

Satellite Sounder Products in NASA GES DISC & Services Supporting Their Applications

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Outline

- Satellite Sounder Products in Goddard Earth Sciences Data and Information Services Center (GES DISC)
 - TOVS Pathfinder, Aqua AIRS+AMSU, SNPP/JPSS CrIS+ATMS
- Unified Data Services in GES DISC
 - Searching, Accessing, Subsetting, Downloading
- Sounder Product Application Services
 - Giovanni: visualization/explore/analysis tool
 - Application uses cases
 - State of monthly surface air temperature from AIRS

Sounder Products in GES DISC

- **Sounder Missions:**

- TOVS Pathfinder: from TIROSN to NOAA-14, 1978 to 2002

- Aqua AIRS-only: September 2002 to present

- Aqua AIRS+AMSU: September 2002 to September 2016

- Many AMSU primary channels ceased in September 2016

- SNPP CrIS+ATMS: December 2011 to present

- JPSS-1 CrIS+ATMS: February 2018 to present

- JPSS-2 CrIS+ATMS: future

- **Three Levels Products:**

- Level1: granule/swath, radiance, brightness temperature

- Level 2: granule/swath, cloud-cleared radiance, retrieval

- Level 3: global gridded, daily, 8-day, monthly retrieval

- **Versions:**

- AIRS: version 6 now, version 7 coming

- SNPP and JPSS-1: L1 now, L2 and L3 coming

- (limited SNPP L2 and L3)

Sounder Products in GES DISC

- Primary (popularly-used) Retrieved Parameters:
 - Dynamics: temperature and moisture
 - Atmospheric Composition: CO, CH₄, O₃, CO₂
 - Cloud & Radiation: cloud fraction, cloud top pressure, OLR
- Secondary Retrieved/Derived Parameters:
 - Precipitation: serving TRMM/GPM, GPCP
 - Cloud Phase: cloud thermodynamics phase, ice cloud optical phase, ice cloud effective diameter, effective ice top temperature
 - SO₂ Index: brightness temperature differences
 - Dust Score: based on brightness temperature differences
 - PBL Height: derived from humidity profile
 - Ammonia: community product

AIRS Near-Real Time (NRT) Products

- LANCE (Land, Atmosphere NRT Capability for EOS)

Latency within 3 hours

Aqua AIRS is one LANCE element

Level 1 and Level 2 products

7-day rolling archive

- AIRS NRT Imagery Product

GIBS (Global Imagery Browse Services)

