

MAST/GALEX Tutorial

May, 2006

Version 4.1

(References to GR1 and
GR2-imaging products)

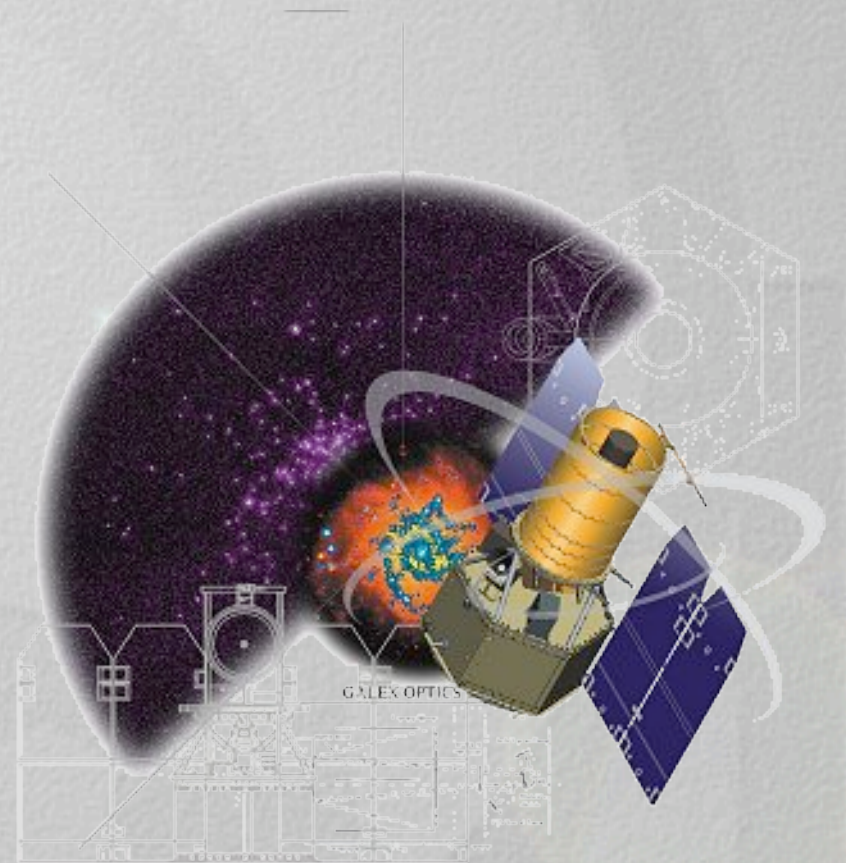


Table of Contents

Basic Tour

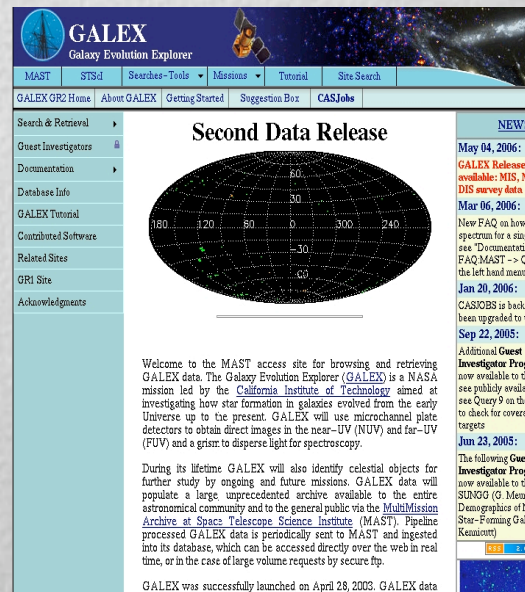
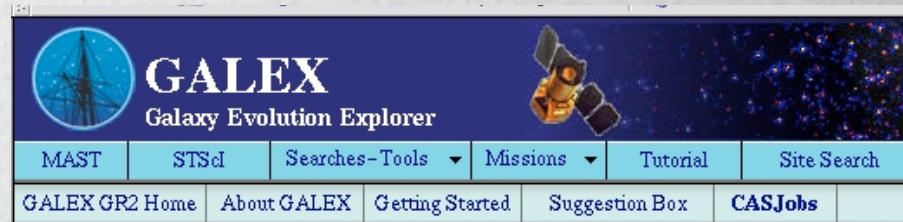
- Getting started: help, DataBase tables
- Searching through programs by sky areas (tiles)
- Simple and SQL Search forms (search by objects)
- Navigating the “**Explore**” page
- Retrieving the data (now including spectra)

