Exploring NASA GES DISC Data with Interoperable Services

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NASA/Goddard EARTH SCIENCES DATA and INFORMATION SERVICES CENTER (GES DISC)

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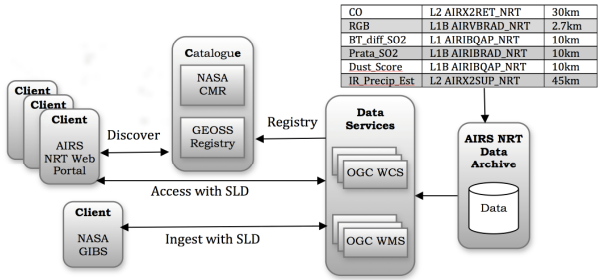
Open-standard and Interoperable Services

- Improve data discoverability, accessibility, and usability with metadata, catalogue and portal standards
- Achieve data, information and knowledge sharing across applications with standardized interfaces and protocols
- Open Geospatial Consortium (OGC) Data Services and Specifications
  - *Web Coverage Service (WCS) -- data*
  - *Web Map Service (WMS) -- pictures of data*
  - *Web Map Tile Service (WMTS) --- pictures of data tiles*
  - *Styled Layer Descriptors (SLD) --- rendered styles*

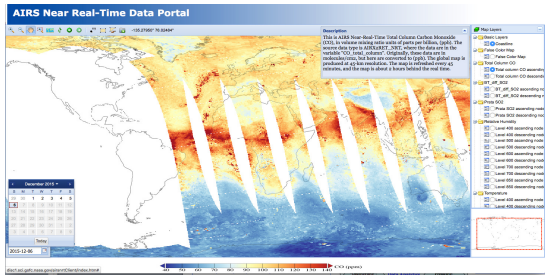
AIRS Near-Real Time Data

The Atmospheric Infrared Sounder (AIRS) Near-Real Time (NRT) data provide information on the global and regional atmospheric state, with very low temporal latency, to support climate research and improve weather forecasting.



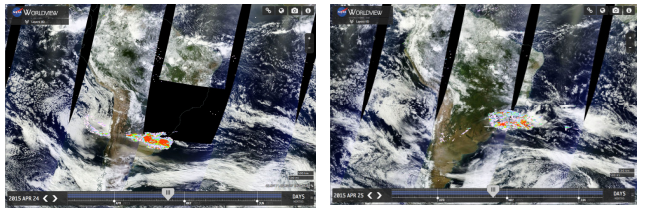
An open and interoperable way of access and integration of AIRS NRT data

With the support of OGC WCS and WMS, the AIRS NRT visualization portal provides near real time (refreshed every 30-minute), and recent 10 days images and data of false color radiance, air quality, temperature, and humidity parameters.



AIRS NRT Data Portal (http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/MapViewer)

The OGC WMS is invoked by the Land Atmosphere Near real-time Capability for EOS (LANCE) project every day, making the AIRS NRT imagery available in the Global Imagery Browse Services (GIBS) with specific OGC SLDs.

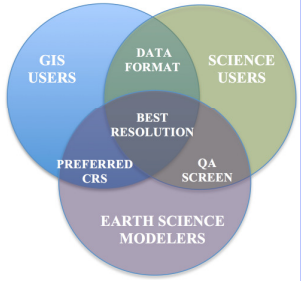


AIRS captured some cool images of the SO2 plume from Calbuco volcano

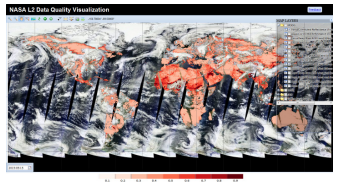
L2 Data Quality Service and Visualization

The OGC WCS/WMS for Level 2 data provides swath data, including OMI, MODIS and MISR, to broad user communities in an interoperable way.