Worldview, AIRS NRT ImageViewer

Surface Air & Skin Temperature and Relativity Humidity

Temperature and Relativity Humidity at 850, 700, 500hPa

Total Cloud Fraction, Cloud Top Height, Dust Score

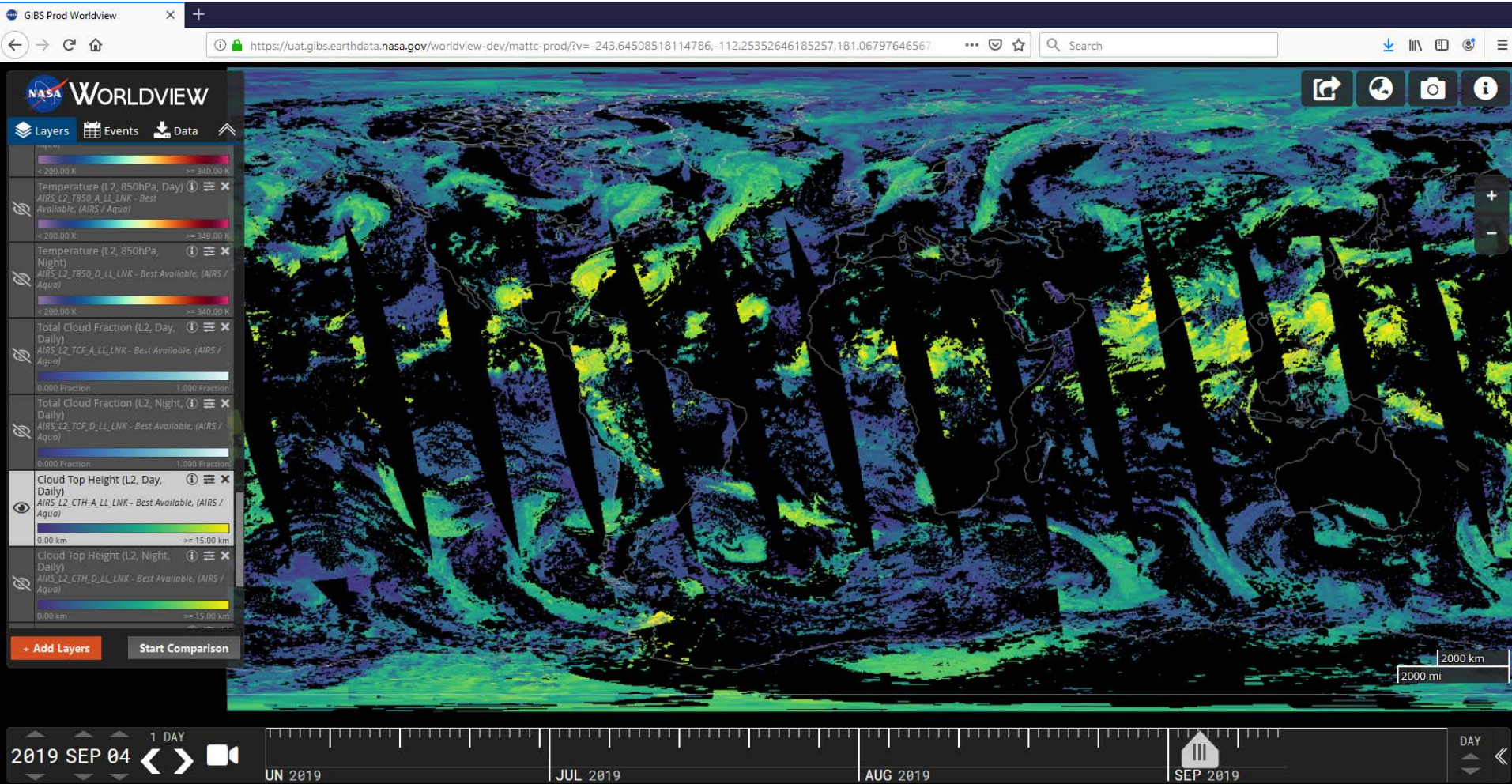
CO at 500hPa, CH4 at 400hPa

SO2 BT-Diff, SO2 from Prata Algorithm

AIS NRT Imagery on Worldview

<https://worldview.earthdata.nasa.gov>

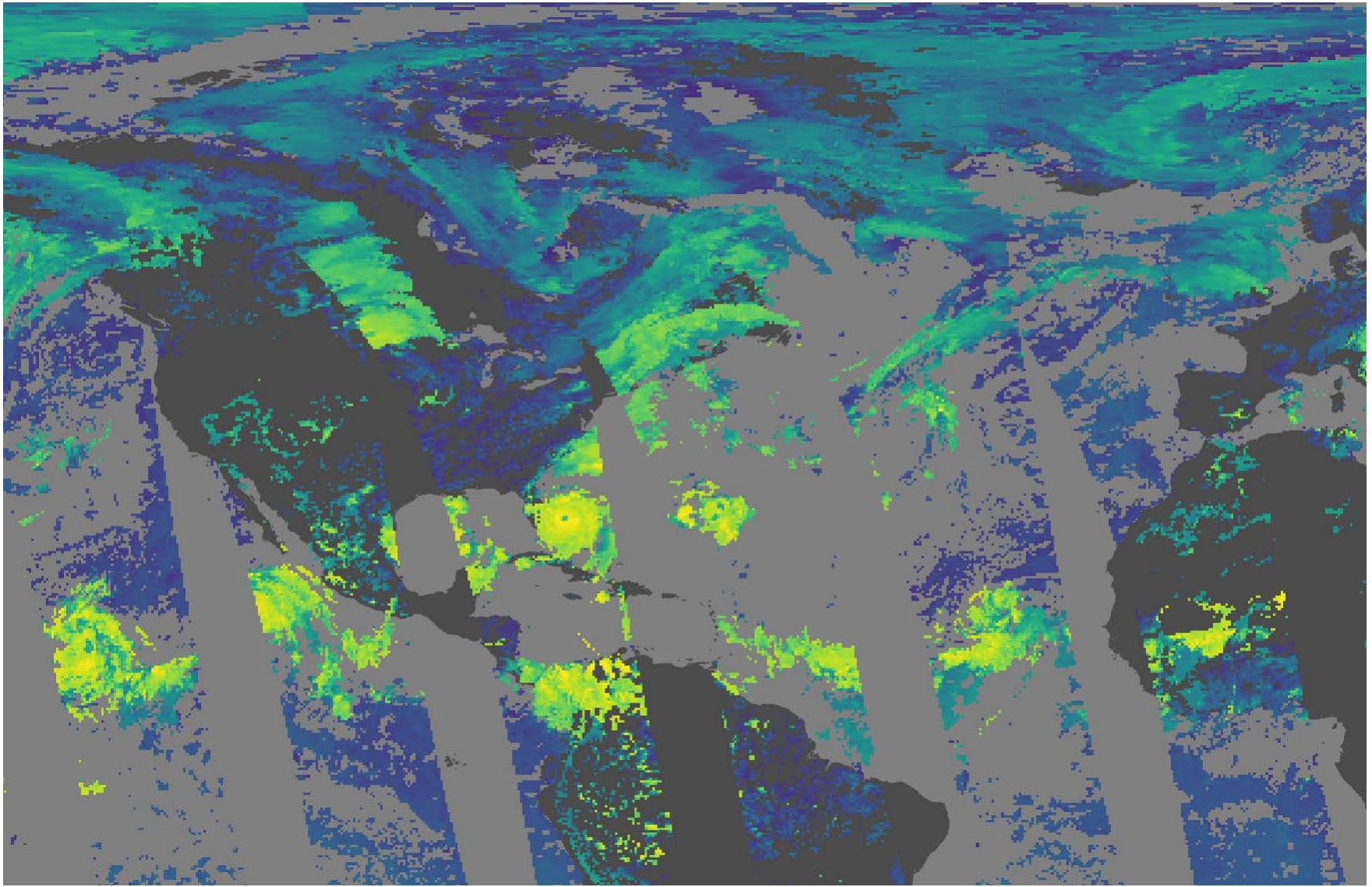
Cloud Top Height on September 4, 2019



AIS NRT Imagery on Worldview

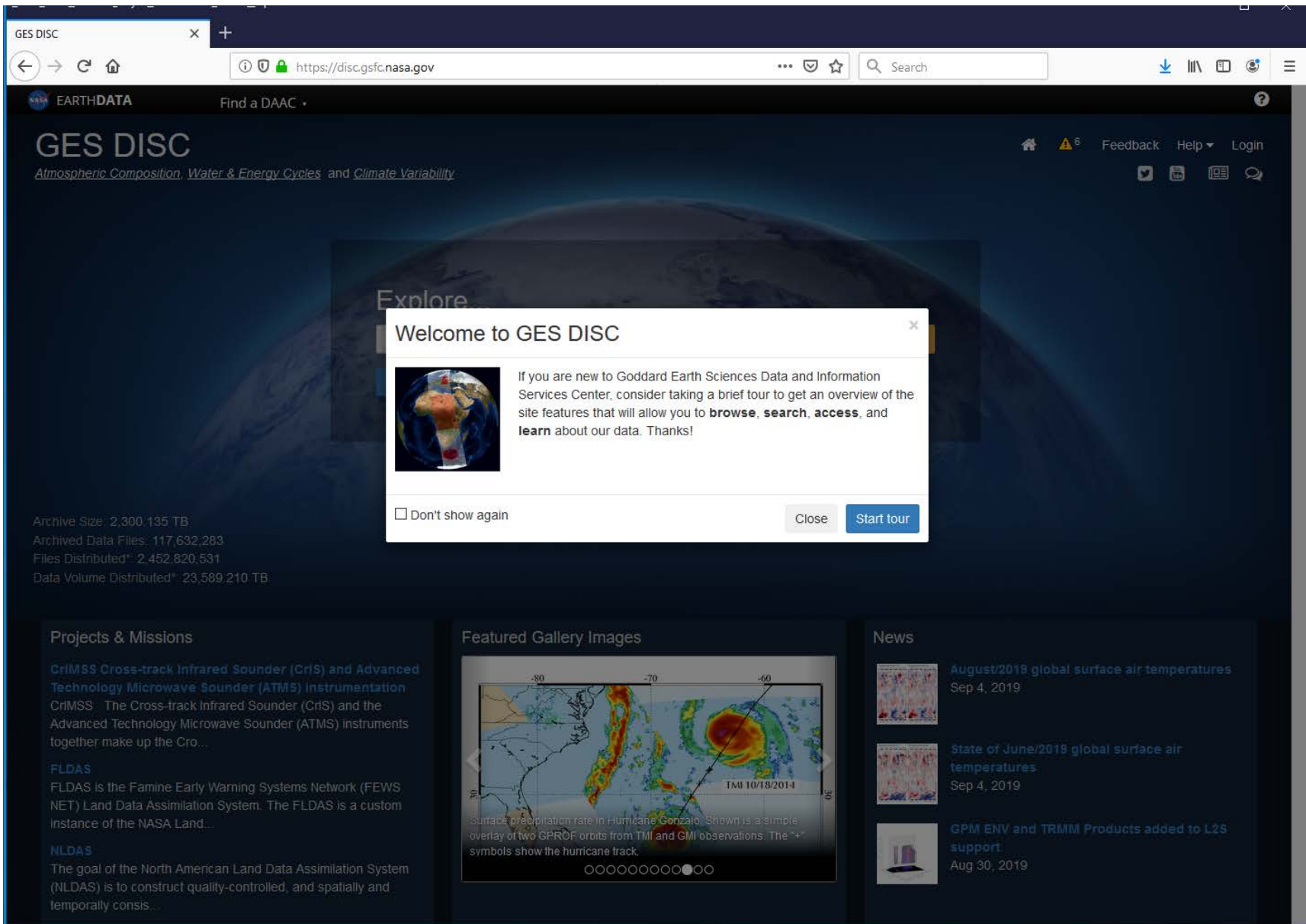
<https://worldview.earthdata.nasa.gov>

Saved snapshot image over North America: Hurricane Dorian



Unified Data Services Start from GES DISC Homepage

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




The screenshot shows the NASA EarthData GES DISC homepage. A modal window titled "Welcome to GES DISC" is open in the center. The modal contains a small globe icon and text: "If you are new to Goddard Earth Sciences Data and Information Services Center, consider taking a brief tour to get an overview of the site features that will allow you to **browse, search, access, and learn** about our data. Thanks!". Below the text are three buttons: "Don't show again" (with an unchecked checkbox), "Close", and "Start tour" (highlighted in blue). The background of the page shows a large image of Earth from space. At the top, there is a navigation bar with "EARTHDATA" and "Find a DAAC". The main header includes "GES DISC" and a subtitle "Atmospheric Composition, Water & Energy Cycles and Climate Variability". On the right side of the header, there are links for "Feedback", "Help", and "Login". Below the modal, the page is divided into three columns: "Projects & Missions", "Featured Gallery Images", and "News".

