



# NASA GES DISC Earth Science Data Support

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# Outline

- Who are we?
- How do YOU get the Data?
- Data support
- Recent released services
- Resources



# The GES DISC: Who We ARE

## Atmospheric Data

Total Ozone Mapping Spectrometer (TOMS)  
Upper Atmosphere Research Satellite (UARS)  
Solar Radiation and Climate Experiment (SORCE)  
Aura: Ozone Monitoring Instrument (OMI),  
High Resolution Dynamics Infrared Sounder (HIRDLS),  
Microwave Limb Sounder (MLS)  
Historical datasets from Nimbus, Tiros, others  
SNPP Ozone Mapping & Profiler Suite (OMPS)  
Total and Spectral Solar Irradiance Sensor (TSIS)\*  
Sentinel 5P (TROPOMI)\*  
Cloud Absorption Radiometer (CAR)

TIROS Operational Vertical Sounder (TOVS)  
Aqua: Atmospheric Infrared Sounder (AIRS)  
SNPP/JPSS : Cross-track Infrared Sounder (CrIS)

Atmospheric CO2 Observations from Space (ACOS)  
Orbiting Carbon Observatory 2 (OCO-2)  
Carbon Monitoring System (CMS)

### Modeling

- Modern-Era Retrospective Analysis For Research and Applications (MERRA/2)
- Global Land Data Assimilation System (GLDAS)
- North American Land Data Assimilation System (NLDAS)

### Precipitation

- Tropical Rainfall Measuring Mission (TRMM)
- Hydrology Collections
- Global Precipitation Mission (GPM)

### MEaSURES

- MEaSURES 2006
- MEaSURES 2012



# Nominal Data Support at GES DISC

## Types of support:

- Archival of NASA designated data
- Distribution of NASA designated data
- Provide documentation support:
  - Writing user guides
  - Registering DOIs
  - Creating Data Interchange Format (DIFs) documents
  - Web content and interface development
- **Develop Value Added Services**
- **User Support**
- Data and Service Metrics
- Provide Ancillary Data Support



# Data and Services Facilitate Research and Applications

## **Web Interface**

- Web interface to data products and services
- Search and Download Mechanisms
- Data Set landing pages

**OTF (On-The-Fly) Data Subsetter** – Parameter, Spatial, Time, Vertical, Mean averaging, format conversion and regridding.

**TDS** – THREDDS Data Server

**GDS** – GrADS Data Server

**OPeNDAP** - Open-source Project for a Network Data Access Protocol

**Giovanni** – On-line Data Visualization and Analysis Tool which we have monthly and daily instances.

**HTTPS direct online access** – Direct anonymous HTTPS access

**Subscriptions** – to mission teams and other “power” users

**Value-added generated data products**– A-Train Data Depot (ATDD)



# The GES DISC Web Interface

Redesigned interface

<https://disc.gsfc.nasa.gov>

More **efficient** and **user friendly** design to find the information and data you need with new capabilities to search by **mission, discipline, and other key information.**

The screenshot displays the GES DISC web interface. At the top, it features the NASA logo, the text 'EARTHDATA Find a DAAC -', and the main title 'GES DISC' with the subtitle 'Atmospheric Composition, Water & Energy Cycles and Climate Variability'. Navigation links for 'Feedback', 'Help', and 'Login' are in the top right. A central search bar is labeled 'Explore...' and includes a 'Data Collections' dropdown, a search input field with the placeholder 'Enter search (e.g., rainfall, GPM, ...)', and icons for a calendar, a book, and a search icon. Below the search bar is a 'Browse Data by Category' button. A statistics section shows: 'Archive Size: 1,891.337 TB', 'Archived Data Files: 108,637,642', 'Files Distributed: 2,217,309,563', and 'Data Volume Distributed: 20,419,464 TB'. The main content area is divided into three columns: 'Projects & Missions' (listing SSBUV, UARS, and ACOS), 'Featured Gallery Images' (showing a precipitation map of Morocco and Algeria), and 'News' (listing articles about Nimbus 6 LRIR data, Atlantic coastal states, and GES DISC Level 2 products). A footer section contains 'NASA Official: Long Pham', 'Science Focus Areas' (Atmospheric Composition, Water & Energy Cycles, Climate Variability), 'Tools' (Giovanni, MERRA Subsetter, etc.), 'Resources' (HowTo, Glossary, etc.), and 'About Us' (Who We Are, etc.).

