Tools and Services for Science Data and Information Management at the GES DISC

Interface with User Community

**Interface with Science Investigators / Partners**

**Data Mining**
- Simple interface
- Tailored to the users being served

**Data Processing with S4PM**
- Multiple sensors
- Single- and multi-parameter statistics
- Discipline specific portals
- Simple Web interface
- Tailored to the users being served

**Data Archive and Distribution with S4PA**
- Multiple input formats & protocols
- Invoked via Web Services interface
- Simple, Scalable, Script-based, Science Product Archive
- Reused by LaRC for CALIPSO, FlashFlux, MISR; EDC for ASTER On-Demand

**Data & Information Web Portals**
- Based on Google
- Easy to use
- Can support portals

**Giovanni: Data Visualization and Analysis**
- Data from multiple sensors
- Multiple input formats and protocols
- Simple interface
- Tailored to the users being served

**RECOMMENDATIONS**

The National Research Council’s Committee on Earth Science and Applications from Space vision includes “a decadal program of Earth science research and applications in support of society”—a vision that includes advances in fundamental understanding of the Earth system and increased application of this understanding to serve the nation and the people of the world.” - The committee made several key recommendations regarding research strategies, missions, and measurement.

- New Earth observation missions are developed, early attention should be given to developing the requisite data processing and distribution system, and data archive. Distribution of data should be free or at low cost to users, and provided in an easily accessible manner.

**USING INFORMATION MANAGEMENT SERVICES THAT FACILITATE AEROSOL AND CLOUD STUDIES**

Atmospheric science data sets being served by GES DISC Tools and Services include:

- **Atmospheric Infrared Sounder (AIRS)** - clouds, humidity, water vapor, CO, ozone
- **High Resolution Dynamics Limb Sounder (HIRLDS)** - water vapor, chemistry, aerosols
- **Limb Infrared Monitor of the Stratosphere (LIMS)** - chemistry mixing ratios

Modern Era Retrospective-analysis for Research and Applications (MERRA) - atmospheric model

Microwave Limb Sounder (MLS) - chemistry, water vapor, cirrus ice, relative humidity Ozone Monitoring Instrument (OMI) - chemistry, aerosol, clouds

Solar Radiation and Climate Experiment (SORCE) - solar irradiance

Total Ozone Mapping Spectrometer (TOMS) - ozone

TIROS Operational Vertical Sounder (TOVS) - humidity profiles, total ozone, clouds, radiation

Tropical Rainfall Measuring Mission (TRMM) - precipitation

Upper Atmospheric Space Research Satellite (UARS) - trace gases, temperature, aerosols

Northern Eurasia Earth Science Partnership Initiative (NEESP) (AIRS, MODIS) - aerosol, clouds

A-Train subsetted data (AIRS, OMI, MLS, Cloudsat, CALIPSO, MODIS, POLDER) - chemistry, clouds

Air Quality Giovanni - PM2.5, MODIS

**DECADAL STUDY’ RECOMMENDATIONS**

The National Research Council’s Committee on Earth Science and Applications from Space vision includes “a decadal program of Earth science research and applications in support of society”—a vision that includes advances in fundamental understanding of the Earth system and increased application of this understanding to serve the nation and the people of the world.” - The committee made several key recommendations regarding research strategies, missions, and measurement.

- New Earth observation missions are developed, early attention should be given to developing the requisite data processing and distribution system, and data archive. Distribution of data should be free or at low cost to users, and provided in an easily accessible manner.

- A formal interagency planning and review process should be put into place that focuses on effectively implementing the recommendations made in the present decadal survey report and sustaining and building an Earth knowledge and information system for the next decade and beyond.

(Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond, NRC, 2007)

**REUSING SERVICES FOR RECOMMENDED DECADAL STUDY MISSIONS**

Recommended Decadal Study Atmospheric data sets include:

- Active Sensing of CO2 Emissions Over Nights, Days, and Seasons (ASCENDS) - carbon dioxide
- Aerosol-Cloud-Ecosystems (ACE) - aerosols, clouds
- Climate Absolute, Radiance and Refractivity Observatory (CLARREO) - solar irradiance, water vapor
- Geostationary Coastal and Air Pollution Events (GEO-CAPE) - chemistry, aerosol
- Global Atmospheric Composition Mission (GACM) - aerosol, Precipitation and All-Weather Temperature and Humidity (PATH) - precipitation, water vapor, clouds
- Three-Dimensional Tropospheric Winds From Space-Based Lidar (3D-WINDS) - wind, atmospheric composition transport