Projects & Missions

- CrMSS Cross-track Infrared Sounder (CrIS) and Advanced Technology Microwave Sounder (ATMS) instrumentation**
CrMSS The Cross-track Infrared Sounder (CrIS) and the Advanced Technology Microwave Sounder (ATMS) instruments together make up the Cro...
- FLDAS**
FLDAS is the Famine Early Warning Systems Network (FEWS NET) Land Data Assimilation System. The FLDAS is a custom instance of the NASA Land...
- NLDAS**
The goal of the North American Land Data Assimilation System (NLDAS) is to construct quality-controlled, and spatially and temporally consis...

Featured Gallery Images



surface precipitation rate in Hurricane Gonzalo. Shown is a simple overlay of two GPROF orbits from TMI and GMI observations. The "+" symbols show the hurricane track.

News

- August 2018 global surface air temperatures**
Sep 4, 2019
- State of June 2018 global surface air temperatures**
Sep 4, 2019
- GPM ENV and TRMM Products added to L2S support**
Aug 30, 2019

Archive Size: 2,300.135 TB
Archived Data Files: 117,632,283
Files Distributed*: 2,452,820,531
Data Volume Distributed*: 23,589,210 TB

Searching, Browsing, Accessing Data, Documentation, News, Tools...

The screenshot shows the NASA EarthData GES DISC website. The browser address bar displays <https://disc.gsfc.nasa.gov>. The page header includes the NASA EarthData logo and the text "Find a DAAC". The main heading is "GES DISC" with the subtitle "Atmospheric Composition, Water & Energy Cycles and Climate Variability". Navigation links for "Feedback", "Help", and "Login" are visible in the top right. A central "Explore..." panel features a search bar with the placeholder text "Enter search (e.g., rainfall, GPM, TRMM_3B42)" and a "Data Collections" dropdown menu. Below the search bar is a "Browse Data by Category" dropdown menu. A list of categories is displayed, including "Subject", "Measurement", "Source", "Processing Level", "Project", "Temporal Resolution", and "Spatial Resolution". The "Subject" category is expanded, showing a grid of sub-categories such as "Aerosols", "Air Quality", "Altitude", "Atmospheric Chemistry", "Atmospheric Phenomena", "Atmospheric Pressure", "Atmospheric Radiation", "Atmospheric Temperature", "Atmospheric Water Vapor", "Atmospheric Winds", "Atmospheric/Ocean Indicators", "Clouds", "Cryospheric Indicators", "Ecological Dynamics", "Ecosystems", "Frozen Ground", "Glaciers/Ice Sheets", "Ground Water", "Infrared Wavelengths", "Ionosphere/Magnetosphere Dynamics", "Land Surface/Agriculture Indicators", "Land Use/Land Cover", "Microwave", "Natural Hazards", "Ocean Chemistry", "Ocean Heat Budget", "Ocean Optics", "Ocean Pressure", "Ocean Temperature", "Ocean Winds", "Paleoclimate Indicators", "Platform Characteristics", "Precipitation", "Protists", "Radar", "Sea Ice", "Sea Surface Topography", "Sensor Characteristics", "Snow/Ice", "Soils", "Solar Activity", "Solar Energetic Particle Flux", "Solar Energetic Particle Properties", "Solid Precipitation", "Sun-Earth Interactions", "Surface Radiative Properties", "Surface Thermal Properties", "Surface Water", "Topography", "Ultraviolet Wavelengths", "Vegetation", and "Visible Wavelengths". In the bottom left corner, statistics are provided: "Archive Size: 2,300.163 TB", "Archived Data Files: 117,633,117", "Files Distributed*: 2,452,837,914", and "Data Volume Distributed*: 23,589.540 TB". A "Projects & Missions" link is located at the bottom left.

GES DISC
Atmospheric Composition, Water & Energy Cycles and Climate Variability

Explore...

Data Collections ▾ Enter search (e.g., rainfall, GPM, TRMM_3B42)

Browse Data by Category ▾

Subject	Aerosols	Infrared Wavelengths	Sea Ice
Measurement	Air Quality	Ionosphere/Magnetosphere Dynamics	Sea Surface Topography
Source	Altitude	Land Surface/Agriculture Indicators	Sensor Characteristics
Processing Level	Atmospheric Chemistry	Land Use/Land Cover	Snow/Ice
Project	Atmospheric Phenomena	Microwave	Soils
Temporal Resolution	Atmospheric Pressure	Natural Hazards	Solar Activity
Spatial Resolution	Atmospheric Radiation	Ocean Chemistry	Solar Energetic Particle Flux
	Atmospheric Temperature	Ocean Heat Budget	Solar Energetic Particle Properties
	Atmospheric Water Vapor	Ocean Optics	Solid Precipitation
	Atmospheric Winds	Ocean Pressure	Surface Radiative Properties
	Atmospheric/Ocean Indicators	Ocean Temperature	Surface Thermal Properties
	Clouds	Ocean Winds	Surface Water
	Cryospheric Indicators	Paleoclimate Indicators	Topography
	Ecological Dynamics	Platform Characteristics	Ultraviolet Wavelengths
	Ecosystems	Precipitation	Vegetation
	Frozen Ground	Protists	Visible Wavelengths
	Glaciers/Ice Sheets	Radar	
	Ground Water		

Archive Size: 2,300.163 TB
Archived Data Files: 117,633,117
Files Distributed*: 2,452,837,914
Data Volume Distributed*: 23,589.540 TB

Projects & Missions

Searching "AIRS L3 monthly" data

GES DISC Data Collections AIRS L3 monthly

Atmospheric Composition, Water & Energy Cycles and Climate Variability

Data Collections Showing 1 - 25 of 760 datasets associated with AIRS L3 monthly

Refine By

- Subject** Sort ▾
 - Aerosols (47)
 - Air Quality (33)
 - Altitude (199)
 - Atmospheric Chemistry (160)
 - Atmospheric Phenomena (12)
 - More...
- Measurement** Sort ▾
 - Absorption (6)
 - Aerosol Backscatter (3)
 - Aerosol Extinction (18)
 - Aerosol Optical Depth/Thickness (27)
 - Aerosol Particle Properties (4)
 - More...
- Source** Sort ▾
 - AEM-2 SAGE I (2)
 - Aqua AIRS (67)
 - Aqua AMSR-E (17)
 - Aqua AMSU-A (23)
 - Aqua HSB (6)
 - More...
- Processing Level** Sort ▾
 - 1 (6)
 - 1B (13)
 - 2 (103)

