Goddard Earth Sciences Data and Information Services Center (GES DISC)

NASA GES DISC NEW data service and data management for the Air Quality community

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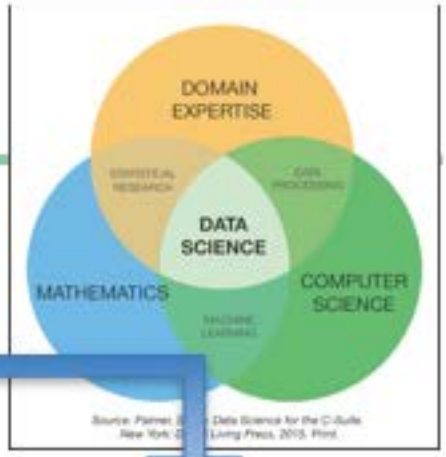
HAQAST2

The NEW GES DISC World



Advancing Technology

Earth Science Data

Earth Science Metadata

Document-ation

Ingest, Process, Archive, Distribute, Steward Earth Science Data (on computers optimized for tasks)

Data and Document Preservation

Community Driven Data Access Capabilities

User, Data, Science Support

Value Added Products and Services

Research

Applications

Outreach

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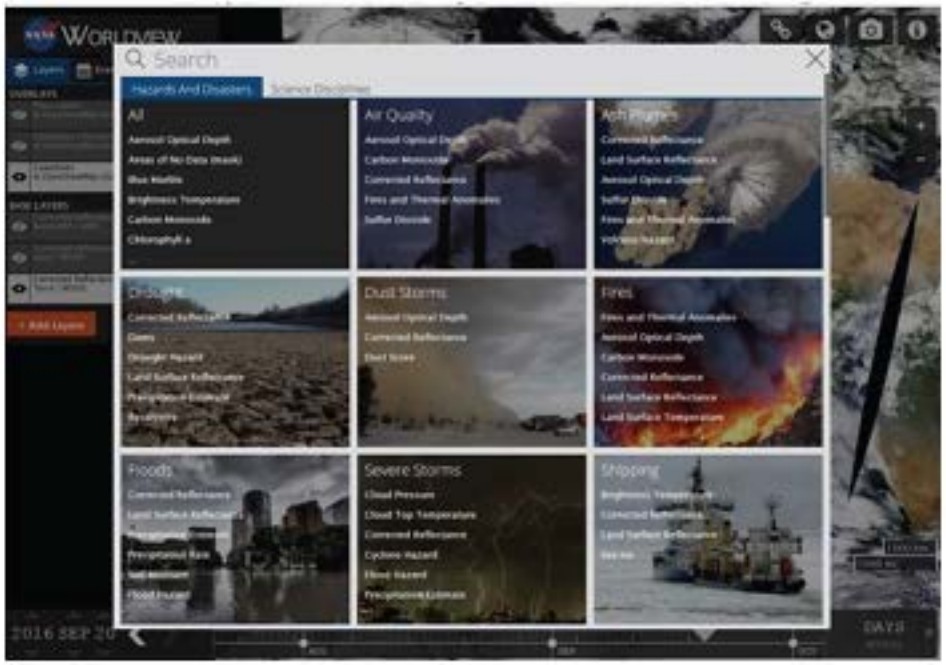
Goddard Earth Sciences
Data Information Services Center

Big Earth Data Initiative (BEDI) set up Data Management standards

Origin: President Obama's "Big Data Research and Development Initiative" seeks to improve our ability to acquire knowledge and discover insights into large and complex collections of digital data.