Bells and whistles for advanced searches:

- CasJobs in GALEX (slides 24-34)

MAST/GALEX: Home Page

Search & Retrieval	▶
Guest Investigators	▶
Documentation	▶
Database Info	
GALEX Tutorial	
Contributed Software	
Related Sites	
GR1 Site	
Acknowledgments	



Detailed Options

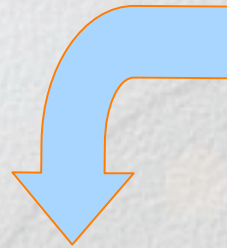
The left gutter Provides options for exploring/browsing GALEX data, including **Data Search** query Forms and **Data Retrieval** lists by Program and sky-tile

Broad Navigation Tools

The top banner allows for quick access to the most common features of the **GALEX** Site.

Links to other **MAST** missions are also here

Getting Started Page



Contains:

- Mission Information
- How to browse/retrieve data
- Data Release schedule
- GI Program
- Link to data search
- Link to Search help
- Links to related aids (tutorial)

GALEX Galaxy Evolution Explorer

MAST STScI Searches-Tools Missions Tutorial Site Search

GALEX GR2 Home About GALEX Getting Started Suggestion Box CASJobs

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Getting Started with GALEX

On April 28, 2003 NASA launched the GALEX satellite as part of its Explorer class series. The mission's purpose is to survey galaxies out to a redshift of $z = 2$ and to study the evolution of star-forming galaxies. GALEX conducts this work by means of UV sky surveys and deep sky searches in the imaging mode and partial sky surveys. All observations are made through a beam-splitter allowing light to be recorded by far-UV and near-UV detectors in either direct-imaging and spectroscopic (grism) modes. The wavelength bandpasses of these detectors are approximately 1400--1800 Angstroms and 1800--2800 Angstroms, respectively. Further technical information can be obtained at the [GALEX/Caltech](#) website or through a [FAQ](#) page periodically updated by Caltech and maintained at MAST. Eventually, the All Sky Survey (direct imaging) will cover some 3/4 of the sky (generally in single short visits). Users should be aware that some regions of the Galactic Plane, the Magellanic Clouds, and bright stars ($m(AB) \sim 10$) will be avoided in order to protect the detectors from saturation and damage.

The Caltech GALEX project delivers its data to MAST as periodic public releases. These have included the Early Release Observations [ERO](#) in early 2004, the first Public Release [GR1](#) in early 2005, and the second Public Release [GR2](#) in spring of 2006. At this writing, the direct images for the GR2, consisting of the Medium Imaging, Deep Imaging, Nearby Galaxy, and All Sky Surveys (MIS, DIS, NGS, and AIS) have been delivered to MAST and staged for public release. The grism data (spectroscopic surveys) will be released in early summer of 2006. As implied by its name, there are no proprietary rights on public release data.

Beginning in 2005, Guest Investigator (GI) data were delivered to MAST. Pursuant to NASA policy, these data are proprietary to the GI for a nominal period of six months after date of ingest at MAST. The Guest Investigator [GI](#) office at Goddard Space Flight Center administers this program and coordinates with MAST to communicate release dates as well as instructions to the GIs. At the end of a proprietary period, MAST opens the permissions to a GI dataset and allows them to be accessed by the general users at its [public GI Programs](#) entry point. To date, solicitations for GI proposals have been made annually by NASA's Science Mission Directorate through a Research Opportunities for Research in Space and Earth Sciences ("ROSES"). Parties interested in writing proposals should consult the GI website.