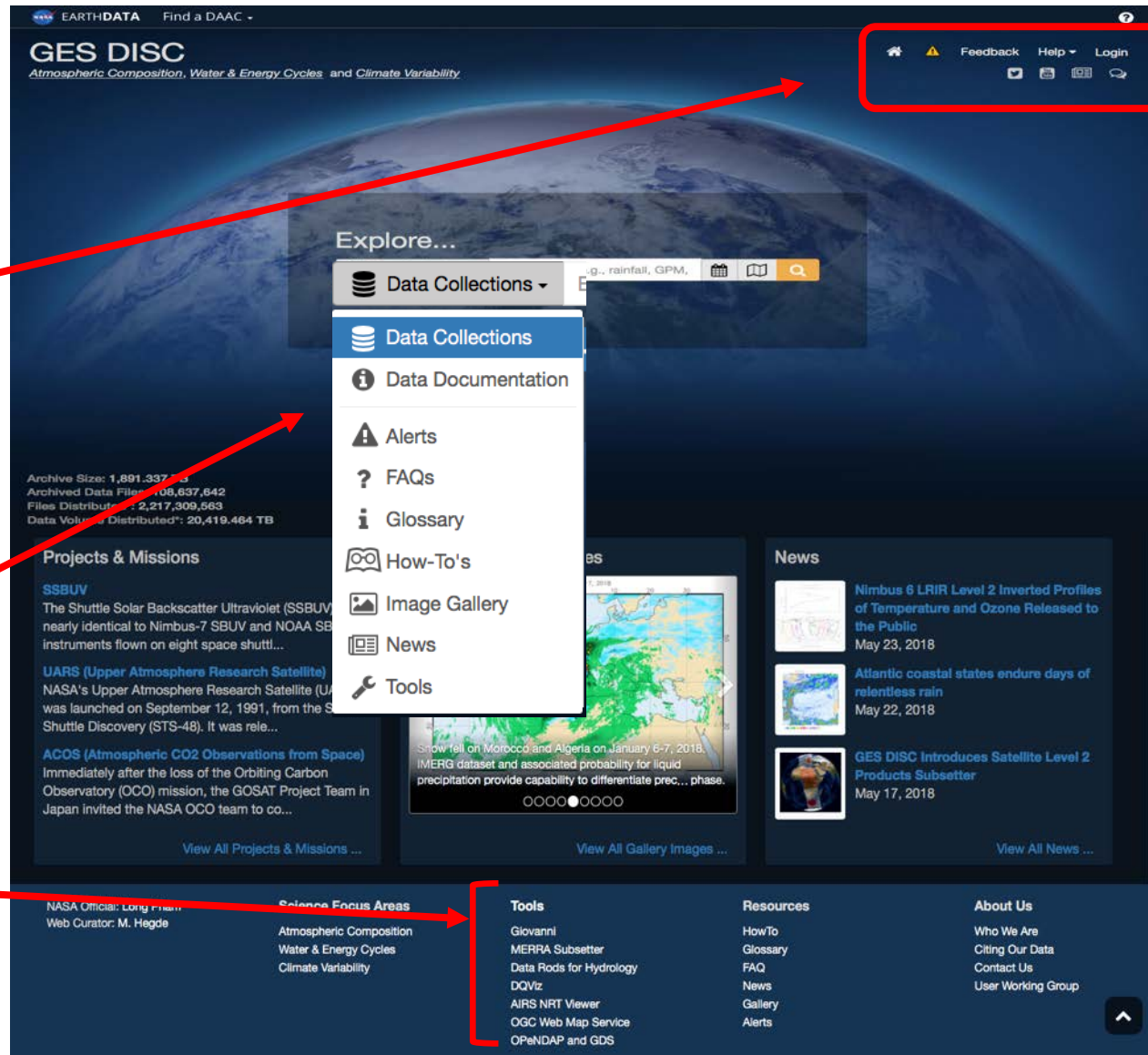
GES DISC Goddard Earth Science Data and Information Services Center  
<https://disc.gsfc.nasa.gov>