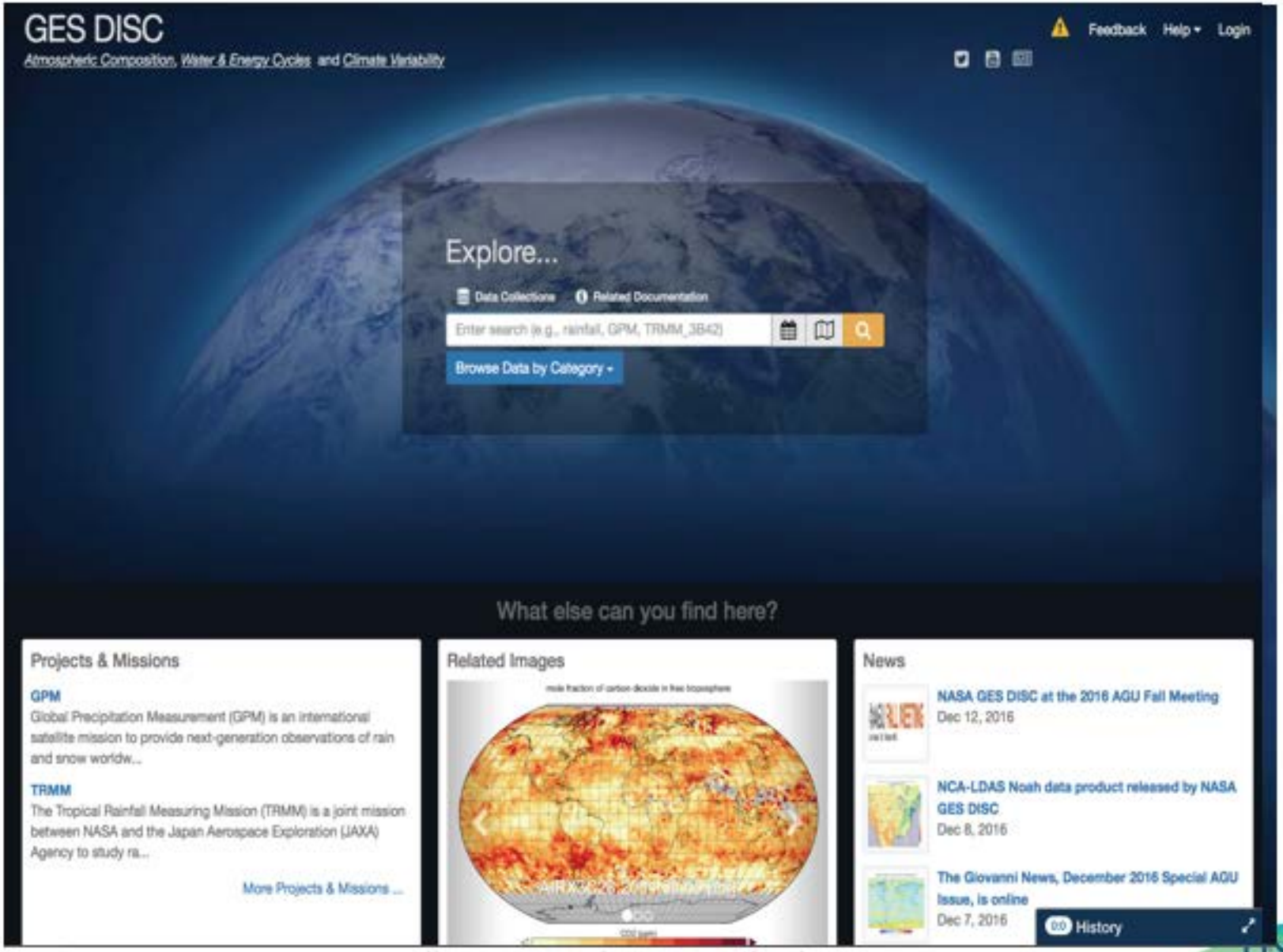
Outcome: The Big Earth Data Initiative (BEDI) invests in standardizing and optimizing the collection, management and delivery of U.S. Government's civil Earth observation data.