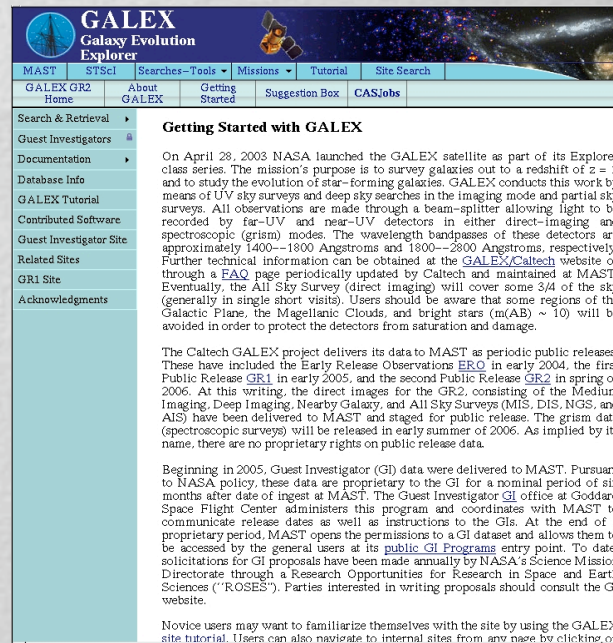
Novice users may want to familiarize themselves with the site by using the GALEX [site tutorial](#). Users can also navigate to internal sites from any page by clicking on

Data Search: Start with Help

(from Data Search link on Getting Started page)

Open from:

- Getting started (top banner)
- Data Search link in text
- Data retrieval tab (by GALEX program including spectra)



The screenshot shows the GALEX Galaxy Evolution Explorer website. The top navigation bar includes links for MAST, STScI, Searches-Tools, Missions, Tutorial, and Site Search. Below this, there are links for GALEX GR2 Home, About GALEX, Getting Started, Suggestion Box, and CAS/Jobs. The main content area is titled "Getting Started with GALEX" and contains text about the mission's launch on April 28, 2003, and details about data releases and Guest Investigator (GI) data. The text describes the mission's purpose, observation modes, and the availability of data for public release and research.

- Data Search by target name (coordinates) and search radius on home page
- Search by Object Name or position with a simple interface
- Search in SQL on [SQL interface](#) form (familiarize yourself with the database by submitting a sample query in SQL script)

Image Data Search, first on tiles: (e.g. MIS program)

GALEX Galaxy Evolution Explorer

MAST STScI Searches-Tools Missions Tutorial Site Search

GALEX GR2 Home About GALEX Getting Started Suggestion Box CASJobs

Search & Retrieval Main Search Form **365 total tiles.** [Show All Tiles](#)

Guest Investigators SQL Search Form

Documentation

Database Info **DIS: Deep Imaging Survey**

GALEX Tutorial **MIS: Medium Imaging Survey**

Contributed Software **NGS: Nearby Galaxies Survey**

Guest Investigator Site

Related Sites

GR1 Site

Acknowledgments

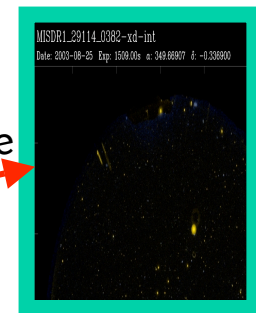
Declination Radius (degrees)

Search

365 Tiles found matching search criteria:

[Click on column header to sort]

	1	2	3	4						
	Jpeg Image	Retrieve Imaging	Retrieve Spectra	survey	filename	ra_cent	dec_cent	nuv_exptime	fuv_exptime	
1		FITS		MIS	MISDR1_29484_0650	0	-9.08038	1677	1677	
2		FITS		MIS	MISDR1_29572_0650	0	-10.81217	1601.05	1601.05	
3		FITS		MIS	MISDR1_29569_0651	3.05491	-10.79351	727	727	
4		FITS		MIS	MISDR1_29134_0389	3.56593	-1.35288	1689	1689	



Whole tile image

Click green button to browse image
Mark data & click blue Retrieve arrow
(step 1 of downloading data).

Files available for download - Coadded Products

You can download GALEX data using two separate methods.

- Select each file individually by clicking on the **Download** link provided.
- Select multiple files and click the **Submit Request** button. If you choose the second method, you will be taken to another page where you will be given a script to run on our anonymous FTP server which, in turn, will retrieve all the selected files.