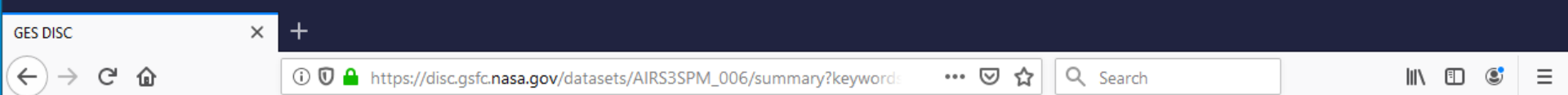
Image	Dataset	Source	Version	Time Res.	Spatial Res.	Process Level	Begin Date	End Date
	AIRS/Aqua L3 Monthly Support Monthly Product (AIRS+AMSU+HSB) 1 degree x 1 degree V006 (AIRH3SPM 006) AIRS Science Team/Joao Teixeira	Aqua AIRS	006	1 month	1 ° x 1 °	3	2002-09-01	2003-03-01
	AIRS/Aqua L3 Monthly Support Product (AIRS-only) 1 degree x 1 degree V006 (AIRS3SPM 006) AIRS Science Team/Joao Teixeira	Aqua AIRS	006	1 month	1 ° x 1 °	3	2002-09-01	2019-09-01
	AIRS/Aqua L3 Monthly Quantization in Physical Units (AIRS-only) 5 degrees x 5 degrees V006 (AIRS3QPM 006) AIRS Science Team/Joao Teixeira	Aqua AIRS	006	1 month	5 ° x 5 °	3	2002-09-01	2019-09-01
	AIRS/Aqua L3 Monthly Standard Physical Retrieval (AIRS+AMSU+HSB) 1 degree x 1 degree V006 (AIRH3STM 006) AIRS Science Team/Joao Teixeira	Aqua AIRS	006	1 month	1 ° x 1 °	3	2002-09-01	2003-03-01
	AIRS/Aqua L3 Monthly Standard Physical Retrieval (AIRS+AMSU) 1 degree x 1 degree V006 (AIRX3STM 006) AIRS Science Team/Joao Teixeira	Aqua AIRS, Aqua AMSU-A	006	1 month	1 ° x 1 °	3	2002-09-01	2016-10-01

Click on, Go to Product Page

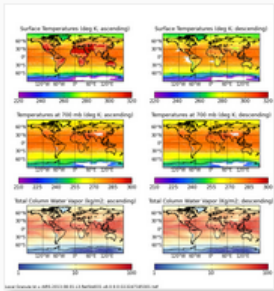
Subset or Get Data

Click for dataset information including how to get data

AIRS L3 monthly support product (AIRS-only) landing page



AIRS3SPM: AIRS/Aqua L3 Monthly Support Product (AIRS-only) 1 degree x 1 degree V006



[View Full-size Image](#)

The Atmospheric Infrared Sounder (AIRS) is a grating spectrometer (R = 1200) aboard the second Earth Observing System (EOS) polar-orbiting platform, EOS Aqua. In combination with the Advanced Microwave Sounding Unit (AMSU) and the Humidity Sounder for Brazil (HSB), AIRS constitutes an innovative atmospheric sounding group of visible, infrared, and microwave sensors. The L3 support products are similar to the L3 standard products but contain fields which are not fully validated, or are inputs or intermediary values. Because no quality control information is available for some of these fields, values from failed retrievals may be included.

Data Access

[Online Archive](#)

[Earthdata Search](#)

[Simple Subset Wizard](#)

[OPENDAP](#)

 [Subset / Get Data](#)

Subset and download the data for this collection

[Product Summary](#)

[Data Citation](#)

[Documentation](#)

Shortname: AIRS3SPM

Longname: AIRS/Aqua L3 Monthly Support Product (AIRS-only) 1 degree x 1 degree V006

DOI: doi:10.5067/Aqua/AIRS/DATA324

Version: 006

Format: HDF-EOS

Spatial Coverage: -180.0,-90.0,180.0,90.0

Temporal Coverage: 2002-09-01 to [2019-09-01](#)

File Size: 554.5 MB per file

Data Resolution

Spatial: 1 ° x 1 °

Temporal: 1 month

Subset / Get Data

GES DISC x +

https://disc.gsfc.nasa.gov/datasets/AIRS3SPM_006/summary?keywords Search

Get AIRS/Aqua L3 Monthly Support Product (AIRS-only) 1 degree x 1 degree V006 data

Estimated size of results
6,210 days, 249 links, 129.37 GB

Refine Search ?

▶ **Refine Date Range:** 2002-09-01 to 2019-09-01 Reset

Subset Options ?

▶ **Spatial Subset:** -180, -90, 180, 90 Reset

▶ **Variables:** Get all variables Reset

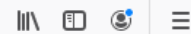
▶ **Dimensions:** * Get all dimensions Reset

Output format ?

▶ **File Format:** HDF-EOS Reset

Reset All Get Data

Spatial Coverage: -180.0,-90.0,180.0,90.0
Temporal Coverage: 2002-09-01 to 2019-09-01
File Size: 554.5 MB per file
Data Resolution
Spatial: 1 ° x 1 °



Refine Search ?

▼ **Refine Date Range:** 2002-09-01 to 2019-09-01 Reset

From:

To:

Available Range: 2002-09-01 to 2019-09-01

Default Range

September 2002						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	01	02	03	04	05
06	07	08	09	10	11	12

September 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	01	02	03	04	05
06	07	08	09	10	11	12

Subset Options ?

▼ **Spatial Subset:** -180, -90, 180, 90 Reset

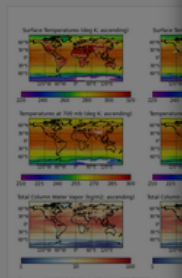
Default Range



Available Range: -180, -90, 180, 90

Cursor Coordinates: 33.762, 143.789

AIRS3SPM: A



[View Full-size](#)

Product Summary

NASA Official: Long Ph
Web Curator: M. Hegde

[Web Privacy Policy](#)

Access

Archive

Search

Wizard

AP

Get Data

About Us

Who We Are

Using Our Data

Contact Us

User Working Group



Estimated size of results

6,210 days, 249 links, 129.37 GB

Refine Search [?](#)

▸ **Refine Date Range:** 2002-09-01 to 2019-09-01 Reset

Subset Options [?](#)

▸ **Spatial Subset:** -180, -90, 180, 90 Reset

▾ **Variables:** Get all variables Reset

NOTE: By default, **ALL** variables are sent in the subset request.