- **Discover**: improve metadata in archives to make datasets more discoverable by popular search engines (e.g., Google or Bing)
- **Access**: Develop better web accessible APIs by improving geospatial coordinate handling and response formats
- **Use**: enhance data usability is the organization of data collections into 12 Societal Benefit Areas, or SBA.



Source: https://earthdata.nasa.gov/eosdis-role-in-bedi

Easy to Discover – GES DISC Way



https://disc-beta.gsfc.nasa.gov/uui/

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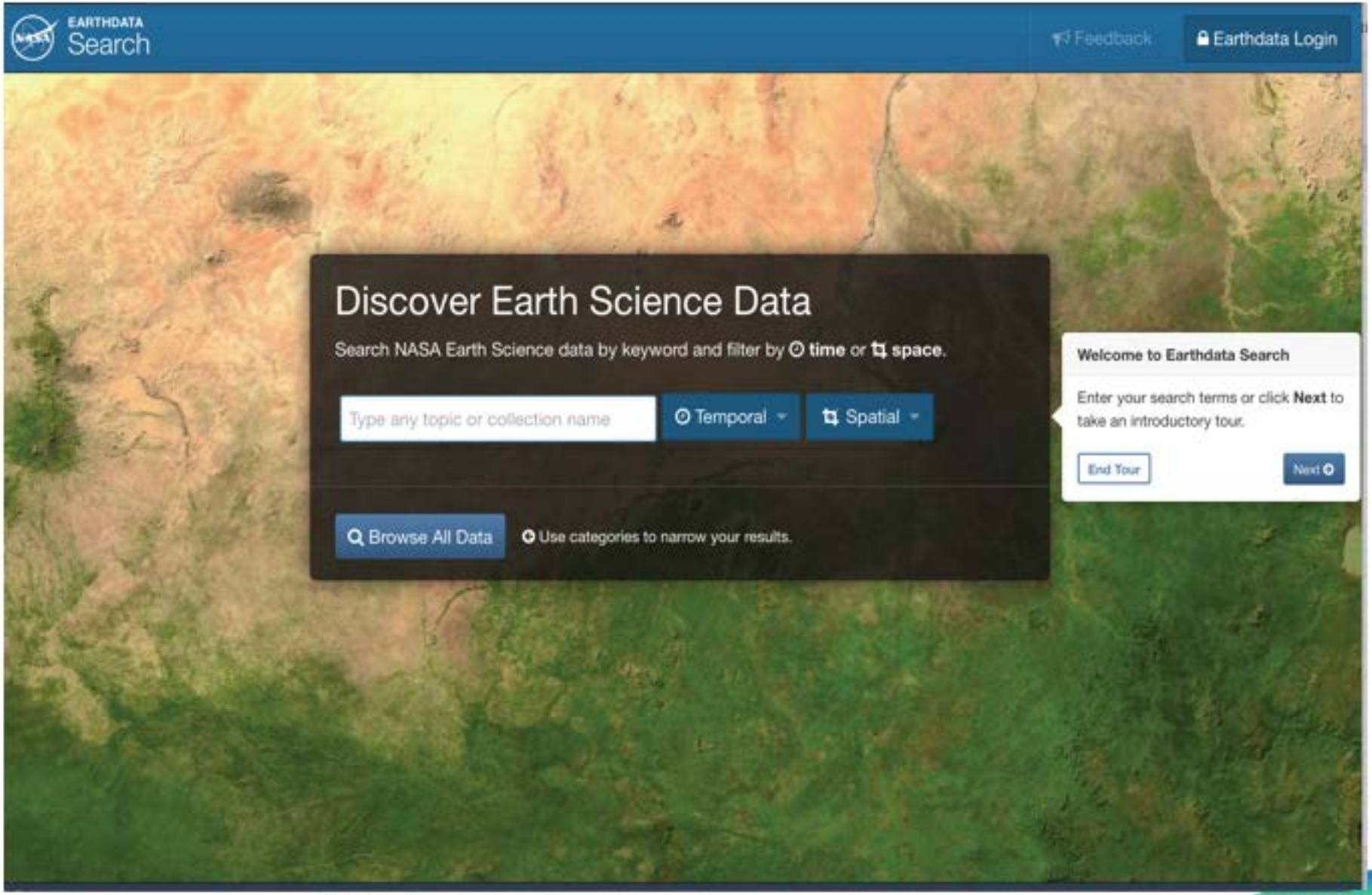
Easy to Discover – ESDIS Way