[Submit Request](#)

[Show Coadd for this Tile](#)

[Show Visits for this Tile](#)

[Click on column header to sort]

	survey	filename	size [KB]	band	img	description
<input checked="" type="checkbox"/>	Download	MIS MISDR1_29568_0652-xd-mcat.fits.gz	9499.37	N/A	1	Merged source catalog
<input type="checkbox"/>	Download	MIS MISDR1_29568_0652-nd-int.fits.gz	11552.63	NUV	1	Intensity map (12000)

...clicked on **Retrieve Imaging** to select files for data download

Select files:

- individual: click Download,
- file groups: click Submit (green button). Follow instructions for sending a simple ftp-get request
- third button allows downloads of data for an individual visit.

Files available for download
- Coadded IMAGING Products -

You can download GALEX data using two separate methods.

- Select each file individually by clicking on the **Download** link provided.
- Select multiple files and click the **Submit Request** button. If you choose the second method, you will be taken to another page where you will be given a script to run on our anonymous FTP server which, in turn, will retrieve all the selected files.

[Click on column header to sort]

<input type="checkbox"/>		survey	filename	size [KB]	band	img	description
<input type="checkbox"/>	Download	MIS	MISDR1_29484_0650-xd-mcat.fits.gz	10138.25	N/A	1	Merged source catalog
<input type="checkbox"/>	Download	MIS	MISDR1_29484_0650-nd-int.fits.gz	12561.77	NUV	1	Intensity map (J2000)
<input type="checkbox"/>	Download	MIS	MISDR1_29484_0650-fd-int.fits.gz	6887.79	FUV	1	Intensity map (J2000)
<input type="checkbox"/>	Download	MIS	MISDR1_29484_0650-nd-cnt.fits.gz	5200.19	NUV	1	Count map (J2000)

Submit Request

Show Coadd for this Tile

Show Visits for this Tile

FTP Script to Retrieve Your Files

From Windows Command Prompt

```
ftp -n -s: get . ftp
```

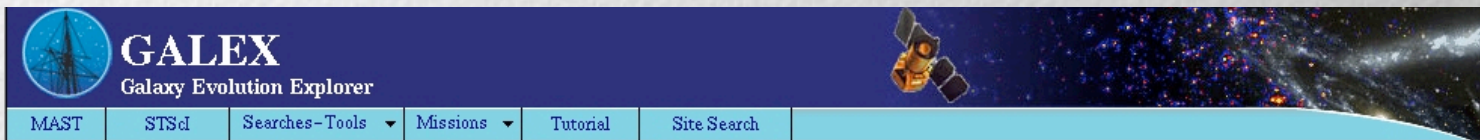
From Unix/MacOS Command Prompt

```
ftp -n -v < get . ftp
```

Save FTP Script to your system

View FTP Script

Open Spectra: lists GR1 tiles with spectra (GR2 spectra to follow)



GALEX Galaxy Evolution Explorer

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**List of All Observed Tiles containing SPECTRAL products.
There are 7 tiles.**

[Click on column header to sort]

	Jpeg Image	Retrieve Imaging	Retrieve Spectra	survey	tilename	ra_cent	dec_cent	nuv_exptime	fuv_exptime	tilenum	nuv_Visits	fuv_Visits	n
1		FITS	FITS	DIS	ELAISS1_01	9.31561	-42.966843	24390.9	24390.75	6454	19	19	
2		FITS	FITS	DIS	ELAISS1_00	9.638574	-43.990234	72398.25	72398.25	6451	56	56	
3		FITS	FITS	DIS	ELAISS1_07	10.356164	-42.249268	20821.55	20821.55	6466	13	13	
4		FITS	FITS	DIS	ELAISS1_02	11.083665	-43.852993	19667.9	19667.9	6456	16	16	
5		FITS	FITS	DIS	CDFS_00	53.127785	-27.871367	139292	104283.7	6051	123	97	
6		FITS	FITS	DIS	SIRTFPL_00	259.123871	59.909149	70127.25	70127.25	6751	50	50	
7		FITS	FITS	DIS	SIRTFPL_01	260.414246	59.342857	25315.35	22253.35	6754	22	19	

- For coplotted spatial spectral visits, click green Submit button,
- Click on FITS takes you to file products (next page).

Retrieval of spectra

By visit, or coadded

Files available for download
- Coadded SPECTRAL Products -

You can download GALEX data using two separate methods.

