



AIRS Subsetting Capabilities at the GES-DISC

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Outline

- Existing Capabilities
 - Mirador (<http://mirador.gsfc.nasa.gov>)
 - Simple Subset Wizard (<http://disc.sci.gsfc.nasa.gov/SSW/>)
 - HTTP Services
 - OPeNDAP
 - Scripting
- New and Upcoming Features
 - Pomegranate
 - Compressed Level 3 Subsets
 - THREDDS
 - Unified User Interface (UUI)



Existing Capabilities are Under Development

Since we are in the process of updating our web interface to a Unified User Interface (**UUI**) the appearance of some services may appear different in the near future.

All functionality should remain.

Contact us if you have difficulty finding a particular service.



Current Subsetting Capabilities

- **Level 1 and Level 2**
 - OPeNDAP
 - HTTP Service (used by Mirador and SSW)
 - Pomegranate
 - THREDDS (planned)
- **Level 3**
 - OPeNDAP (used by Mirador and SSW)
 - THREDDS (planned)



Current Web Interfaces for obtaining Subsets

Mirador (<http://mirador.gsfc.nasa.gov>): A data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions

Simple Subset Wizard (<http://disc.sci.gsfc.nasa.gov/SSW/>): A somewhat simpler data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions



Types of Subsets

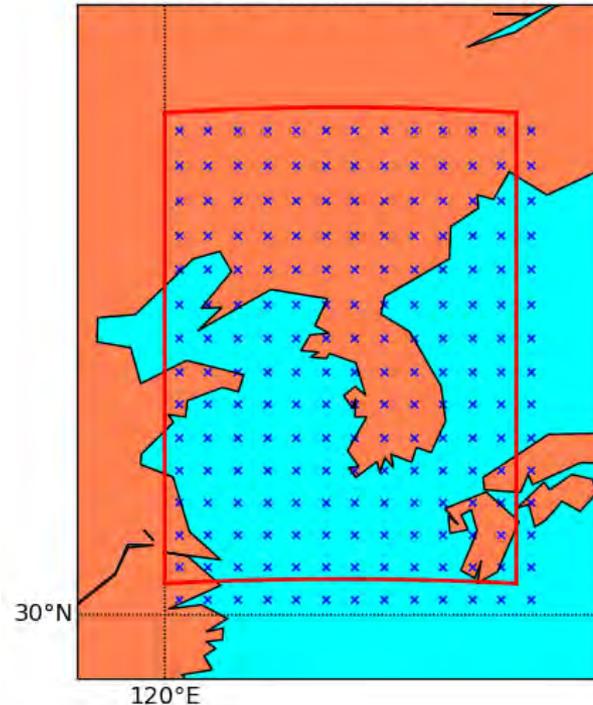
Variable Subsets: A subset of a selected set of Variables (e.g., Radiance, Temperature, etc.). Can also be parts of a multidimensional variable

Spatial Subsets: A subset of a geographical region.



Spatial Subsets of Level 3 Data

L3 Subset W=120,N=45,E=132,S=31

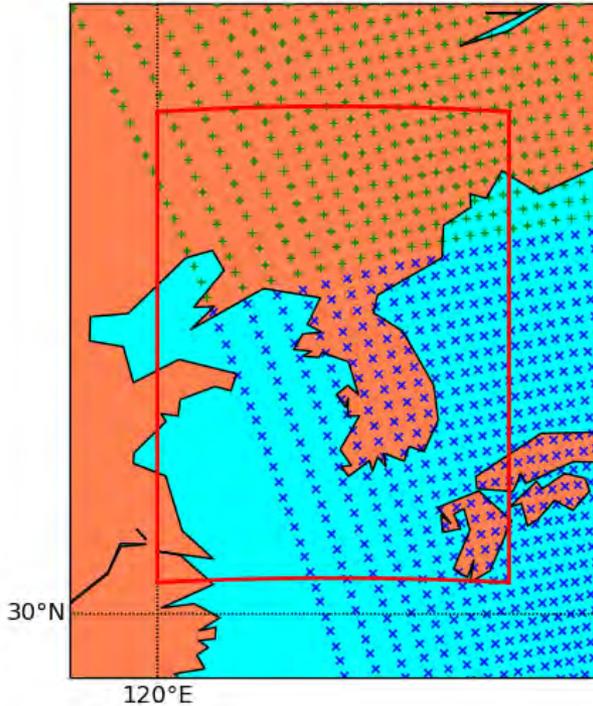


- For Level 3 data Mirador and the Simple Subset Wizard use the same bounding box for spatial searches and spatial subsetting.
- The extra data points outside the request bounding box is a known bug that will be fixed by next week.

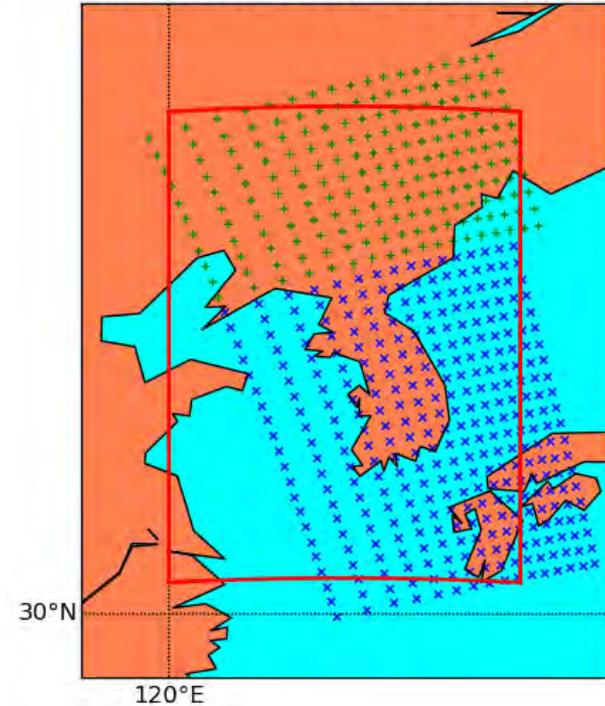


More on Spatial Subsets (Swath Data)

L2 Subset W=120,N=45,E=132,S=31



THREDDS W=120,N=45,E=132,S=31



- Spatial subsetting is currently not available for Level 1 and 2 data through Mirador or the Simple Subset Wizard.
- Users get the entire granule that overlaps with the bounding box (left)
- Is a Level 1 and 2 spatial subset (right) something the Science Team would want?
- My preference would be to have a Level 1 or 2 spatial subset be an option.
- Or stitch the granules together?



Current Web Interfaces for obtaining Subsets

<http://mirador.gsfc.nasa.gov>

Keyword: Time Span: To:

Location: Update Map Search GES-DISC

Map

NORTH AMERICA EUROPE ASIA
Atlantic Ocean
AFRICA
SOUTH AMERICA Indian Ocean AUSTRALIA
Pacific Ocean

Google Terms of Use Report a map error

Advanced Search

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

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Enter values for the Date Range and (optionally) the Spatial Bounding Box to search for data sets; those criteria will also be used when data sets are subsetted by Date Range and Spatial Region.