https://search.earthdata.nasa.gov

Increase Access

GES DISC

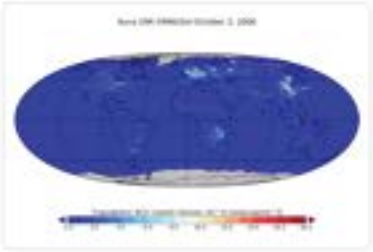
OMNO2d_003

Feedback Help

Atmospheric Composition , *Water and Energy Cycle* , and *Climate Variability* Data

Go to Search Results

OMNO2d: OMI/Aura NO2 Cloud-Screened Total and Tropospheric Column L3 Global Gridded 0.25 degree x 0.25 degree V3



This is Level-3 daily global gridded (0.25x0.25 deg) Nitrogen Dioxide Product (OMNO2d). OMNO2d data product is a Level-3 Gridded Product where pixel level data of good quality are binned and "averaged" into 0.25x0.25 degree global grids. This product contains Total column NO2 and Total Tropospheric Column NO2, for all atmospheric conditions, and for sky conditions where cloud fraction is less than 30 percent. Nitrogen dioxide is an important chemical species in both, the stratosphere where it plays a key role in ozone chemistry, and in the troposphere where it is a precursor to ozone production. In the troposphere, it is produced in various combustion processes and in lightning and is an indicator of poor air quality. OMNO2d data are stored in EOS Hierarchical Data Format (HDF-EOS). Each file contains data from the day lit portion More ...

Data Access

Online Archive

Search

Simple Subset Wizard

Web Services

- OPENDAP DATA
- Web Map Service (WMS)
- Web Coverage Service (WCS)
- Web Coverage Service (WCS)

Product Summary | Data Citation | Documentation

Shortname: OMNO2d

Longname: OMI/Aura NO2 Cloud-Screened Total and Tropospheric Column L3 Global Gridded 0.25

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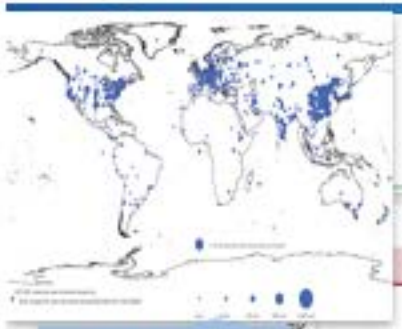
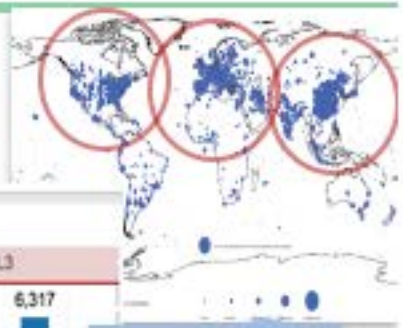
Improve Usability – User Needs Based Data Usage Metrics