# How Do I Find What I Need?

(1/3)

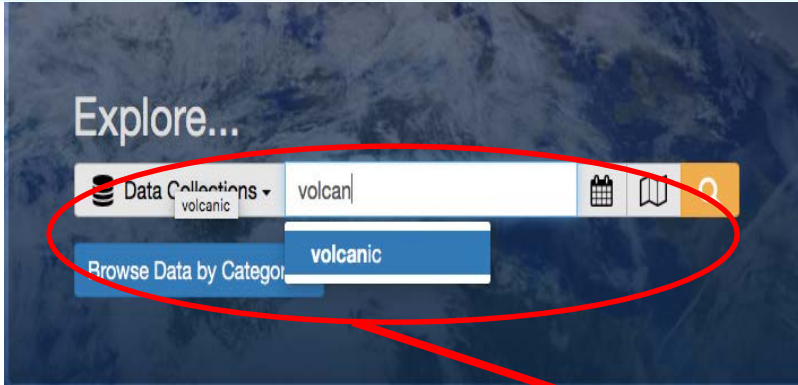


## Accessibility from the Start!

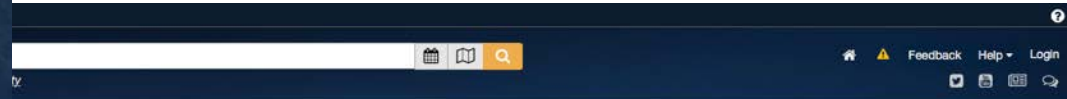
- Help Desk/Feedback/User Profile/Social Media
- Direct data product search and mission search
- Find related documentation
- Link to services from the Gateway



# How Do I Find What I Need? (2/3)



The search result is a product listing of all available Products with the metadata tagged with your keyword. A more specific keyword will yield less more accurate results.



Data Collections Showing 1 - 11 of 11 datasets associated with volcanic

## Refine By

### Subject Sort -

- Aerosols (9)
- Air Quality (4)
- Atmospheric Chemistry (8)
- Atmospheric Radiation (3)
- Infrared Wavelengths (4)

More...

### Measurement Sort -

- Aerosol Backscatter (2)
- Aerosol Extinction (3)
- Aerosol Optical Depth/Thickness (3)
- Aerosol Particle Properties (3)
- Aerosol Radiance (3)

More...

### Source Sort -

- Aqua AIRS (4)
- Aqua MODIS (3)
- Aura OMI (2)
- EP-TOMS TOMS (2)
- Nimbus-7 TOMS (3)

More...

### Processing Level Sort -

- 1B (3)
- 2 (5)
- 4 (2)

### Project Sort -

- ATDO (3)
- Aqua (4)
- LANCE (2)
- MEASURES (4)

### Temporal Resolution Sort -

- 12 hours (4)

### Spatial Resolution Sort -

- 10 km x 10 km (3)
- 13.5 km x 13.5 km (4)
- 50 km x 50 km (2)