- Select each file individually by clicking on the **Download** link provided.
- Select multiple files and click the **Submit Request** button.

If you choose the second method, you will be taken to another page where you will be given a script to run on our anonymous FTP server which, in turn, will retrieve all the selected files.

[Click on column header to sort]

<input type="checkbox"/>		survey	filename	size [KB]	band	img	description
<input type="checkbox"/>	Download	DIS	ELAISS1_07-ng-gsax.fits.gz	141.67	NUV	1	Spectral extraction parameter information for each source
<input type="checkbox"/>	Download	DIS	ELAISS1_07-fg-gsax.fits.gz	135.42	FUV	1	Spectral extraction parameter information for each

Submit Request

Show Coadd for this Tile

Show Visits for this Tile

Mark column or individual entry box to get all or some files.

Click here to download a single file.

Simple form: data search on objects

- **Resolve** object's name with either NED or SIMBAD
- **Add** field constraints
- **Select** output columns (to request spectra, add "isThereSpectrum")
- **Output** in multiple formats
- **Search** by TARGET NAME or POSITION.

The screenshot shows the GALEX Search Form interface. At the top, there are links for 'archive status' and '(Help)'. Below these are two tabs: 'Standard Form' (selected) and 'Upload File Form'. The main form area is divided into several sections: 1. Action buttons: 'Search', 'Reset', and 'Clear Form'. 2. Search criteria: 'Target Name' (text input), 'Resolver' (dropdown menu with 'NED' selected), 'Radius (arcmin)' (text input with '3.0'), 'Right Ascension' (text input), 'Declination' (text input), and 'Equinox' (dropdown menu with 'J2000' selected). 3. User-specified fields: 'User-specified field' (dropdown menu with 'RA' selected), 'Field Descriptions' (text input), and an 'Add' button. 4. Output Columns: A list of fields including 'IAU Name', 'RA (J2000)', 'Dec (J2000)', 'Mode', 'Best Magnitude', 'Ellipticity', 'Classification', 'Redshift', 'UV Slope', and 'Lyman Break'. There are 'Up', 'Down', 'Remove', and 'Reset' buttons for this list. 5. Sort By: Three dropdown menus for 'RA (J2000)', 'Dec (J2000)', and 'Redshift', each with a 'Reverse' checkbox. 6. Output Format: A dropdown menu set to 'HTML Table'. 7. Additional options: 'Show Query' and 'Make Rows Distinct' checkboxes, and 'Maximum Records' set to '100'. 8. Bottom: An 'Add' button and an 'Additional Output Columns' dropdown menu.

This form permits data in general categories, e.g. sky area

Search on Simple form to find object at input position in sky:

archive status **GALEX Search Form**

Target Name
Resolver NED
Radius 5.0

Right Ascension 9.315
Declination -42.996
Equinox J2000

- Enter coords of object of interest
- Set Radius (search limit)
- Click on Search

GALEX Home About GALEX Getting Started Suggestion Box CASJobs

Galex Search Results

[Click on column header to sort]

1 2 3 4

	?	objid	specID	distance arcmin	IAUName	ra
1	Explore	2532925283188616079	0	0.274123134710145	GALEX J003714.91-425935.19	9.312142884
2	Explore	2532925283188615829	0	0.275609213637987	GALEX J003715.34-430001.89	9.313902835
3	Explore	2532925283190713178	0	0.516432328068063	GALEX J003712.95-425956.34	9.303959875
4	Explore	2532925283188616125	0	0.532886638690338	GALEX J003713.73-425921.04	9.30722416
5	Explore	2532925283188615819	0	0.562925359305675	GALEX J003717.74-430009.91	9.323910691
6	Explore	2532925283190713369	0	0.572786406676911	GALEX J003712.80-425930.25	9.303323022
7	Explore	2532925283188615972	0	0.710216883780214	GALEX J003719.48-425945.93	9.331182982
8	Explore	2532925283188615726	0	0.752713130111532	GALEX J003713.10-430021.45	9.304562880

Document: Done (2.001 secs)

Sort on "distance":

(first entry will be object closest to your input RA, Dec)