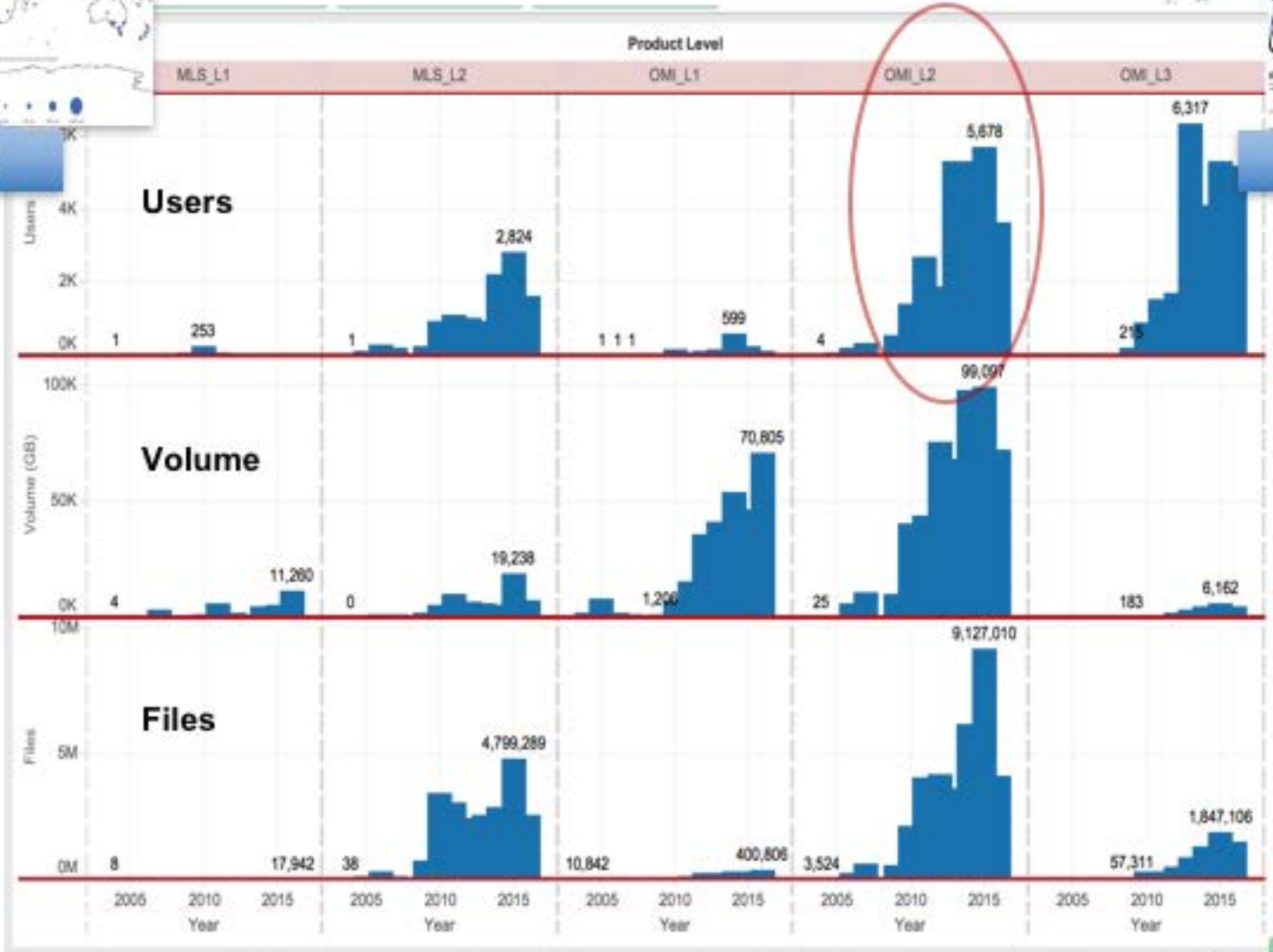
Metrics: MLS/OMI Data Distribution



MLS



OMI



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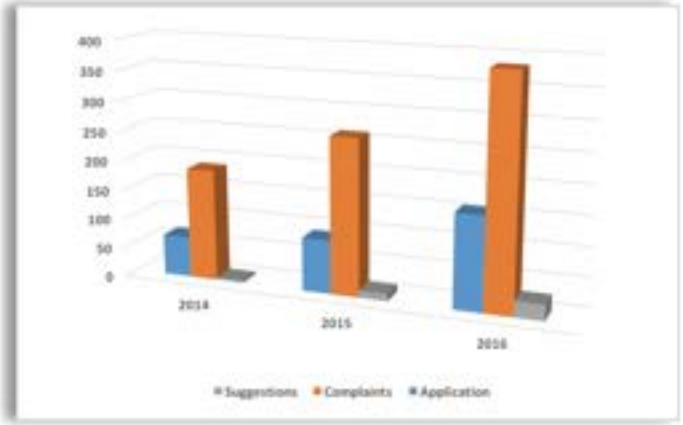
Improve Usability – User Needs Based
Help Desk Requests Metrics/Google Scholar Metrics



- **User Complaints**

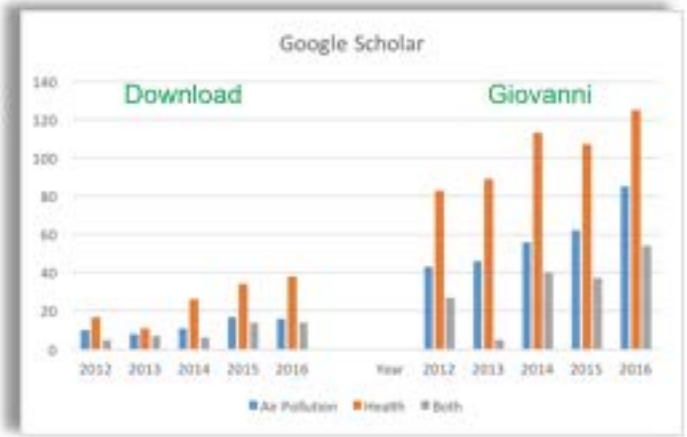
  Q: Fail to Find/Access/Download Data, data formats

  Cause: broken URL links, deprecating old tools, workflow failure, HDF4/5 (why not ascii)