Image	Data	Source	Temporal Resolution	Spatial Resolution	Process Level	Begin Date	End Date
	Multi-Satellite Air Quality Sulfur Dioxide (SO2) Database Long-Term L4 Global V1 (MSAQSO2L4.1) - Aerosols, Air Quality, Atmospheric Chemistry	Aura OMI, SUOMI-NPP OMPS, Nimbus-7 TOMS, EP-TOMS TOMS			4	2005-01-01	2017-12-31
	OMPS/NPP PCA SO2 Total Column 1-Orbit L2 Swath 50x50km V1 (OMPS_NPP_NMSO2_PCA_L2.1) - Air Quality, Atmospheric Chemistry, Paleoclimate Indicators	SUOMI-NPP OMPS		50 km x 50 km	2	2011-11-07	2018-05-29
	AIRS/Aqua L1B Near Real Time (NRT) Infrared (IR) geolocated and calibrated radiances in BUFR format V005 (AIRIBRAD_NRT_BUFR.005) - Aerosols, Infrared Wavelengths, Atmospheric Chemistry	Aqua AIRS	12 hours	13.5 km x 13.5 km	1B	2018-05-22	2018-05-29
	AIRS/Aqua L1B Near Real Time (NRT) Infrared (IR) geolocated and calibrated radiances V005 (AIRIBRAD_NRT.005) - Aerosols, Infrared Wavelengths, Atmospheric Chemistry	Aqua AIRS	12 hours	13.5 km x 13.5 km	1B	2018-05-22	2018-05-29
	AIRS/Aqua L1B Infrared (IR) geolocated and calibrated radiances V005 (AIRIBRAD.005) - Aerosols, Infrared Wavelengths, Atmospheric Chemistry	Aqua AIRS	12 hours	13.5 km x 13.5 km	1B	2002-08-30	2018-05-29
	AIRS/Aqua L1C Infrared (IR) resampled and corrected radiances V006 (AIRICRAD.006) - Aerosols, Infrared Wavelengths, Atmospheric Chemistry	Aqua AIRS	12 hours	13.5 km x 13.5 km	1	2018-04-29	2018-05-29
	MODIS/Aqua Aerosol 10km 5-Min L2 Narrow Swath Subset along CloudSat (MAC04SO.002) - Aerosols, Atmospheric Radiation	Aqua MODIS		10 km x 10 km	2	2006-06-02	2018-02-28
	MODIS/Aqua Aerosol 10km 5-Min L2 Wide Swath Subset along CloudSat (MAC04S1.002) - Aerosols, Atmospheric Radiation	Aqua MODIS		10 km x 10 km	2	2006-06-02	2018-02-28

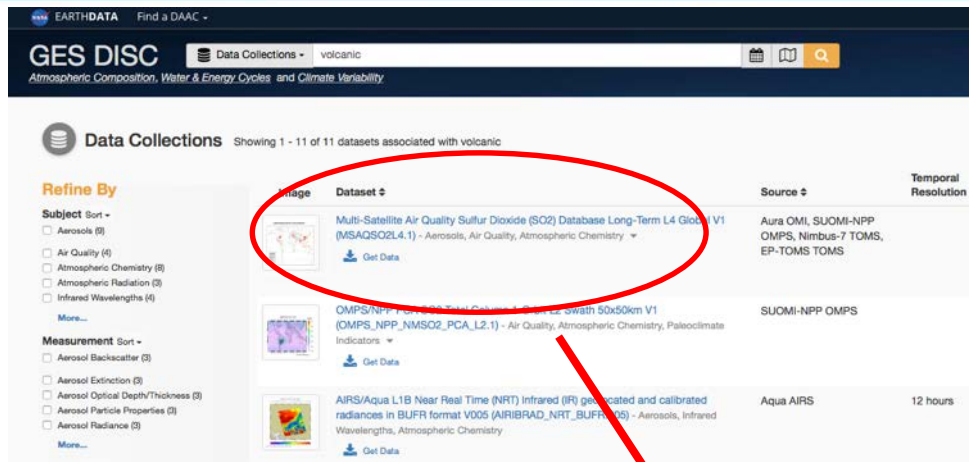
- Faceted Filter
  - Measurement
  - Source
  - Discipline
  - Temporal Resolution
  - Spatial Resolution, etc
- Product Listing
- Product Information

GES



# NASA How Do I Find What I Need? (3/3)

Click on the data product name will bring the user to the Data Set Landing Page.



- Product description
- Documentation

**MSAQSO2L4: Multi-Satellite Air Quality Sulfur Dioxide (SO2) Database Long-Term L4 Global V1**

These data are a part of Multi-Decadal Sulfur Dioxide Climatology from Satellite Instrument (MEASURES-12-0022 project). The catalogue MSAQSO2L4 file contains the site coordinates, source type, country, source name, annual SO2 emissions and uncertainties, and the number of OMI/Aura satellite SO2 measurements used for emissions estimates near each source. The emissions estimates are based on the fitting of the operational Aura/OMI planetary boundary layer (PBL) SO2 data produced with the Principal Component Analysis (PCA) algorithm (10.5067/Aura/OMI/DATA2022) and a site-specific AMF adjustment for each site (Fioletov et al., 2016). The emission estimate method for linking OMI level 2 SO2 vertical column densities (VCDs) to emissions is based on a fit of OMI VCDs to an empirical plume model developed to describe the SO2 spatial distribu ...more