Enter keywords or click the "Select Data Sets" button.

Data Set Keyword(s) Select Data Sets

Enter dates as YYYY-MM-DD or use the calendars

Date Range to

Enter South, West, North, East coordinates or use the map

Spatial Bounding Box

Search for Data Sets

[Report a Problem with the Simple Subset Wizard](#)



Current Web Interfaces for obtaining Subsets

	Mirador http://mirador.gsfc.nasa.gov	Simple Subset Wizard (SSW) http://disc.sci.gsfc.nasa.gov/SSW
Level 1	1)Predefined Channel Subsets 2)User Defined Channel Subsets	1)Predefined Channel Subsets
Level 2	1)Bounding Box Search 2)Variable Subsets 3)Data Quality Screening	1)Bounding Box Search 2)Variable Subsets
Level 3	1)Variable Subset 2)Spatial Subset	1)Variable Subset 2)Spatial Subset 3)Level 3 “Lite” Virtual Products



Current Web Interfaces for obtaining Subsets

Examples

- Level 2:** Complete examples using both Mirador and the Simple Subset Wizard
- Level 1:** Differences between channel selection in Mirador and the Simple Subset Wizard
- Level 3:** Example of using the Simple Subset Wizard search for the AIRS Level 3 “Lite” products and comparison with the full Level 3 product.



Level 2 Subsets

The next slides demonstrate how to obtain AIRS level 2 subsets using both Mirador and the SSW. For both cases I will search the following:

Keyword: AIRX2RET

Start Time: 2002-09-06

End Time: 2002-09-06 23:59:59

Location: (20,-100),(40,-70)



AIRS Level 2 Subsets using Mirador

Keyword Projects Science Areas

Keyword: AIRX2RET Time Span: 2002-09-06 To: 2002-09-06

Location: (20,-100),(40,-70) Update Map Search GES-DISC

Map

United States

Mexico

Google

Map data ©2015 Google, INEGI Terms of Use

Advanced Search

After entering the Search Criteria click "Search GES-DISC". The Location is optional.



AIRS Level 2 Subsets using Mirador

Click on this link to get v6 of the AIRS+AMSU product.

Keyword Projects Science Areas

Data Sets Results 1 - 4 of 4 for AIRX2RET (1 seconds)

-More Services (e.g. http download, format conversion, subsets etc) are available for the data set(s). Whenever you add files to the shopping cart, you will be presented with options for selecting a service and service parameters for any data set which has these services.

- Aqua AIRS Level 2 Standard Physical Retrieval (AIRS+AMSU) (AIRX2RET)
View Files: [All](#) | [00](#) | [006](#) | Info: [005](#) | [006](#) | Data Calendar: [005](#) | [006](#)
Approx. 20 files found (Avg Size: 2.93 MB)
Parameters: CARBON MONOXIDE, TROPOSPHERIC OZONE, GEOPOTENTIAL HEIGHT, TROPOPAUSE, SURFACE AIR TEMPERATURE, TEMPERATURE PROFILES, CLOUD TOP TEMPERATURE...
Spatial Resolution: 50 kilometers x 50 kilometers
Temporal Resolution: Twice per day; Day and Night; Orbital repeat cycle 16 days
- AIRS/Aqua Level 2 CO2 in the free troposphere (AIRS+AMSU) (AIRX2STC)
[View Files](#) | [Info](#)
Approx. 10 files found (Avg Size: 0.30 MB)
Parameters: CARBON DIOXIDE
Spatial Resolution: 110 km x 110 km
Temporal Resolution: 6 Minute(s)
- Aqua AIRS L2 Standard Physical Retrieval (AIRS+AMSU+HSB) (AIRH2RET)
View Files: [All](#) | [005](#) | [006](#) | Info: [005](#) | [006](#) | Data Calendar: [005](#) | [006](#)
Approx. 20 files found (Avg Size: 2.94 MB)
Parameters: GEOPOTENTIAL HEIGHT, BRIGHTNESS TEMPERATURE, SULFUR DIOXIDE, CLOUD FRACTION, CLOUD FREQUENCY
Spatial Resolution: 50 kilometers x 50 kilometers
Temporal Resolution: Twice per day; Day and Night; Orbital repeat cycle 16 days
- Aqua AIRS Level 2 Standard Physical Retrieval (AIRS-only) (AIRS2RET)
[View Files](#) | [Info](#) | [Data Calendar](#)
Approx. 10 files found (Avg Size: 3.03 MB)
Parameters: TROPOPAUSE, SURFACE PRESSURE, AIR TEMPERATURE, SKIN TEMPERATURE, SURFACE TEMPERATURE, PRECIPITABLE WATER, CLOUD VERTICAL DISTRIBUTION...
Spatial Resolution: 50 kilometers x 50 kilometers
Temporal Resolution: Twice per day; Day and Night; Orbital repeat cycle 16 days

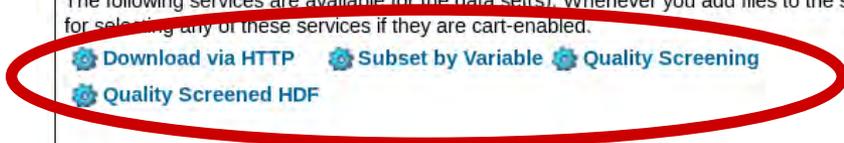
In order to show you only the results which match ALL of your search criteria, we have omitted collections that match your keyword but not your time and space constraints. If you like, you can [repeat the search](#) with these omitted collections included.

Select All Reset List Selected Files By Time See Timeline View Add Selected Files To Cart



AIRS Level 2 Subsets using Mirador

These services can be selected after adding the files to the cart.



Several **One Click Download** options are available for downloading individual files:

- Quality Screened
- HTTP (original file)
- OPeNDAP url

Results 1 - 9 for AIRX2RET (1 second)

Filter by version: 006 Day/night: All

Aqua AIRS Level 2 Standard Physical Retrieval (AIRS AMSU) [Info](#)

The following services are available for the data set(s). Whenever you add files to the shopping cart, you will be presented with options for selecting any of these services if they are cart-enabled.

