data processing and data analysis results and access to tools to conduct processing and analysis

Contribution to GEOSS (Architecture Implementation Pilot) – Become a community 'node' in the GEOSS Architecture by serving as an

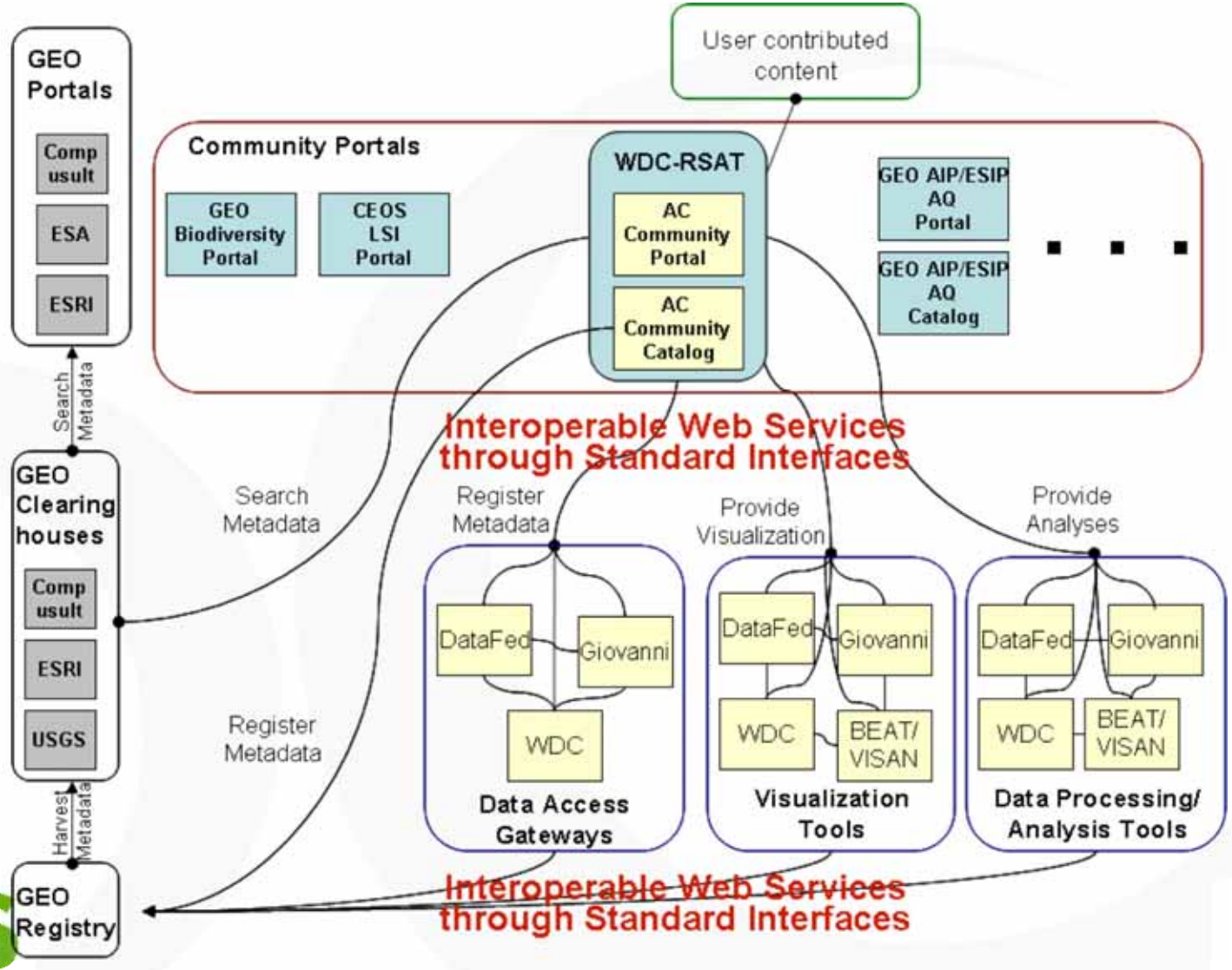
- **AC Community Catalog** - Data providers can register their services with the AC Community Catalog. The AC Community Catalog, in turn, is registered with the GEO Registry via a standard catalog interface, thereby allowing the GEOSS Clearinghouses to harvest metadata for the individual AC services
- **AC Community Portal** - Users can search the metadata in the GEOSS Clearinghouses with AC-focused queries to discover relevant data and tools

User contributed content – Use of social networking and knowledge networking (e.g., wikis, blogs, forums, keyword tagging, interoperable portlets, RSS feeds, etc) that allow AC users to provide feedback and input to the AC Portal. Examples might include users

- sharing publications in which they have used AC data
- posting questions on assumptions made in the derivation of AC data products
- identifying unique AC data needs for a particular application
- customizing the portal front-end using portlets for their particular scientific or application areas

Committee on Earth Observation Satellites

ACC Portal Architecture



CEOS
Committee on Earth Observation Satellites

ACC TECH TEAM CHARTER (tentative)

The ACC Portal Technical Team will:

- … help to ensure the efficient leveraging of existing atmospheric composition data, tools and related resources for the CEOS ACC Portal.
- … help to coordinate near-term capabilities within the ACC portal thus supporting research and data users in Air Quality, Climate, and Stratospheric Ozone communities.
- … provide an integrated perspective on the needed ACC technologies, protocols and information technology standards spanning the participating agencies and other affiliates.

CEOS
Committee on Earth Observation Satellites

Participants in initial design & approach

- DLR
  - Michael Bittner
  - Diego Loyla
  - Beate Hildenbrand
  - Kathrin Höppner
  - Volker Mohnen
  - Peter Sommer
  - Oleg Goussev
  - Séverine Bernonville
- NASA
  - Ernie Hilsenrath
  - Karen Moe
  - Frank Lindsay
  - Greg Leptoukh
  - Chris Lynnes
  - Jianfu Pan
  - Stefan Falke (Northrop Grumman)
  - Rudolf Husar (Washington University)
  - Erin Robinson (Washington University)
- ESA
  - Claus Zehner

Committee on Earth Observation Satellites