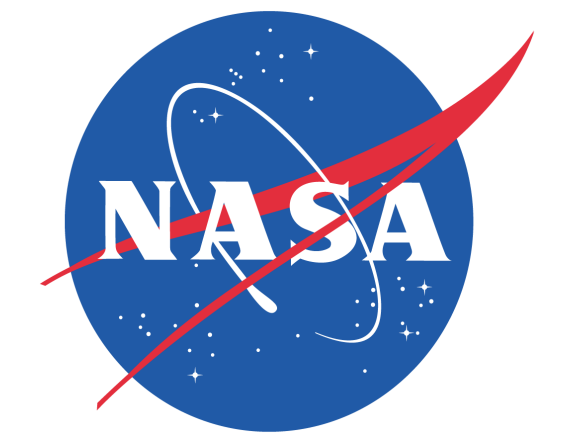


# UUI:

# Unified User Interface to Support Effective and Intuitive Data Discovery, Dissemination, and Analysis at NASA GES DISC

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## Abstract

In order to improve the accessibility of GES DISC (NASA Goddard Earth Sciences Data and Information Services Center) tools and services, we have designed and implemented UUI, the Unified User Interface. UUI seeks to provide a simple, unified, and intuitive one-stop shop experience for the key services available at GES DISC, including subsetting (Simple Subset Wizard), granule file search (Mirador), plotting (Giovanni), and other services. In this poster, we will discuss the main lessons, obstacles, and insights encountered while designing the UUI experience. We will also present the architecture and technology behind UUI, including NodeJS, Angular, and Mongo DB, as well as speculate on the future of the tool at GES DISC as well as in a broader context of the Space Science Informatics.

## UUI as a Data Service portal

In addition to serving 'raw' Earth science data to its users, one of the core missions of GES DISC is to provide data-related services that can help users to get the most from the hosted data resources. UUI is built around this notion of **Data Services**, providing a seamless and uniform access to the most popular GES DISC services. These include data and documentation search and access, multiple data subsetting capabilities (e.g., by time, space, variable, etc.), data format conversion, and others. UUI also provisions for some of the anticipated services, providing a flexible platform for deploying novel capability at GES DISC.

## Key features

Allow the user to search/find/navigate-to **ANY DATA RESOURCE**, while retaining **CONTEXT** for cross-resource **SEAMLESS NAVIGATION**:

- Data granules
- Data subsets (in bulk)
- Data visualization in/from Giovanni/HDAT
- Data Documentation
- Dataset Landing Pages

## Interoperability

UUI frontend is driven by backend services described in JSON WSP (JavaScript Object Notation Web-Service Protocol), facilitating automated service discovery and a high interoperability with 3<sup>rd</sup> party clients. Where appropriate, service descriptions closely follow industry standards, including OpenSearch and OGC WPS.

## Technology stack - JavaScript

- Node.js
- AngularJS
- MongoDB

<http://disc.sci.gsfc.nasa.gov/uui/>

The screenshot shows the GES DISC search results for the keyword 'ash'. The page displays a list of datasets with columns for Image, Dataset, Source, Temporal Resolution, Spatial Resolution, Process Level, Begin Date, and End Date. The datasets listed include:

- AIRS/Aqua Level 1C Infrared (IR) resampled and corrected radiances (AIRICRAD.006) - Aerosols, Atmospheric Chemistry, Infrared Wavelengths
- AIRS/Aqua Near Real Time (NRT) Level 1B Infrared (IR) geolocated and calibrated radiances (AIRIBRAD\_NRT.005) - Aerosols, Atmospheric Chemistry, Infrared Wavelengths
- AIRS/Aqua Level 1B Infrared (IR) geolocated and calibrated radiances (AIRIBRAD.005) - Aerosols, Atmospheric Chemistry, Infrared Wavelengths
- SeaWiFS Deep Blue Aerosol Optical Depth and Angstrom Exponent Monthly Level 3 Data Gridded at 0.5 Degrees (SWDB\_L3M05.004) - Aerosols, Atmospheric Radiation
- AIRS/Aqua Near Real Time (NRT) Level 1B Infrared (IR) geolocated and calibrated radiances (AIRIBRAD\_NRT\_BUFR.005) - Aerosols, Atmospheric Chemistry, Infrared Wavelengths
- SeaWiFS Deep Blue Aerosol Optical Depth and Angstrom Exponent Level 2 Data (SWDB\_L2.004) - Aerosols, Atmospheric Radiation
- SeaWiFS Deep Blue Aerosol Optical Depth and Angstrom Exponent Daily Level 3 Data Gridded at 0.5 Degrees (SWDB\_L305.004) - Aerosols, Atmospheric Radiation

## What's coming soon?

### Subsetting

- Narrowing results by temporal search
- Services on data
  - subsetting by variable
  - subsetting by spatial region (bounding box)
  - subsetting by vertical level (e.g., pressure)
  - viewing files/granules (e.g., mirador)
  - downloading data

The screenshot shows the subsetting interface where users can refine their search by date range (1997-09-03 to 2010-12-11) and select variables for subsetting, such as 'Number of retrievals used for angstrom exponent'.

### In-place visualization (by Giovanni)

The screenshot shows the in-place visualization interface, displaying a time series plot of 'Area-Averaged of Aerosol Absorption Optical Depth' over time (from Sep 2009 to Mar 2011).

### Splash screen

The screenshot shows the UUI splash screen with navigation options for Data, Plot by Giovanni, and Information, and a search bar for granules.

## Summary

- UUI provides a modern user experience, replacing and integrating with a number of legacy data services and applications at GES DISC.
- Designed for simplicity, speed, and interoperability.
- Implementation takes advantage of modern technologies, ensuring high maintainability, evolvability, and forward compatibility with near-future technologies and partner services.

## Architecture