- **Application**

  Q: Data Inquiry, Service Inquiry

  Cause: Diff. temporal/spatial data inquired, interoperability other tools (Matlab/IDL/Python, WCS/WMS, R/ArcGIS…)



- **Suggestion**

  Q: Subsetting/visualization service, data transformation

  Cause: Software not compatible, non-conventional users

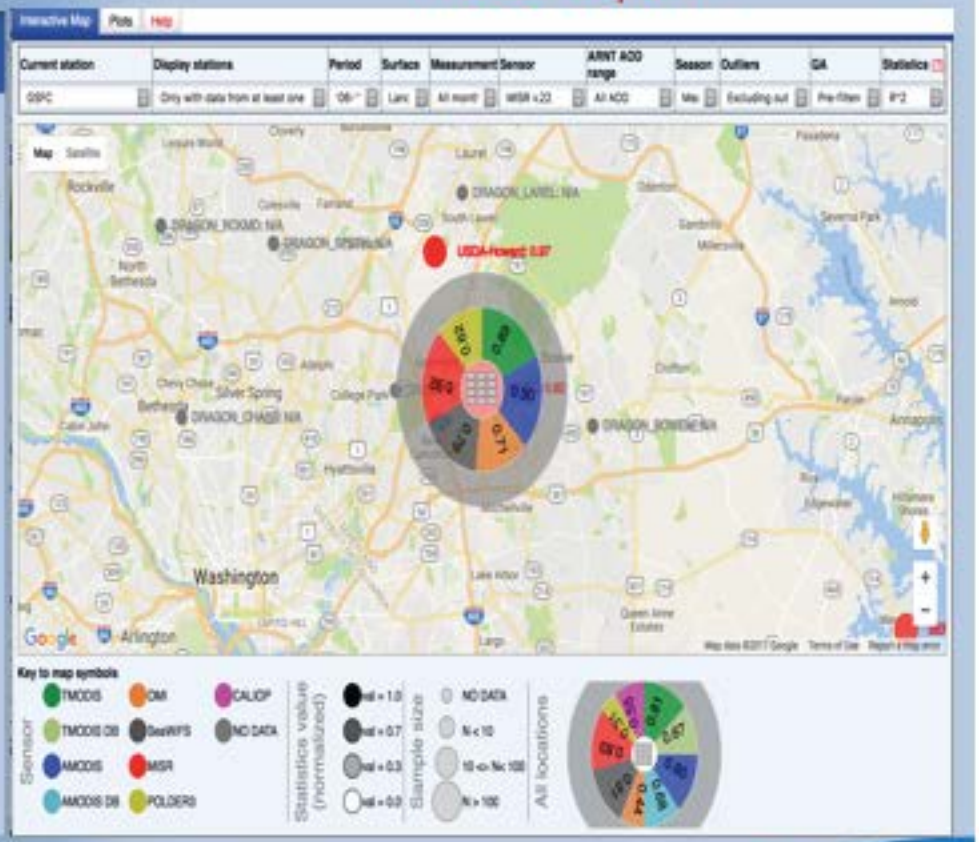
Improve Usability – User Needs Based Satellite Level 2 Services - MAPSS