[Download via HTTP](#) [Subset by Variable](#) [Quality Screening](#)
[Quality Screened HDF](#)

<input checked="" type="checkbox"/> Select All in Page <input type="checkbox"/> File Names/Descriptive File Names	Start Time
<input checked="" type="checkbox"/> AIRS.2002.09.06.193.L2.RetStd.v6.0.7.0.G13202074101.hdf (3.45 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 19:17:26 (Day) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.192.L2.RetStd.v6.0.7.0.G13202074159.hdf (3.67 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 19:11:26 (Day) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.177.L2.RetStd.v6.0.7.0.G13202073726.hdf (3.66 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 17:41:26 (Day) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.176.L2.RetStd.v6.0.7.0.G13202073907.hdf (3.63 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 17:35:26 (Day) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.175.L2.RetStd.v6.0.7.0.G13202074703.hdf (3.55 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 17:29:26 (Day) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.083.L2.RetStd.v6.0.7.0.G13202071726.hdf (3.64 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 08:17:26 (Night) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.082.L2.RetStd.v6.0.7.0.G13202071559.hdf (3.55 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 08:11:26 (Night) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.067.L2.RetStd.v6.0.7.0.G13202071551.hdf (3.66 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 06:41:26 (Night) Metadata
<input checked="" type="checkbox"/> AIRS.2002.09.06.066.L2.RetStd.v6.0.7.0.G13202071717.hdf (3.59 MB) One Click Download: HDF (Quality Screened) HDF (HTTP) OPeNDAP	2002-09-06 06:35:26 (Night) Metadata

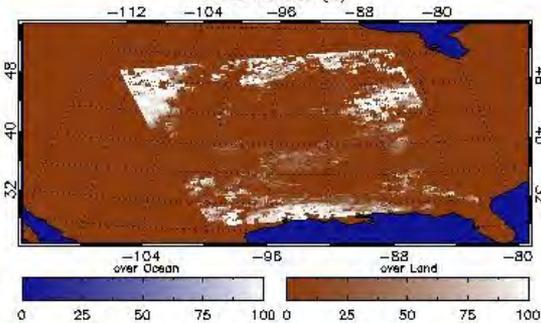


AIRS Level 2 Subsets using Mirador

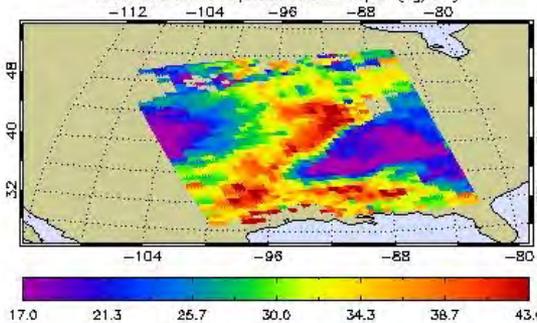
AIRS Level-2 Standard Retrieval Quick Browse Image

Sep 06, 2002 19:17:26 UTC Granule 193

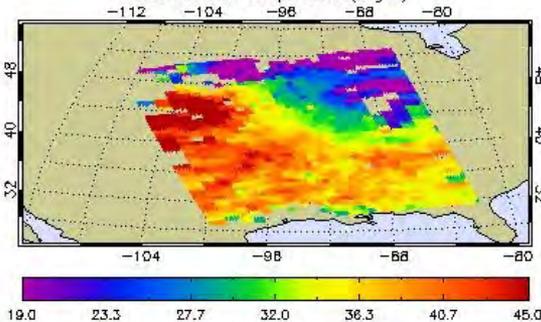
Cloud Fraction (%)



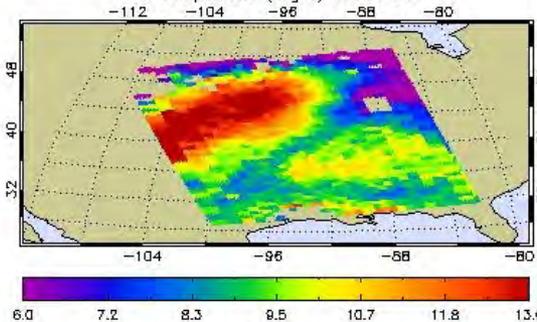
Total Column Precipitable Water Vapor (kg/m²)



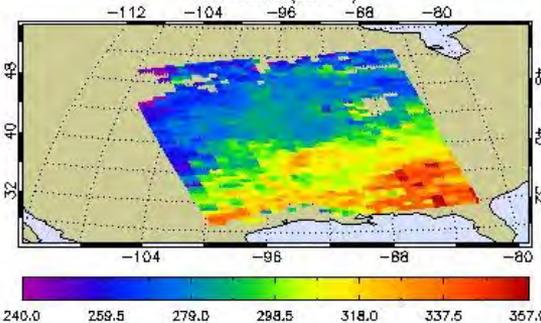
Surface Skin Temperature (deg C)



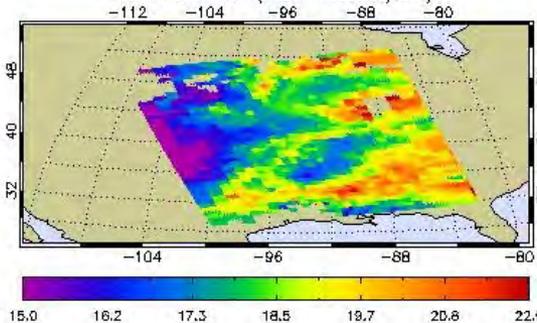
Air Temperature (deg C) at 700 mb



Total Ozone (Dobson)



Total Column CO (x10¹⁷ molecules/cm²)



Granule Id = AIRS.2002.09.06.193.L2.RetStd.v6.0.7.0.G13202074101.hdf

Keyword Projects Science Areas

9 for AIRS2RET (1 second)

06

Day/night: All

(AIRS AMSU) Info

Whenever you add files to the shopping cart, you will be presented with options

Quality Screening

The icons are linked to granule browse images

Add To Cart

File Names	Start Time
4101.hdf (3.45 MB) HTTP OPeNDAP	2002-09-06 19:17:26 (Day) Metadata
4159.hdf (3.67 MB) HTTP OPeNDAP	2002-09-06 19:11:26 (Day) Metadata
3726.hdf (3.66 MB) HTTP OPeNDAP	2002-09-06 17:41:26 (Day) Metadata
3907.hdf (3.63 MB) HTTP OPeNDAP	2002-09-06 17:35:26 (Day) Metadata
4703.hdf (3.55 MB) HTTP OPeNDAP	2002-09-06 17:29:26 (Day) Metadata
1726.hdf (3.64 MB) HTTP OPeNDAP	2002-09-06 08:17:26 (Night) Metadata
1559.hdf (3.55 MB) HTTP OPeNDAP	2002-09-06 08:11:26 (Night) Metadata
1551.hdf (3.66 MB) HTTP OPeNDAP	2002-09-06 06:41:26 (Night) Metadata
1717.hdf (3.59 MB) HTTP OPeNDAP	2002-09-06 06:35:26 (Night) Metadata

Add Selected Files To Cart

Add All Files in All Pages To Cart



AIRS Level 2 Subsets using Mirador

Keyword Projects Science Areas

Service Selection

Total Number of Files being added to the Cart is 9

Instructions for Service Selection

- Data set files added to the cart have their corresponding services, and only one service can be selected per data set.
- To enable a service, select the radio button for any of the available services.
- Selecting a service that has subsetting will take you to a Service Options page and then back to this page.
- To change options for a service you have already selected, click on the "Edit" button.
- After choosing your services, click "Continue to Cart" to proceed, or click "Cancel" to return to your search results.