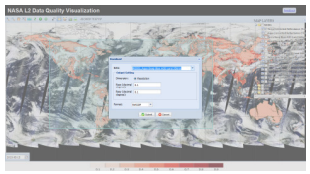
- *Accurate pixel footprint mapping*
- *Multiple on-the-fly coordinate transformations*
- *Dynamic resolution specification*
- *Flexible spatial and temporal subsetting/stitching*
- *Various combinations QA screening*
- *Multiple data formats: HDF4/5-EOS, CF-NetCDF3/4, geoTiff ,and PNG*



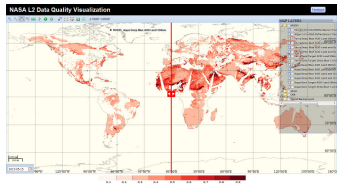
The NASA L2 Data Quality Visualization (DQViz) Portal enables users to browse, QA-screen, and download customized data.



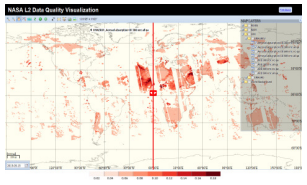
Integrate data from GIBS via WMTS



subset and download customized L2 data with different spatial resolutions and data formats



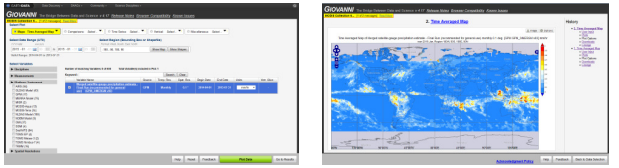
Use Swipe to compare multiple parameters from multiple satellites/instruments



Use Swipe to compare differently QA-screened data in great details

Interoperable Giovanni

Geospatial Interactive Online Visualization and Analysis Interface (GIOVANNI) enables users to explore a wide variety of remotely sensed Earth science datasets through interactive mapping, together with various algorithms including spatiotemporal average and correlation.

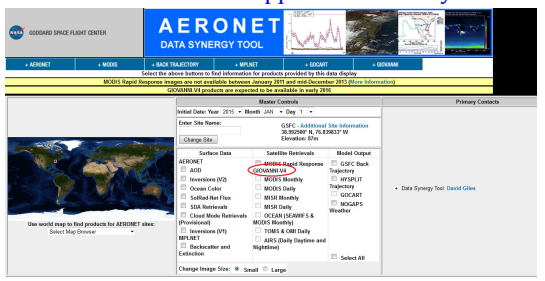


Giovanni (http://giovanni.gsfc.nasa.gov/giovanni)

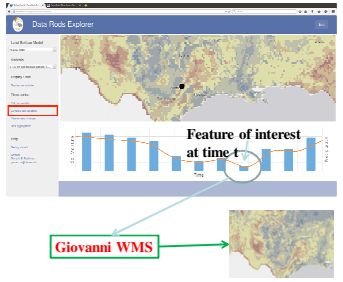
The OGC WMS interface is implemented in Giovanni to support the Big Earth Data Initiative (BEDI). This machine-to-machine interface makes Giovanni interoperable at the system level, e.g., enabling GIBS to import the Giovanni analysis results with a simple WMS request:

http://giovanni.gsfc.nasa.gov/giovanni/daac-bin/wms_ag4? **workflow**
*version=1.1.1&service=WMS&request=GetMap&SRS=EPSG:4326&WIDTH=1024&HEIGHT=512&TRANSPARENT=TRUE&FORMAT=image/png&bbox=-180,-90,180,90&LAYERS=Time-Averaged_* **algorithm**
OMSO2e_003_ColumnAmountSO2_PBL&time=2015-05-01T00:00:00Z& **data**
SLD=http://map1.vis.earthdata.nasa.gov/sld/OMI_SO2_Planetary_Boundary_Layer.sld **visualization**

The data, algorithms, visualization and workflows in Giovanni are shared across applications and systems.



AERONET Data Synergy Tool (http://aeronet.gsfc.nasa.gov/cgi-bin/bamgomas_interactive)



Data Rods Explorer (DRE) is a Web client app, using the Tethys open-source framework, being developed as part of a NASA project supported by the NASA ACCESS Program (ROSES NNH13ZDA001N).