The Multi-sensor Aerosol Products Sampling System (MAPSS) has been established as a consensus data framework for multi-sensor aerosol validation, intercomparison, and joint analysis. MAPSS provides statistics of spatial and temporal subsets of Level-2 aerosol scientific data sets (SDS) from a range of sensors that currently includes AERONET, MODIS, MISR, OMI, SWDB, VIIRS, POLDER, and CALIOP.

MAPSS

https://giovanni.sci.gsfc.nasa.gov/mapss/

MAPSS Explorer



https://giovanni.gsfc.nasa.gov/mapss_explorer/

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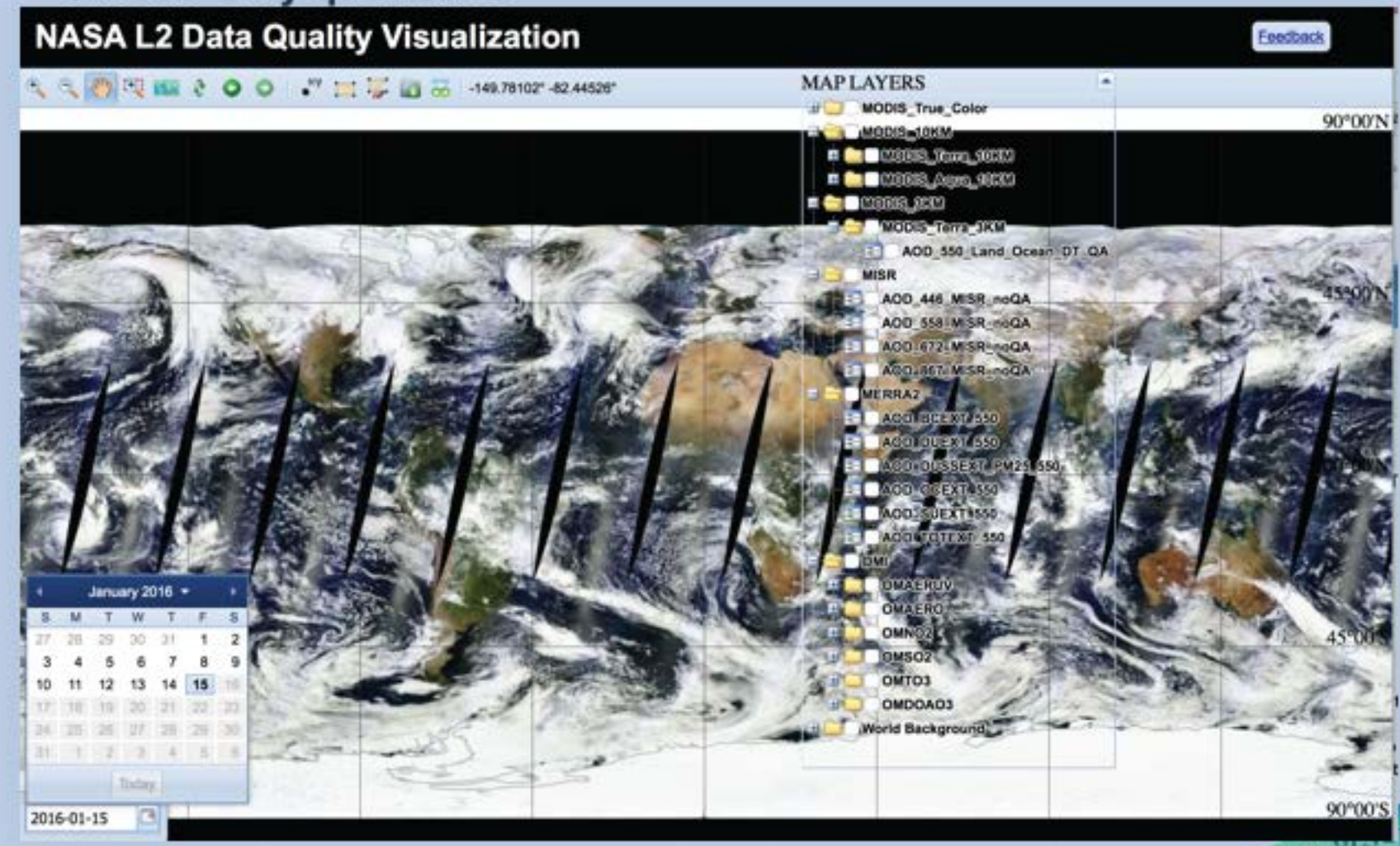
Improve Usability – User Needs Based Satellite Level 2 + Model Services - DQViz