Data Set(s) Being Added to Shopping Cart

Aqua AIRS Level 2 Standard Physical Retrieval (AIRS+AMSU) (AIRX2RET.006)

Select Service Option: None Download via HTTP Quality Screening... Subset by Variable...

- **None** will provide ftp links
- **Download via HTTP** will provide http links
- **Quality Screening and Subset by Variable** both enable both subsetting by variable, data quality screening, and format conversion.



AIRS Level 2 Subsets using Mirador

Selecting
Quality Screening
Or
Subset by Variable
results in the following
interface:

- The quality thresholds can be set for each variable.
- The output files can also be converted to netCDF

AIRX2RET.006 - Quality Screening and Variable Subsetting Service Options

Quality-Screen and Subset Variables for AIRX2RET. Each variable in a data file can be screened following procedures prescribed by the AIRS Science team, or excluded completely from the output. ([more info](#)) For more information on each of the variables see: [Variable Explanation](#). Documentation on the Quality Screening process: [Quality Criteria Explanation](#)

Quality Screening and Variable Subsetting

Output Format Options



Submit

Quality Screening Global Selections:

Best * Good ** NoScreening DoNotInclude

You may refine your selections below.

Select **Good** to screen all variables to follow Science Team criteria)

SUBSETTING Choice: Select **DoNotInclude** to remove the variable from the subset

Variable Refinement Selection

Moisture_Variables

Best * Good ** NoScreening DoNotInclude

H2OMMRStd Best Good NoScreening DoNotInclude

H2OMMRLevStd Best Good NoScreening DoNotInclude

H2OMMRSat Best Good NoScreening DoNotInclude

RelHumSurf Best Good NoScreening DoNotInclude

totClH2OStd Best Good NoScreening DoNotInclude

totH2OMWOnlyStd Best Good NoScreening DoNotInclude

totH2OStd Best Good NoScreening DoNotInclude

RelHum Best Good NoScreening DoNotInclude

RelHumSurf_liquid Best Good NoScreening DoNotInclude

RelHum_liquid Best Good NoScreening DoNotInclude



AIRS Level 2 Subsets using Mirador

Selecting **netCDF**, **DoNotInclude** globally and **Best** for totH2OStd will result in a variable subset of the best quality totH2OStd.

The Submit button will send you back to the **Continue to Cart** page

AIRX2RET.006 - Quality Screening and Variable Subsetting Service Options

Quality-Screen and Subset Variables for AIRX2RET. Each variable in a data file can be screened following procedures prescribed by the AIRS Science team, or excluded completely from the output. ([more info](#)) For more information on each of the variables see: [Variable Explanation](#). Documentation on the Quality Screening process: [Quality Criteria Explanation](#)

Quality Screening and Variable Subsetting

Output Format Options



Submit

Quality Screening Global Selections:

Best * Good ** NoScreening DoNotInclude

You may refine your selections below.

Select **Good** to screen all variables to follow Science Team criteria)

SUBSETTING Choice: Select **DoNotInclude** to remove the variable from the subset

Variable Refinement Selection

Moisture_Variables Best * Good ** NoScreening DoNotInclude

H2OMMRStd	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
H2OMMRLevStd	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
H2OMMRSat	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
RelHumSurf	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
totClH2OStd	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
totH2OMWOnlyStd	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
totH2OStd	<input checked="" type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input type="radio"/> DoNotInclude
RelHum	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude
RelHumSurf_liquid	<input type="radio"/> Best <input type="radio"/> Good <input type="radio"/> NoScreening <input checked="" type="radio"/> DoNotInclude



AIRS Level 2 Subsets using Mirador

Keyword Projects Science Areas

Service Selection Total Number of Files being added to the Cart is **9**

Instructions for Service Selection

- Data set files added to the cart have their corresponding services, and only one service can be selected per data set.
- To enable a service, select the radio button for any of the available services.
- Selecting a service that has subsetting will take you to a Service Options page and then back to this page.
- To change options for a service you have already selected, click on the "Edit" button.
- After choosing your services, click "Continue to Cart" to proceed, or click "Cancel" to return to your search results.

Data Set(s) Being Added to Shopping Cart

Aqua AIRS Level 2 Standard Physical Retrieval (AIRS+AMSU) (AIRX2RET.006)

Select Service Option: None ... Download via HTTP Quality Screening... Subset by Variable...

We can now "Continue to Cart"



AIRS Level 2 Subsets using Mirador

Shopping Cart - By Data Set Name

Keyword Projects Science Areas

Your cart contains 9 items (32.41 MB)

Sort by: Data Set

Aqua AIRS Level 2 Standard Physical Retrieval (AIRS+AMSU) (AIRX2RET v.006 Subset by Variable): 9 Items

Page: 1

And then "Checkout"



AIRS Level 2 Subsets using Mirador

Basic Download

More Download Options

Your cart will automatically be emptied when you select any download option unless you choose to keep the items.

Keep items in the cart after selecting a download option

Download Data (with wget, curl, etc.)

[URL List \(Data\)](#)

[URL List \(Metadata\)](#)

[URL List \(Data and Metadata\)](#)

Instructions:

wget:

For use with wget, please make sure that the wget version is at least 1.11.1; run `wget -V` to find the version.

(You can download version 1.11.1 of wget [here](#).)

Save the list of URLs in one of the above links to your local workstation as `myfile.dat`

On your command line:

```
wget --content-disposition -i myfile.dat
```

If wget version 1.11.1 is not available on your system and cannot be installed, see [More Options...](#) for alternatives.

[More Options...](#)

You can now get a URL list of the Data, Metadata, or both.



AIRS Level 2 Subsets using Mirador

ftp://airs12.gesdisc.eosdis.nasa.gov/data/s4pa/Aqua_AIRS_Level2/AIRX2RET.006/doc/README.AIRS_V6.pdf