[View Full-size Image](#)

**Data Access**

- Online Archive
- EARTHDATA Search
- OPENDAP (DODS)
- Get Data

Product Summary | **Data Citation** | Documentation

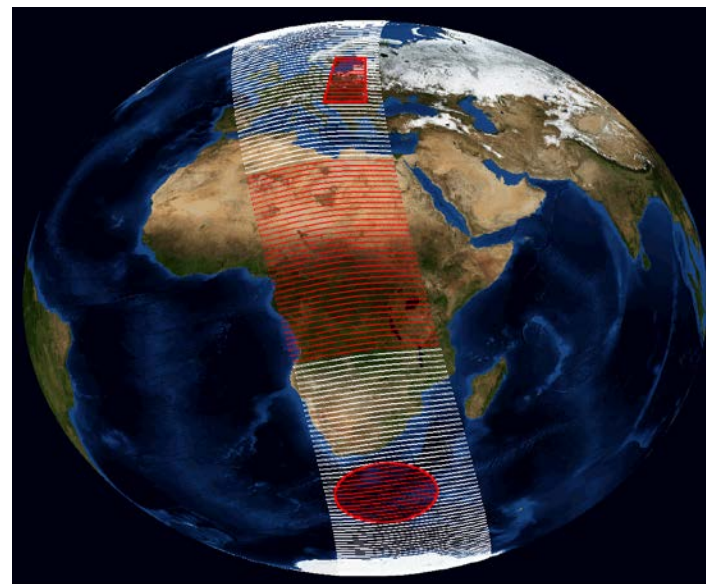
**Shortname:** MSAQSO2L4  
**Longname:** Multi-Satellite Air Quality Sulfur Dioxide (SO2) Database Long-Term L4 Global V1  
**DOI:** 10.5067/MEASURES/SO2/DATA403  
**Version:** 1  
**Format:** HDF5  
**Spatial Coverage:** -180.0,-90.0,180.0,90.0  
**Temporal Coverage:** 2005-01-01 to 2017-12-31  
**File Size:** 212 KB per file  
**Data Resolution**

- Data Access Methods



# GES DISC Satellite Level 2 Products Subsetter

- [News released](#) in early May
- **Missions:**
  - 25 OMI Level 2
  - 10 OMI Level 2G products
- **Instructional Aid:**
  - [HowTo Recipe](#)
  - [Webinar](#)
- **Next in the pipeline:**
  - MLS/OCO2/GPM Products
  - Radial subsetting
  - Point subsetting



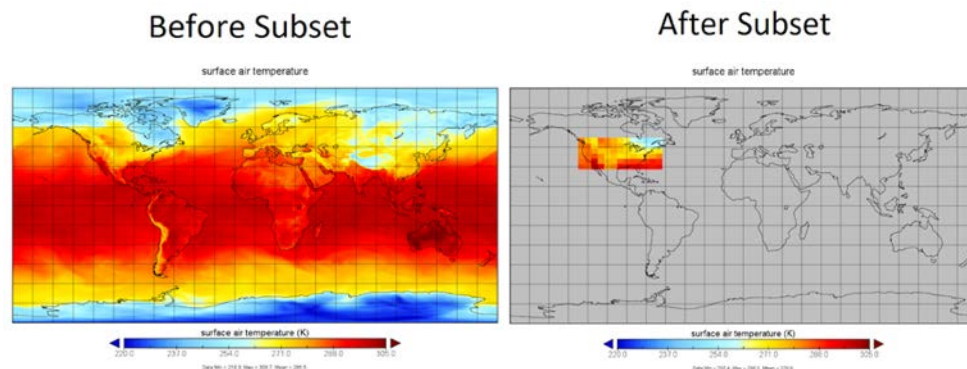
## Capabilities:

- Selection of specific variables within a file
- Specification of a latitude-longitude box
- Subsetting variables output as cropped boxes (geolocation dimensions trimmed to smallest box containing subsetting data)
- Index variables generated for each of the subset dimensions, thus preserving original index values
- Dimensional subsetting
- Temporal subsetting
- Preservation of original file structure, metadata, dimensions, data types, and attributes



# GES DISC Level 3 and 4 Regridder and Subsetter

- [News released](#) in April of latest additions
- **Missions:**
  - [Modern Era Retrospective-analysis for Research and Applications \(MERRA\)](#)
  - [MERRA-2](#)
  - [Global Land Data Assimilation System \(GLDAS\)](#)
  - [Famine Land Data Assimilation System \(FLDAS\)](#)
  - [North American Land Data Assimilation System \(NLDAS\)](#)
  - [National Climate Assessment - Land Data Assimilation System \(NCA-LDAS\)](#)
- **Instructional aid:**
  - [HowTo recipe](#)
- **Next in the pipeline:**
  - GPM Products
  - Point selection and ASCII output
  - Additional statistical options



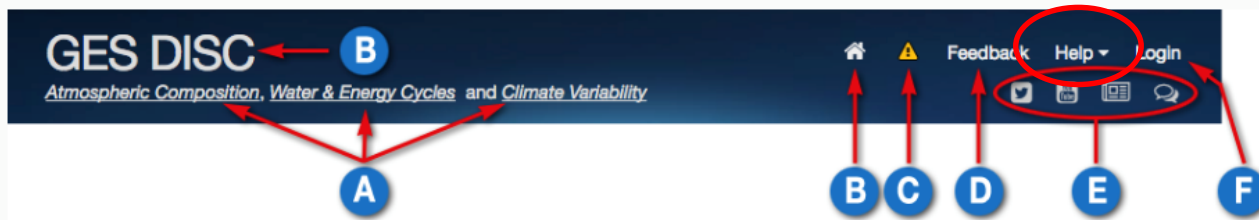
**Figure .** MERRA-2 surface air temperature before subsetting and regridding (left) and after (right). Surface air temperature data was subsetting over the continental United States and regridded to the Goddard Earth Observing System Model 4° x 5° (geos4x5) grid using the nearest neighbor remapping method.

## Capabilities:

- Regridding data from its native grid to a user selected specified grid
- Specification of numerical regridding method
- Subsetting within a user specified latitude-longitude bounding box
- Temporal averaging of data to user specified range (currently MERRA and MERRA-2 data only)
- Dimensional subsetting
- Variable subsetting
- Preservation of original file structure, metadata, data types, and attributes
- File format conversion for HDF-EOS2, NetCDF, GRIB, and GRIB2



# User Support



- A** Clicking on a science focus areas provides a description of the science area and links to related data holdings.
- B** Returns to view the GES DISC home page.
- C** View a list of all currently active site and data alerts.
- D** Opens a feedback form. Use the form to report issues, ask questions or suggest improvements. Submitting feedback creates and sends an email from the information entered on the form. The email will automatically include information on the browser and the page you are viewing.
- E** View our [Twitter](#) feed, [Youtube](#) channel, the latest [GES DISC news](#) and access our [User Forum](#).
- F** Click to login. You must be logged in to download data. If you don't have an account, please [register](#). It's easy!

## Instructional Help

- User registration
- Web interface to data products and services
- Search and Download Mechanisms
- Data Set landing pages
- Getting Data
- Subsetting Data
- History Panel
- User Forum
- Help Desk ([gsfc-help-disc@lists.nasa.gov](mailto:gsfc-help-disc@lists.nasa.gov))

## Additional Instructional Aid:

- **How-To's** : 47 entries
- **FAQ**: 227 entries
- **Glossary**: 159 entries
- **News**: 555 entries
- **Alerts**: 362 entries



# Information

- Search and download GES DISC data:  
<http://disc.gsfc.nasa.gov>
- Comments and suggestions:
  - [gsfc-help-disc@lists.nasa.gov](mailto:gsfc-help-disc@lists.nasa.gov)
  - Jennifer Wei [jennifer.c.wei@nasa.gov](mailto:jennifer.c.wei@nasa.gov)