- **Use visual to demonstrate satellite Level 2 physical quantity**
- **Use visual to differentiate observations made by different platforms**
- **Caveat: Only qualitative**



https://disc1.gesdisc.eosdis.nasa.gov/dqviz/l2portal_transparent/index.htm

Improve Usability – User Needs Based
Knowledge advances by Citizen Science

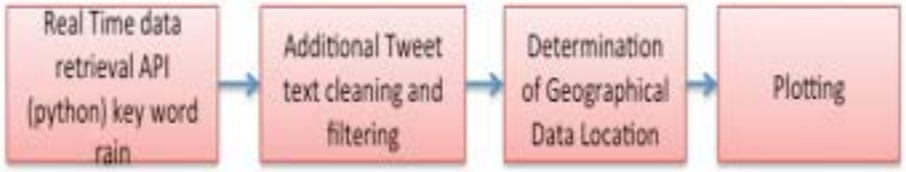
https://trends.google.com/trends/explore?cat=45&date=2007-02-24%202017-02-24&q=air%20quality

- Internet is enriched with information
- Recognize citizen scientists are both data producers and users
- Federal Crowdsourcing and Citizen Science Catalog
  - https://citizenscience.gov
  - https://ccsinventory.wilsoncenter.org
- GES DISC's perspective: How can we better utilize crowdsourcing apps to help the community?

Using Twitter to Validate Satellite Obs.

Objective: Develop a general infrastructure for processing social media
Use Case: Precipitation

- Listen to Twitter stream in real-time for "precipitation" and related tweets.
- Apply basic filters for exact phrases.
- Extract location information.
- Map resulting tweet distributions.



From Dr. William Teng (william.l.teng@nasa.gov)
Data Mining Twitter for Augmenting NASA Precipitation Research and Applications, funded by NASA "Citizen Science for Earth Systems Program **NNH16ZDA001N-CSESP**

How can we help?

gsfc-help-disc@lists.nasa.gov

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