[Here is 1 url with the readme that is always included.](http://airs12.gesdisc.eosdis.nasa.gov/daac-bin/OTF/HTTP_services.cgi?FILENAME=%2Fdata%2Fs4pa%2FAqua_AIRS_Level2%2FAIRX2RET.006%2F2002%2F249%2FAIRS.2002.09.06.193.L2.RetStd.v6.0.7.0.G13202074101.hdf&FORMAT=TmV0Q0RGLw&LABEL=AIRS.2002.09.06.193.L2.QCSUBX2RET.v6.0.7.0.G13202074101.nc&FLAGS=&SHORTNAME=AIRX2RET&SERVICE=SUBAIRSL2_DQS&VERSION=1.02&DATASET_VERSION=006&VARIABLES=H2OMMRStd.DoNotInclude%2CH2OMMRLevStd.DoNotInclude%2CH2OMMRSat.DoNotInclude%2CRelHumSurf.DoNotInclude%2CtotCldH2OStd.DoNotInclude%2CtotH2OMWOnlyStd.DoNotInclude%2CtotH2OStd.Include.Best%2CH2OMMRLevStd_QC.Include%2CH2OMMRSat_QC.Include%2CH2OMMRSat_liquid_QC.Include%2CH2OMMRStd_QC.Include%2CtotCldH2OStd_QC.Include%2CtotH2OMWOnlyStd_QC.Include%2CtotH2OStd_QC.Include%2CRelHumSurf_QC.Include%2CRelHum_QC.Include%2CRelHumSurf_liquid_QC.Include%2CRelHum_liquid_QC.Include%2CH2OMMRSatSurf_QC.Include%2CH2OMMRSatSurf_liquid_QC.Include%2CH2OMMRSatLevStd_QC.Include%2CH2OMMRSatLevStd_liquid_QC.Include%2CH2OMMRSurf_QC.Include%2CRelHum.DoNotInclude%2CRelHumSurf_liquid.DoNotInclude%2CRelHum_liquid.DoNotInclude%2CH2OMMRSatSurf_liquid.DoNotInclude%2CH2OMMRSatLevStd_liquid.DoNotInclude%2CH2OMMRSatSurf.DoNotInclude%2CH2OMMRSurf.DoNotInclude%2CH2OMMRSat_liquid.DoNotInclude%2CH2OMMRSatLevStd.DoNotInclude%2CTSufStd.DoNotInclude%2CTAirStd.DoNotInclude%2CTAirMWOnlyStd.DoNotInclude%2CTSufAir.DoNotInclude%2CCldFrcStd.DoNotInclude%2CCldFrcTot.DoNotInclude%2CPCldTop.DoNotInclude%2CTCldTop.DoNotInclude%2Cclr3x3.DoNotInclude%2Clr.DoNotInclude%2Cclrolr.DoNotInclude%2CCO_total_column.DoNotInclude%2CCOVMRLevStd.DoNotInclude%2CCH4VMRLevStd.DoNotInclude%2CCH4_total_column.DoNotInclude%2CO3VMRLevStd.DoNotInclude%2CO3VMRStd.DoNotInclude%2CtotO3Std.DoNotInclude%2CGP_Surface.DoNotInclude%2CEmisMWStd.DoNotInclude%2CGP_Height.DoNotInclude%2CGP_Tropopause.DoNotInclude%2CGP_Height_MWOnly.DoNotInclude%2CsfcTbMWStd.DoNotInclude%2CemisIRStd.DoNotInclude%2CnadirTAI.DoNotInclude%2Csat_lat.DoNotInclude%2Csatroll.DoNotInclude%2Cglintlon.DoNotInclude%2Cscan_node_type.DoNotInclude%2Cglintlat.DoNotInclude%2Csatpitch.DoNotInclude%2Csatheight.DoNotInclude%2Csatyaw.DoNotInclude%2Csat_lon.DoNotInclude%2Cglintgeoqa.DoNotInclude%2Cmoongoqa.DoNotInclude%2Csatgeoqa.DoNotInclude%2Cdemgeoqa.DoNotInclude%2Csatazi.DoNotInclude%2Ctopog_err.DoNotInclude%2Csun_glint_distance.DoNotInclude%2Csolazi.DoNotInclude%2ClandFrac_err.DoNotInclude%2ClandFrac.DoNotInclude%2Ctopog.DoNotInclude%2Csolzen.DoNotInclude%2Cftptgeoqa.DoNotInclude%2Czengeoqa.DoNotInclude%2Csatzen.DoNotInclude%2CGP_Surface.DoNotInclude%2CTdiff_IR_4CC1.DoNotInclude%2CCC1_noise_eff_amp_factor.DoNotInclude%2CEmisMWStd.DoNotInclude%2CGP_Tropopause.DoNotInclude%2CEmisMWStdErr.DoNotInclude%2CSurf_Resid_Ratio.DoNotInclude%2CnumHingeSurf.DoNotInclude%2Call_spots_avg.DoNotInclude%2CCloud_Resid_Ratio.DoNotInclude%2CInitial_CC_score.DoNotInclude%2CsfcTbMWStd.DoNotInclude%2CTSufdiff_IR_4CC1.DoNotInclude%2CCC1_Resid.DoNotInclude%2CRetQAFlag.DoNotInclude%2CAMSU_Chans_Resid.DoNotInclude%2Cspectral_clear_indicator.DoNotInclude%2CWater_Resid_Ratio.DoNotInclude%2CTdiff_IR_MW_ret.DoNotInclude%2Cstartup.DoNotInclude%2CQual_Guess_PSurf.DoNotInclude%2CGP_Height_MWOnly.DoNotInclude%2CMW_ret_used.DoNotInclude%2CCCfinal_Noise_Amp.DoNotInclude%2CPTropopause.DoNotInclude%2Cretrieval_type.DoNotInclude%2CGP_Height.DoNotInclude%2CTotCld_4_CCfinal.DoNotInclude%2CCC_noise_eff_amp_factor.DoNotInclude%2CCCfinal_Resid.DoNotInclude%2CT_Tropopause.DoNotInclude%2CTemp_Resid_Ratio.DoNotInclude%2Cdust_flag.DoNotInclude%2CTSufdiff_IR_4CC2.DoNotInclude%2Cnum_clear_spectral_indicator.DoNotInclude</p></div><div data-bbox=)





AIRS Level 2 Subsets using Mirador

In unix you can get all of the files in the list as follows:

```
> wget --content-disposition -i urlist.txt
```



AIRS Level 2 Subsets using the SSW

Now the simpler way using the Simple Subset Wizard (SSW)



AIRS Level 2 Subsets using the SSW

SIMPLE SUBSET WIZARD (SSW)

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Enter values for the Date Range and (optionally) the Spatial Bounding Box to search for data sets; those criteria will also be used when data sets are subsetted by Date Range and Spatial Region.

Enter keywords or click the "Select Data Sets" button:

Data Set Keyword(s)

Enter dates as YYYY-MM-DD or use the calendars:

Date Range to

Enter South, West, North, East coordinates or use the map:

Spatial Bounding Box

[Report a Problem with the Simple Subset Wizard](#)

Slightly different syntax for the Bounding Box which is also optional.



AIRS Level 2 Subsets using the SSW

SIMPLE SUBSET WIZARD (SSW)

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Found 2 subsettable data sets.

- + [Subset: Variables](#) for [AIRX2RET v005](#) in
- + [Subset: Variables](#) for [AIRX2RET v006](#) in

[Back to Search](#) [Subset Selected Data Sets](#) [View Subset Results](#)

[Report a Problem with the Simple Subset Wizard](#)

The keyword **AIRX2RET** returns both version 5 and version 6 data.

Using **AIRX2RET 006** as the keyword will include include just Version 6 data.