Expand Tree

- Ancillary and Derived Variables
- Cirrus Cloud Variables
- CO Variables
- Dust and SO2 flags from radiances
- location
- Methane Variables
- Moisture and Precipitation Variables
- Ozone Variables
- Radiation Variables
- Temperature Variables

▸ **Dimensions:** * Get all dimensions Reset

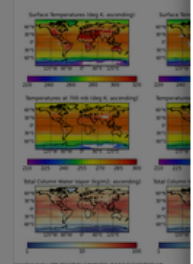
Output format [?](#)

▾ **File Format:** HDF-EOS Reset

- ASCII
- HDF-EOS (Default)
- NetCDF
- NetCDF4

Reset AllGet Data

AIRS3SPM: A

[View Full-size](#)

Product Summary

NASA Official: Long Ph
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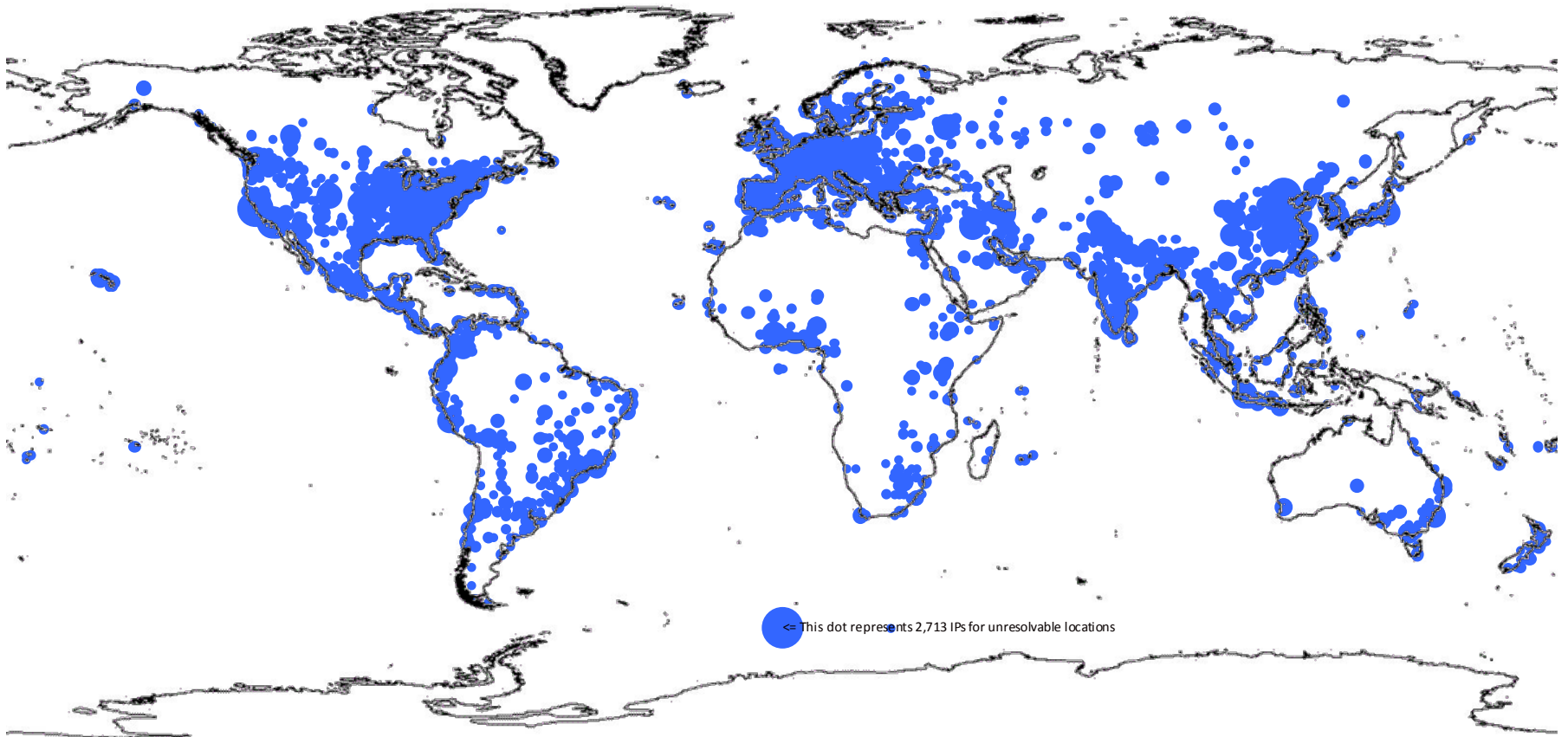
Who We Are

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Member Working Group

Worldwide AIRS Data Users/Unique IPs from Sept 2016 to August 2019



GES DISC external user locations based on:

• 42,112 unique IPs over the entire period (9/1/2016 to 8/25/2019)

1 IP (min)

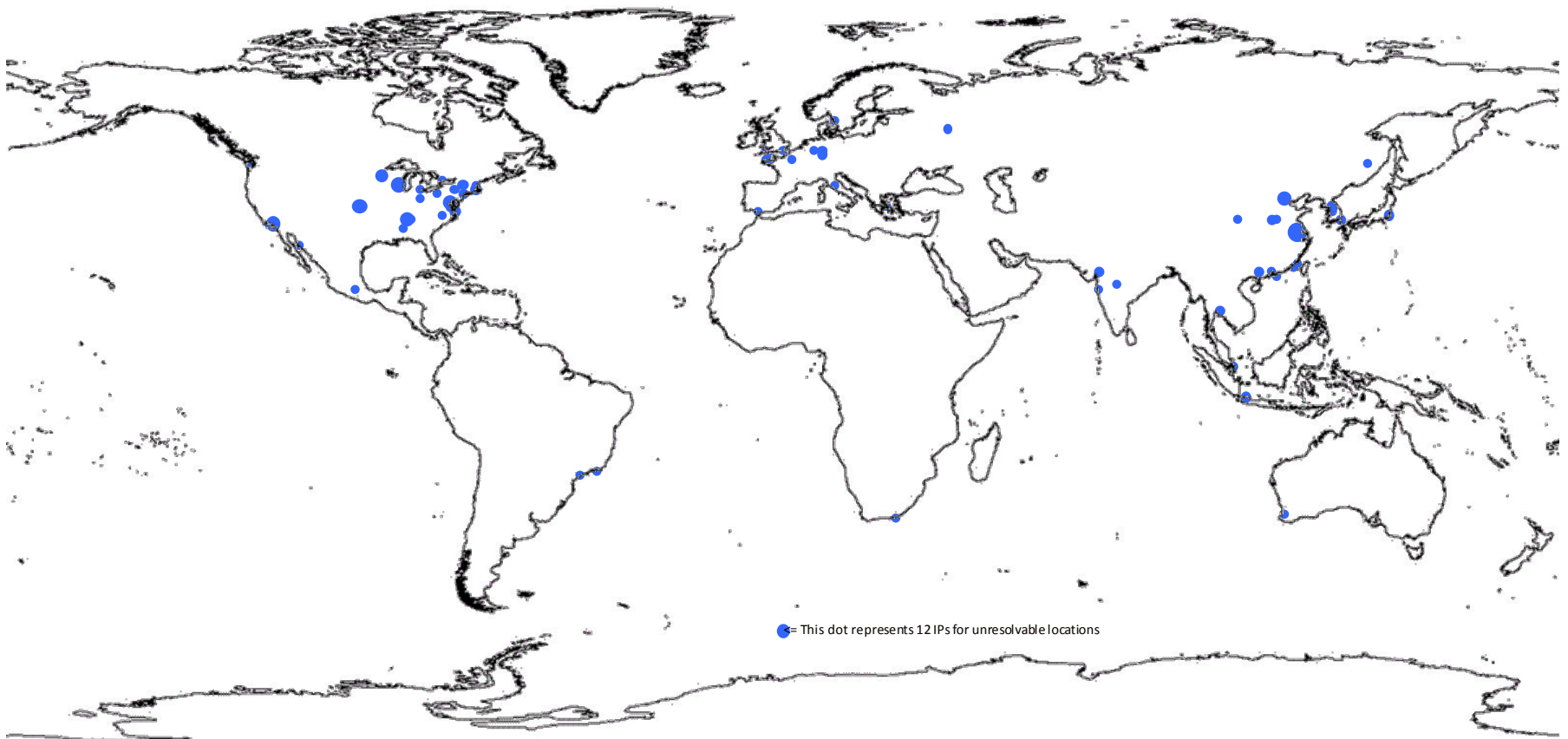
10 IPs

100 IPs

1000 IPs

10,000 IPs

Worldwide SNPP+JPSS-1 Data Users/Unique IPs from May 2017 to August 2019



GES DISC external user locations based on:

• 305 unique IPs over the entire period (5/12/2017 to 8/24/2019)



Giovanni: Exploring/Visualizing/Analyzing Tool

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

Maps: Time-Averaged Maps, Difference of Time-Averaged, Animation, Accumulated, Time Averaged Overlay Map, Monthly and Seasonal Averages

The screenshot shows the Giovanni web interface. At the top, there is a browser window with the URL <https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime=&endtime=>. The page header includes the NASA logo, "EARTHDATA", and "Find a DAAC". The main header features the "GIOVANNI" logo, the tagline "The Bridge Between Data and Science v 4.31", and links for "Feedback", "Help", and "Log out (fengding)".