AIRS Level 2 Subsets using the SSW

Individual variables or groups of variables can be selected.

Currently, subsets can be created in HDF or gzipped HDF format. When we start using OpENDAP for Level 2 subsets, HDF format will no longer be available. Subsets will be in netCDF4 or ASCII format.

After selecting the variables to subset, click “Subset Selected Data Sets.”

Found 2 subsettable data sets.

[Subset: Variables for AIRX2RET v005](#) in

[Subset: Variables for AIRX2RET v006](#) in

Number of Variables selected=2

- Air Temperature Variables
- Ancillary Along-Track Data Fields
- Ancillary Full-Swath Geolocation Fields
- Ancillary Full-Swath Surface Information from Geolocation
- Ancillary Per-Granule Data Fields
- Attributes
- Carbon Monoxide Variables
- Cloud Formation Variables on 3 by 3 AIRS Fields of View
- Geolocation Fields
- Geolocation QA Variables
- Methane Variables
- Microwave Dependent Variables
- Miscellaneous Variables
- Outgoing Longwave Radiation Variables
 - olr
 - olr_QC
 - olr3x3
 - olr3x3_QC
 - olr_err
 - clrolr
 - clrolr_QC
 - clrolr_err
- Ozone Variables
- Quality Indicator Pressure Boundary Variables
- Relative Humidity and Geopotential Height Variables from Temperature and Water Vapor
- Surface Property Variables
- Tropopause Variables Derived from Temperature
- Water Vapor Saturation Variables Derived from Temperature
- Water Vapor Variables

[Back to Search](#)

[Subset Selected Data Sets](#)

[View Subset Results](#)



AIRS Level 2 Subsets using the SSW

SIMPLE SUBSET WIZARD (SSW)

1. Search for Data Sets | 2. Select Subset Criteria | 3. View Results

All subset requests were completed

+ [Subset: Variables](#) for [AIRX2RET v005](#) in

+ [Subset: Variables](#) for [AIRX2RET v006](#) in

Number of Variables selected=2

[Back to Search](#)

[Subset Selected Data Sets](#)

[View Subset Results](#)

[Report a Problem with the Simple Subset Wizard](#)

View Subset Results will go to list of download urls.



AIRS Level 2 Subsets using the SSW

SIMPLE SUBSET WIZARD (SSW)

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Subset: Variables for AIRX2RET v006
(Get [list of URLs](#) for this subset in a file) ([Downloading instructions](#))

1. [AIRS.2002.09.06.066.L2.SUBX2RET.v6.0.7.0.G13202071717.hdf](#)
2. [AIRS.2002.09.06.067.L2.SUBX2RET.v6.0.7.0.G13202071551.hdf](#)
3. [AIRS.2002.09.06.082.L2.SUBX2RET.v6.0.7.0.G13202071559.hdf](#)
4. [AIRS.2002.09.06.083.L2.SUBX2RET.v6.0.7.0.G13202071726.hdf](#)
5. [AIRS.2002.09.06.175.L2.SUBX2RET.v6.0.7.0.G13202074703.hdf](#)
6. [AIRS.2002.09.06.176.L2.SUBX2RET.v6.0.7.0.G13202073907.hdf](#)
7. [AIRS.2002.09.06.177.L2.SUBX2RET.v6.0.7.0.G13202073726.hdf](#)
8. [AIRS.2002.09.06.192.L2.SUBX2RET.v6.0.7.0.G13202074159.hdf](#)
9. [AIRS.2002.09.06.193.L2.SUBX2RET.v6.0.7.0.G13202074101.hdf](#)

[Start Over](#) [Back to Subset Criteria](#)

[Report a Problem with the Simple Subset Wizard](#)

The files can be downloaded either by clicking on the links or downloading the “list of URLs”.

The list of URLs can be downloaded using wget as follows:

```
> wget --content-disposition -i urlist.txt
```



Level 1 radiance Subsets

<http://mirador.gsfc.nasa.gov>

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

Service Options

This AIRS subsetting service allows you to subset by channel. Specify the channel(s) to subset and this interface will prepare the URLs in your cart and subset the files when you download them.

Submit Selected Criteria		
AIRIBRAD.005		
Channel Number Range (Maximum Number of Channels is 1000)	Frequency Range	Comments
<input type="checkbox"/> 1-130	649.61 - 681.99cm-1	Long-wave temperature sounding
<input type="checkbox"/> 131-274	687.60 - 728.44cm-1	Long-wave temperature sounding
<input type="checkbox"/> 275-441	728.06 - 781.88cm-1	Long-wave surface
<input type="checkbox"/> 442-608	789.26 - 852.43cm-1	Long-wave surface
<input type="checkbox"/> 609-769	851.49 - 903.78cm-1	Long-wave surface
<input type="checkbox"/> 770-936	911.24 - 974.29cm-1	Long-wave surface
<input type="checkbox"/> 937-1103	973.82 - 1046.20cm-1	Ozone
<input type="checkbox"/> 1104-1262	1056.10 - 1136.66cm-1	Long-wave surface, Ozone
<input type="checkbox"/> 1263-1368	1216.97 - 1272.59cm-1	Water vapor
<input type="checkbox"/> 1369-1462	1284.35 - 1338.86cm-1	Water vapor, methane
<input type="checkbox"/> 1463-1654	1338.16 - 1443.07cm-1	Water vapor
<input type="checkbox"/> 1655-1760	1460.27 - 1527.00cm-1	Water vapor
<input type="checkbox"/> 1761-1864	1541.10 - 1613.86cm-1	Water vapor
<input type="checkbox"/> 1865-2014	2181.50 - 2325.06cm-1	Shortwave temperature sounding, CO
<input type="checkbox"/> 2015-2144	2299.80 - 2422.85cm-1	Shortwave temperature sounding
<input type="checkbox"/> 2145-2260	2446.20 - 2569.75cm-1	Shortwave Surface
<input type="checkbox"/> 2261-2378	2541.90 - 2665.24cm-1	Shortwave Surface

Option 2: Specify multiple channel numbers or multiple ranges (e.g., 1 2 3 4 5 or 1-5).
Channel Number:

Submit Selected Criteria

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Found 1 subtable data set.

Subset: Channel Ranges for AIRIBRAD v005 in HDF

- Channel Range 1-130, Frequency Range 649.61/cm - 681.99/cm (Long-wave temperature sounding)
- Channel Range 131-274, Frequency Range 687.60/cm - 728.44/cm (Long-wave temperature sounding)
- Channel Range 275-441, Frequency Range 728.06/cm - 781.88/cm (Long-wave surface)
- Channel Range 442-608, Frequency Range 789.26/cm - 852.43/cm (Long-wave surface)
- Channel Range 609-769, Frequency Range 851.49/cm - 903.78/cm (Long-wave surface)
- Channel Range 770-936, Frequency Range 911.24/cm - 974.29/cm (Long-wave surface)
- Channel Range 937-1103, Frequency Range 973.82/cm - 1046.20/cm (Ozone)
- Channel Range 1104-1262, Frequency Range 1056.10/cm - 1136.66/cm (Long-wave surface, Ozone)
- Channel Range 1263-1368, Frequency Range 1216.97/cm - 1272.59/cm (Water vapor)
- Channel Range 1369-1462, Frequency Range 1284.35/cm - 1338.86/cm (Water vapor, methane)
- Channel Range 1463-1654, Frequency Range 1338.16/cm - 1443.07/cm (Water vapor)
- Channel Range 1655-1760, Frequency Range 1460.27/cm - 1527.00/cm (Water vapor)
- Channel Range 1761-1864, Frequency Range 1541.10/cm - 1613.86/cm (Water vapor)
- Channel Range 1865-2014, Frequency Range 2181.50/cm - 2325.06/cm (Shortwave temperature sounding, CO)
- Channel Range 2015-2144, Frequency Range 2299.80/cm - 2422.85/cm (Shortwave temperature sounding)
- Channel Range 2145-2260, Frequency Range 2446.20/cm - 2569.75/cm (Shortwave surface)
- Channel Range 2261-2378, Frequency Range 2541.90/cm - 2665.24/cm (Shortwave surface)

Back to Search | Subset Selected Data Sets | View Subset Results

[Report a Problem with the Simple Subset Wizard](#)

- Mirador and the SSW both allow subsets for the same fixed channel ranges.
- Mirador also allows user defined channel subsets, however, the channels must be contiguous.
- Spatial Subsetting of individual granules is not supported.
- Subsetted Files can be downloaded in HDF or gzipped HDF format.



Level 3 Subsets in Mirador and the SSW

- OPeNDAP is used for subsetting so files are in ASCII or NetCDF
- Similar to the examples
- Since there are 785 variables in the Level 3 files, it is not possible to create very large subsets because of a url restriction
- An upgrade to a new version of Hyrax OPeNDAP allows subsets to be downloaded in NetCDF-4 (with internal compression) as well as NetCDF-3 (no compression).
- Previously large subsets could be larger than the original hdf files which have internal compression.



Level 3 Lite products in the Simple Subset Wizard

Since Selecting from a list of 785 variables can be tedious and the Version 6 Level 3 files are very large (~ 400 MB), we created “Lite” versions of the Level 3 products that are available through the Simple Subset Wizard.

These virtual products only offer the mean value and the counts for each variable thus reducing the number of variables from **785** to **132** and reducing the file sizes (in NetCDF4 format) by a factor of 7 (e.g., from **400 MB** to **53 MB**).



Level 3 Subsets in the Simple Subset Wizard

1. Search for Data Sets 2. Select Subset Criteria 3. View Results

Enter values for the Date Range and (optionally) the Spatial Bounding Box to search for data sets; those criteria will also be used when data sets are subsetted by Date Range and Spatial Region.

Enter keywords or click the 'Select Data Sets' button:

Data Set Keyword(s)

AIERS Lite

Select Data Sets

Enter dates as YYYY-MM-DD or use the calendars:

Date Range

2002-09-06 to 2002-09-06

Enter South, West, North, East coordinates or use the map:

Spatial Bounding Box

 Search for Data Sets

[Report a Problem with the Simple Subset Wizard](#)



Level 3 Subsets in the Simple Subset Wizard

1. Search for Data Sets **2. Select Subset Criteria** 3. View Results

Found 4 subsettable data sets.

- [Subset: Selected Standard Variables from AIRX3STD v006 for AIRX3STDLite v006](#) in netCDF
- [Subset: Selected Standard Variables from AIRX3STM v006 for AIRX3STMLite v006](#) in netCDF
- [Subset: Selected Standard Variables from AIRX3STD v006 for AIRX3STDLiteTqJ v006](#) in netCDF
- [Subset: Selected Standard Variables from AIRX3STM v006 for AIRX3STMLiteTqJ v006](#) in netCDF

[Back to Search](#)

[Subset Selected Data Sets](#)

[View Subset Results](#)

[Report a Problem with the Simple Subset Wizard](#)



Level 3 Subsets in the Simple Subset Wizard

The AIRX3STMLite product has 132 variables from which to choose

The AIRX3STM has 785 variables from which to choose

Found 4 subtableable data sets.

- Subset: Selected Standard Variables from AIRX3STD v006 for AIRX3STDLite v006 in netCDF
- Subset: Selected Standard Variables from AIRX3STM v006 for AIRX3STMLite v006 in netCDF**
- Subset: Selected Standard Variables from AIRX3STD v006 for AIRX3STDLiteTqJ v006 in netCDF
- Subset: Selected Standard Variables from AIRX3STM v006 for AIRX3STMLiteTqJ v006 in netCDF

Number of Selected Standard Variables from AIRX3STM v006 selected=2

- Ancillary Variables
- Cloud Layer Variables (3-D)
- Cloud Total Column and Cloud Top Variables (2-D)
- Geopotential Height Variables
- Moisture Profile Variables (3-D)
- Moisture Total Column and Surface Variables (2-D)
- Radiation Variables
- Surface Pressure Variables
- Temperature Profile Variables (3-D)
- Temperature Surface Variables (2-D)
 - ascending:SurfAirTemp_A
 - ascending:SurfAirTemp_A_ct
 - descending:SurfAirTemp_D
 - descending:SurfAirTemp_D_ct
 - ascending:SurfSkinTemp_A
 - ascending:SurfSkinTemp_A_ct
 - descending:SurfSkinTemp_D
 - descending:SurfSkinTemp_D_ct
- Trace Gas Profile Variables (3-D)
- Trace Gas Total Column Variables (2-D)
- Tropopause Variables (2-D)

Back to Search Subset Selected Data Sets View Subset Results

[Report a Problem with the Simple Subset Wizard](#)

Found 2 subtableable data sets.