The "Select Plot" section contains several radio button options: "Maps: Time Averaged Map *", "Comparisons: Select...", "Vertical: Select...", "Time Series: Select...", and "Miscellaneous: Select...". The "Maps Choices" panel is open, showing a list of options:

- Time Averaged Map**
Interactive map of average over time at each grid cell
[Details...](#)
- Difference of Time Averaged**
Difference of two time averaged variable maps
[Details...](#)
- Animation**
Map animated along the chosen timeline for each grid cell
** Limited to 365 time steps*
[Details...](#)
- Accumulated**
Accumulation of measurement over time at each grid point
[Details...](#)
- Time Averaged Overlay Map**
Interactive Overlay map of average over time at each grid cell
[Details...](#)
- Monthly and Seasonal Averages**
Average of Specified Month or Season
[Details...](#)

Below the "Maps Choices" panel, there are checkboxes for "Air Temperature (105)" and "Albedo (25)". To the right, the "Select Region (Bounding Box or Shape)" section includes a text input field with a "Format: West, South, East, North" label and a search button. Below this, it shows "Variables: 0 of 2007" and "Total Variable(s) included in Plot: 0". A search bar with "Search" and "Clear" buttons is also present.

At the bottom of the page, there is a footer with the NASA logo, "Responsible NASA Official: [Angela Li](#)", "Web Curator: [M. Hegde](#)", "Privacy", "Powered By", and "Contact Us". On the right side of the footer, there are three buttons: "Reset", "Plot Data", and "Go to Results".

Comparisons: Correlation Map, Area/Time-Averaged Scatter Plot (Static/Interactive), Scatter Plot (Static and Interactive)

Vertical : Cross Section (Latitude/ Longitude/Time – Pressure), Vertical Profile

Time Series: Hovmoller (Latitude/Longitude-Averaged), Area-Averaged, Area-Averaged Difference, Interannual Seasonal/Monthly

Miscellaneous: Zonal Mean, Histogram

The screenshot shows the NASA Giovanni web interface. At the top, the browser address bar displays the URL: <https://giovanni.gsfc.nasa.gov/giovanni/#service=CoMp&starttime=&endtime=>. The page header includes the NASA logo, "EARTHDATA", and the text "Find a DAAC". The main header features the "GIOVANNI" logo, the tagline "The Bridge Between Data and Science v 4.31", and links for "Feedback", "Help", and "Log out (fengding)".

The "Select Plot" section contains several dropdown menus: "Maps: Select...", "Comparisons: Map, Correlation *", "Vertical: Select...", "Time Series: Select...", and "Miscellaneous: Select...". The "Comparisons Choices" dropdown menu is open, showing the following options:

- Map, Correlation**
Simple linear regression of 2 variables at each grid cell
[Details...](#)
- Scatter, Area Averaged (Static)**
Scatter plot comparing area averaged time series for two variables
[Details...](#)
- Scatter, Time-Averaged (Interactive)**
Time-averaged, interactive X-Y plot of 2 variables
** Limited to 30000 points*
[Details...](#)
- Scatter (Interactive)**
Interactive Scatter
** Limited to 30000 points*
[Details...](#)
- Scatter (Static)**
Static Scatter
[Details...](#)

On the left side, the "Select Date Range (UTC)" section includes a date input field and a "Valid Range: 1948-01-01" message. Below it is the "Select Variables" section, which is divided into "Disciplines" and "Measurements".

At the bottom of the page, there is a footer with the NASA logo, the text "Responsible NASA Official: [Angela Li](#)", "Web Curator: [M. Hegde](#)", and links for "Privacy", "Powered By", and "Contact Us". On the right side of the footer, there are three buttons: "Reset", "Plot Data", and "Go to Results".

Giovanni: Exploring/Visualizing/Analyzing Tool

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

Date Range

Type or Use Calendar

Variable

Search Keyword and/or Use Filter

Region

Type or Draw Bounding Box

The screenshot shows the Giovanni web interface with several annotations. Blue arrows point from the text labels to specific parts of the interface:

- Date Range:** Points to the "Select Date Range (UTC)" section, which includes a date input field (YYYY-MM-DD) and a time input field (HH:mm), along with a "Valid Range: 1948-01-01 to 2019-09-16" message.
- Variable:** Points to the "Select Variables" section, which includes a search bar with the text "Number of matching Variables: 0 of 2007" and "Total Variable(s) included in Plot: 0".
- Region:** Points to the "Select Region (Bounding Box or Shape)" section, which includes a text input field containing "-135,-60,0,30" and a "Select a Shape..." dropdown menu.

The interface also features a "Select Plot" section with options like "Maps: Time Averaged Map", "Comparisons", "Vertical", "Time Series", and "Miscellaneous". A "Feedback Help Login" link is visible in the top right. At the bottom, there are "Reset" and "Plot Data" buttons.

Giovanni: Exploring/Visualizing/Analyzing Tool

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

Region: Select Shape - *Countries, Land/Sea, US States, Watersheds*

The screenshot shows the Giovanni web interface. At the top, there is a navigation bar with the NASA logo, 'EARTHDATA', and 'Find a DAAC'. Below this is the main header 'GIOVANNI The Bridge Between Data and Science v 4.31' with links for 'Feedback', 'Help', and 'Log out (fengding)'. The main content area is divided into several sections: 'Select Plot' (with 'Maps: Time Averaged Map' selected), 'Select Date Range (UTC)' (with a date range of 00:00 to 23:59), 'Select Variables' (with 'Disciplines' and 'Measurements' sections), and 'Select Region (Bounding Box or Shape)'. The 'Select Region' section has a dropdown menu open, showing options: 'Countries (source: HIU, US State Department)', 'Land Only file (source: GES DISC)', 'Sea Only file (source: GES DISC)', 'US States (source: TIGER/Line, US Census Bureau)', and 'Watersheds (source: Major Hydrological Basins, FAO (United Nations))'. Below the dropdown is a map showing a bounding box over the Pacific Ocean. At the bottom of the page, there is a footer with the NASA logo, 'Responsible NASA Official: Angela Li', 'Web Curator: M. Hegde', 'Privacy', 'Powered By', and 'Contact Us'. There are also buttons for 'Reset', 'Plot Data', and 'Go to Results'.

Select Plot

Maps: Time Averaged Map * Comparisons: Select... Vertical: Select... Time Series: Select... Miscellaneous: Select...