- Subset: Variables for AIRX3STM v006 in netCDF**
- Subset: Selected Standard Variables from AIRX3STM v006 for AIRX3STMLite v006 in netCDF

- Ancillary Variables
- Cloud Variables
- CO Variables
- Methane Variables
- Moisture Variables
- Ozone Variables
- Pressure Variables
- Radiation Variables
- Temperature Variables
 - ascending:SurfAirTemp_A
 - ascending:SurfAirTemp_A_ct
 - ascending:SurfAirTemp_A_err
 - ascending:SurfAirTemp_A_max
 - ascending:SurfAirTemp_A_min
 - ascending:SurfAirTemp_A_sdev
 - descending:SurfAirTemp_D
 - descending:SurfAirTemp_D_ct
 - descending:SurfAirTemp_D_err
 - descending:SurfAirTemp_D_max
 - descending:SurfAirTemp_D_min
 - descending:SurfAirTemp_D_sdev
 - ascending_TqJoint:SurfAirTemp_TqJ_A
 - ascending_TqJoint:SurfAirTemp_TqJ_A_ct
 - ascending_TqJoint:SurfAirTemp_TqJ_A_err
 - ascending_TqJoint:SurfAirTemp_TqJ_A_max
 - ascending_TqJoint:SurfAirTemp_TqJ_A_min
 - ascending_TqJoint:SurfAirTemp_TqJ_A_sdev
 - descending_TqJoint:SurfAirTemp_TqJ_D
 - descending_TqJoint:SurfAirTemp_TqJ_D_ct
 - descending_TqJoint:SurfAirTemp_TqJ_D_err
 - descending_TqJoint:SurfAirTemp_TqJ_D_max
 - descending_TqJoint:SurfAirTemp_TqJ_D_min
 - descending_TqJoint:SurfAirTemp_TqJ_D_sdev

Back to Search Subset Selected Data Sets View Subset Results



Scripting Capabilities

It is possible to create custom spatial and variable subsets by using the following web services. These services can work with **Python**, **IDL**, **Matlab**, and many other programming languages

The spatial searches and subsets are performed by the data server and thus reduce bandwidth and storage requirements.

- OpenSearch (mirador.gsfc.nasa.gov/OpenSearch)
- HTTP Services
- OPeNDAP
- Pomegranate
- THREDDS (planned)



Scripting Capabilities in the Data Cookbook

“How to download a spatial and variable subset of Level 1B data using OPeNDAP”

The GES DISC **Data Cookbook** includes a recipe that demonstrates how to create a **Python** script to identify OCO-2 granules in a region of interest and extract spatial and variable subsets.

This data recipe can easily be modified to create similar subsets of AIRS data.

We plan to write similar recipes using AIRS data.

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

The screenshot shows the GES DISC website navigation menu. The 'Data Cookbook' link is circled in red. The menu is organized into four columns: Earth Science Data, Mission Portals, Science Portals, and About Us. The 'Data Cookbook' link is located under the 'Earth Science Data' column.

Earth Science Data	Mission Portals	Science Portals	About Us
Search with Mirador	A-Train	MEaSUREs	Who We Are
Visualize with Giovanni	AIRS	Nimbus	Data Policy
Subset Data	Aura	OCO-2	FAQ
Data Cookbook	GPM	TRMM	Publications
Get Near Real-time Data	Modeling	SORCE	Gallery
GDS			
+ More...		+ More...	



Potential New Data Recipes

Although implementing new web services may take some time to bring online, existing services can still be more fully utilized. New data recipes may help.

Here are some ideas:

“How to aggregate Level 1 or Level 2 observations near a fixed location in space and time”

“How to create create daily subsets of Level 1 and Level 2 variables near a given set of locations”

“How to create daily aggregates of Level 1 and Level 2 observations”



New and Upcoming Services

- Pomegranate
- Compressed Level 3 Subsets
- THREDDS
- Unified User Interface (UUI)



Pomegranate (w10n)

Allows file attributes and data to be accessed by a url.

http://airsl1.gesdisc.eosdis.nasa.gov/pomegranate/Aqua_AIRS_Level1/

http://airsl2.gesdisc.eosdis.nasa.gov/pomegranate/Aqua_AIRS_Level2/



Compressed Level 3 Subsets

An upgrade to the **Hyrax OPeNDAP** server now allows files to be downloaded in **NetCDF-4** format which enables internal compression.

Previously subsetted files were only available uncompressed **NetCDF-3** format and even moderately sized subsets could be larger than the original file.

The new compressed **NetCDF-4** files will be implemented in Mirador and the Simple Subset Wizard from next week.



THREDDS

We are currently testing a THREDDS data server for AIRS Level 1, 2, and 3 data.

It will enable several new features:

- Spatial subsets based on Longitude and Latitude
- Aggregation of Level 3 data



Unified User Interface (UII)

The functionality of Mirador and the Simple Subset Wizard will be incorporated into the UII.



Summary

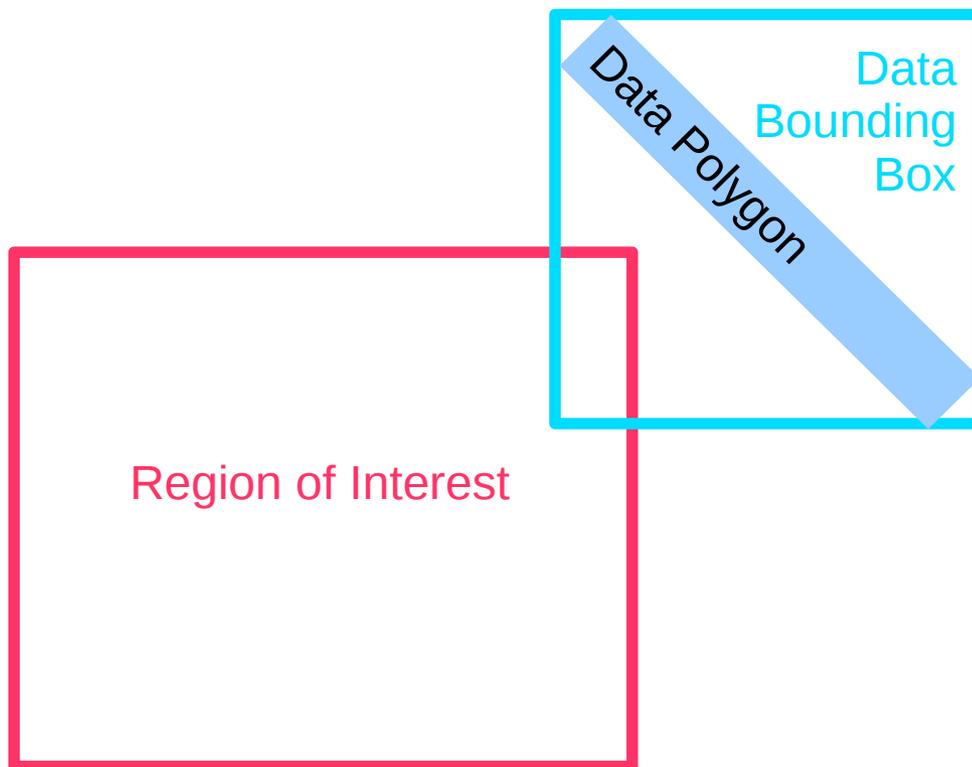
- Existing Capabilities
 - Mirador (<http://mirador.gsfc.nasa.gov>)
 - Simple Subset Wizard (<http://disc.sci.gsfc.nasa.gov/SSW/>)
 - HTTP Services
 - OPeNDAP
 - Scripting
- New and Upcoming Features
 - Pomegranate
 - New Data Recipes and Services
 - Compressed Level 3 Subsets
 - THREDDS
 - Unified User Interface (UUI)



Thank You



The same Search in Mirador returns more granules



Mirador will include this granule, Reverb will not.