Select Date Range (UTC)

YYYY-MM-DD. HH:mm

- - - 00:00 to - - - 23:59

Valid Range: 1948-01-01 to 2019-09-13

Select Variables

Disciplines

- Aerosols (188)
- Atmospheric Chemistry (76)
- Atmospheric Dynamics (424)
- Cryosphere (13)
- Hydrology (1209)
- Ocean Biology (59)
- Oceanography (62)
- Water and Energy Cycle (1272)

Measurements

- Aerosol Index (6)
- Aerosol Optical Depth (88)
- Air Pressure Anomaly (1)
- Air Pressure (58)
- Air Temperature Anomaly (2)
- Air Temperature (105)
- Albedo (25)

Select Region (Bounding Box or Shape)

Format: West, South, East, North

Number of matching Variables: 0 of 2007 Total Variable(s) included in Plot: 0

Keyword: Search Clear

Select a Shape...

- Countries (source: [HIU, US State Department](#))
- Land Only file (source: [GES DISC](#))
- Sea Only file (source: [GES DISC](#))
- US States (source: [TIGER/Line, US Census Bureau](#))
- Watersheds (source: [Major Hydrological Basins, FAO \(United Nations\)](#))

135°00'W 90°00'W 45°00'W 00°00'E 45°00'E 90°00'E 135°00'E 45°00'S

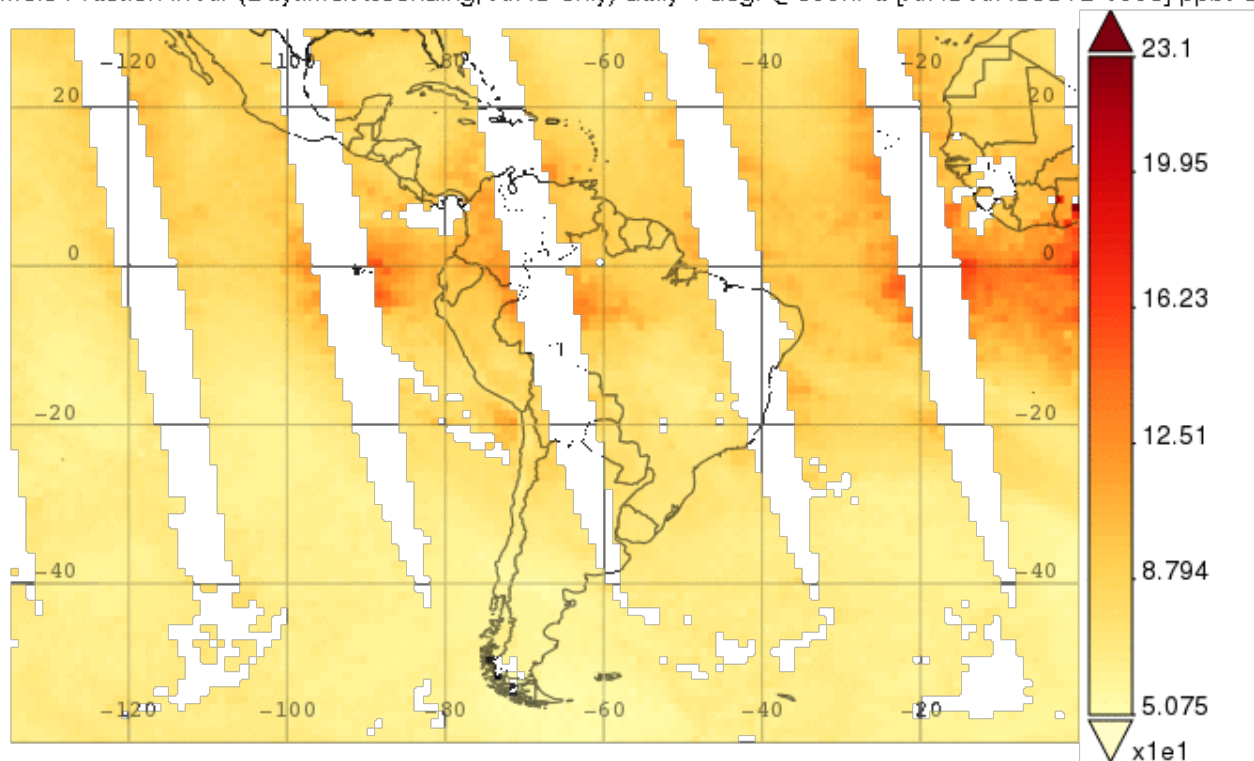
Responsible NASA Official: [Angela Li](#)
Web Curator: [M. Hegde](#)

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Reset Plot Data Go to Results

Giovanni Application: 2019 Amazon Fire AIRS Ascending/Daytime CO at 500hPa Animation, Aug 6 to 25, 2019

Carbon Monoxide, Mole Fraction in Air (Daytime/Ascending, AIRS-only) daily 1 deg. @500hPa [AIRS AIRS3STD v006] ppbv 2019-08-06T00:00:00

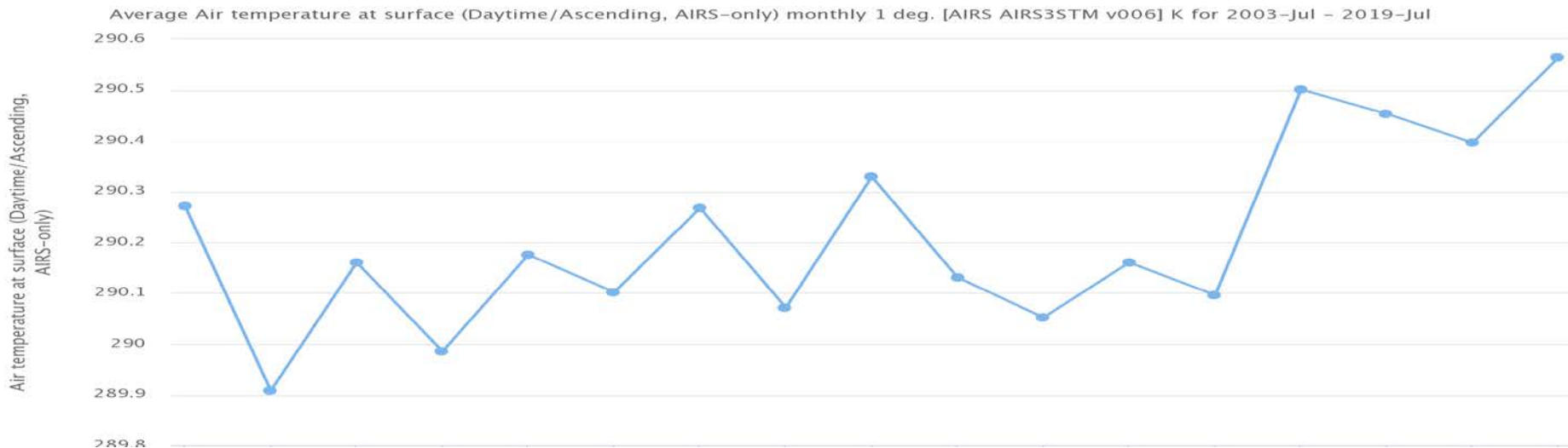


- Selected date range was 2019-08-06 - 2019-08-25. Title reflects the date range of the granules that went into making this result.

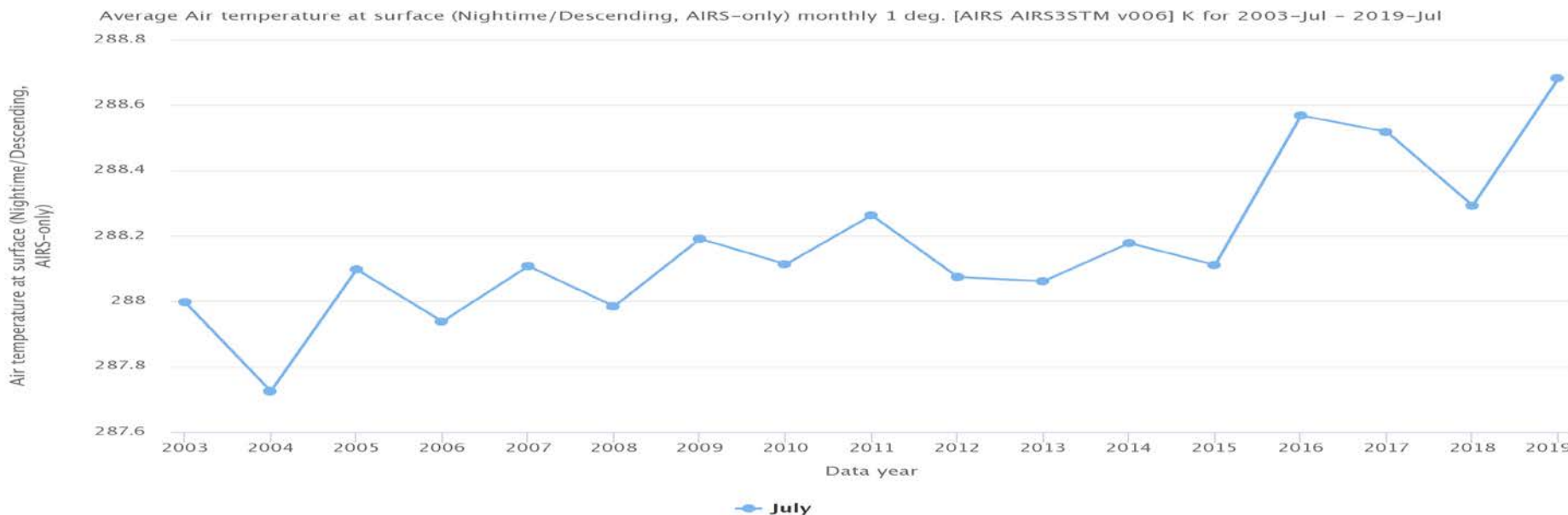
Giovanni Application: Hottest July in 2019

AIRS Global Averaged Surface Temperature, July, 2003 to 2019

Interannual Time Series



Interannual Time Series



GES DISC Newsletter

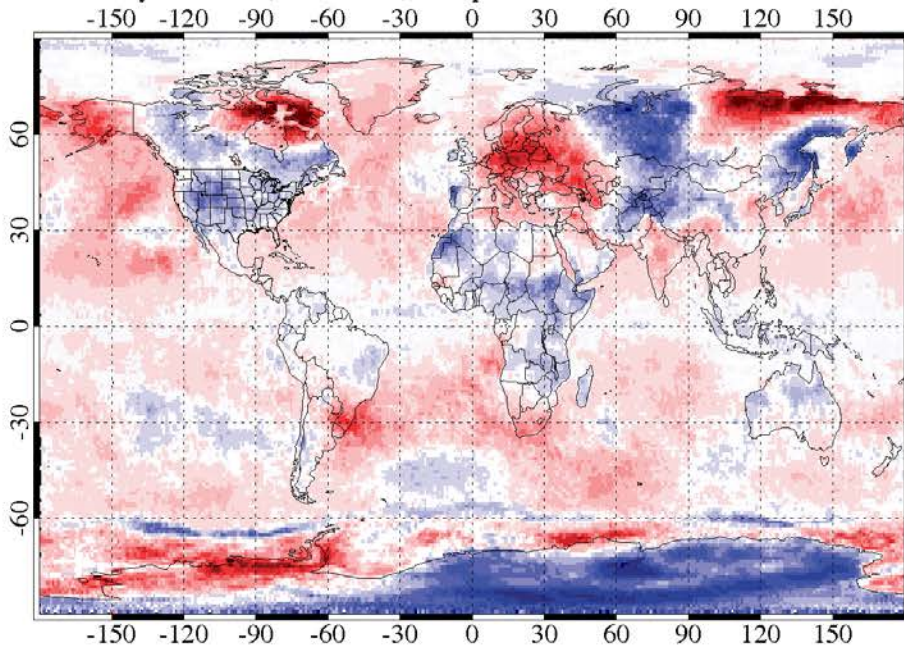
Monthly State of Global Surface Air Temperature from AIRS

Publishing started from June 2019, *Andrey Savtchenko*

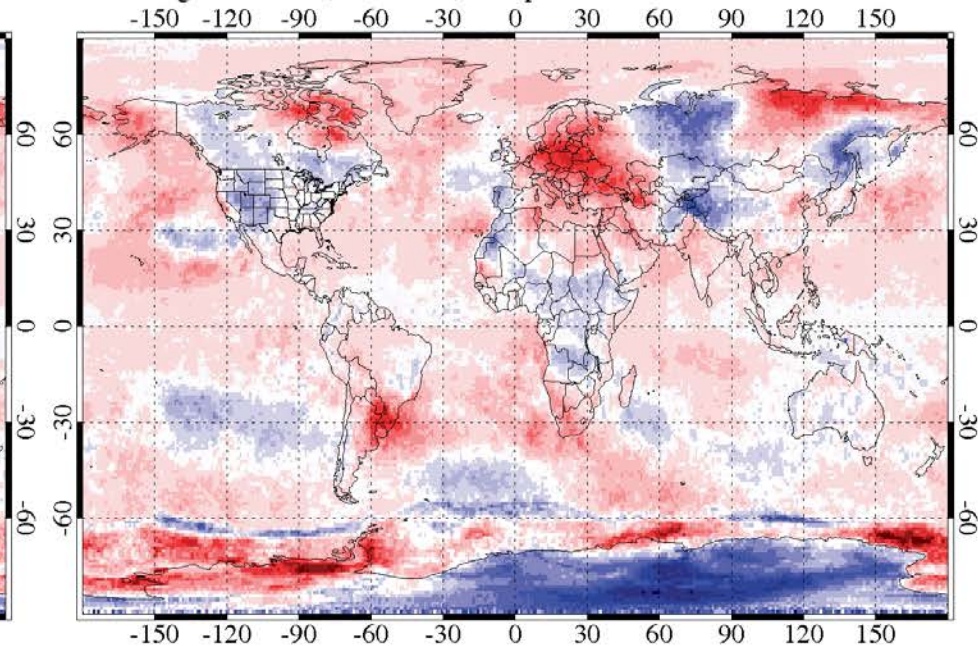
<https://disc.gsfc.nasa.gov/information/news?title=State%20of%20June%2F2019%20global%20surface%20air%20temperatures>

Mean Daytime/Nighttime anomalies, based on 16 years of AIRS data
Daytime/Nighttime increase of frequency of occurrence of the
warmest/coldest 10% temperatures

Mean Day anomalies; June/2019; Base period 16 Years.



Mean Night anomalies; June/2019; Base period 16 Years.



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

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