Search on Simple form to objects with spectral data

archive status **GALEX Search Form** (H)

Search Reset Clear Form

[Click on column header to sort]

		objid	specID	distance_arcmin	IAUNar
1	Explore ✓	2532925283190712977	227084473000274577	1.7574317477101	GALEX J003710.13-43
2	Explore ✓	2532925283190714451	227084473000276051	2.42338636086475	GALEX J003719.08-42

User-specified Field: isThereSpectrum = Field Constraint: Add

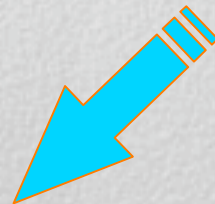
p.isThereSpectrum =1

- Enter value (" = 1")
- Select "IsThereSpectrum" in user-spec menu tab
- Click on add & Search

Result is objects within search radius for which spectra are observed.

Want to Proceed to the SQL search form? Start by browsing the Database Info Page

Search & Retrieval	▶
Guest Investigators	🔒
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The database contains **Tables**, organized in columns and rows. We have defined **Views** over some tables. These represent special subsets of the original table. **Functions** and stored **Procedures** take a number of parameters, and execute a previously defined sequence of commands. Usually, their names are prefixed by *f* or *sp*, like in *fGetNearbyObjEQ* or *spGetNeighbors*.

Click on the [+]
sign in front of the categories on the left to get an expanded view, on the [-] to collapse the list, on the name to get a summary, and on the individual items to get their detailed description.

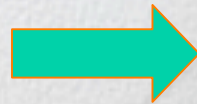
Tables/Functions:

- Links to names and descriptions
- used as search parameters

You may need some of these tables to formulate your SQL queries.

MAST/GALEX: DataBase Info

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Guest Investigators	🔒
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+ Tables
+ Functions



- Tables
- acsData
- GsaxSource
- Img
- ImgRun
- ImgRunVisi
- insData
- ObsPendin
- PhotoExtra
- PhotoObjA
- Plans
- RegionCon
- SpecExtra
- SpecFlux
- SpecObjAl
- SpecProfile
- SpecStrip
- Target
- Visit
- VisitGsaxS
- VisitImg
- VisitMain
- VisitPhotoE
- VisitPhotoC
- VisitSpecE

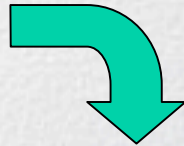
The DB Info menu will allow one to browse the entire database structure:

- tables, views, user fns., internal procedures and all data and constants used.
- Clicking on the “+” sign will reveal the underlying structure.
- Clicking on each individual item, i.e. Tables, will list all tables and a description of their contents (see next slide)
- Note again that table names are needed for many SQL queries!

MAST/GALEX: DB Info



A screenshot of a database interface showing a list of tables under the heading 'Tables'. The list includes: acsData, GsaxSource, Img, ImgRun, ImgRunVisitMainJoin, insData, ObsPending, PhotoExtract, PhotoObjA, Plans, RegionCon, SpecExtract, SpecFlux, SpecObjA, SpecProfile, SpecStrip, Target, Visit, VisitGsaxS, VisitImg, VisitMain, VisitPhotoE, VisitPhotoC, and VisitSpecE.



Tables

name	description
acsData	Auxiliary information about the observation commands to the spacecraft
GsaxSource	
Img	Direct or spectro image characteristics for an image
ImgRun	Image generation parameters
ImgRun VisitMainJoin	Table to join ImgRun and VisitMain

DB Info allows for a description of records in each Table. Parallel actions bring you to descriptions of Function records.

Clicking on **Tables** opens a submenu and a description of available database tables. Clicking on a **table name** returns detailed information about the fields it contains.

Now use the SQL Form (note pulldown menu):

SQL Search Select a sample query...

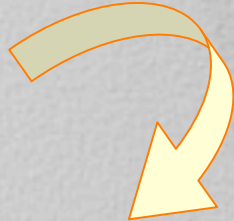
```
select top 100 p.objid, p.ra, p.dec, p.glon, p.glat,
p.nuv_mag, p.nuv_magerr, p.fuv_mag, p.fuv_magerr, e_bv from
photoobjall as p where p.nuv_mag>-99 and p.band=3 and
p.nuv_fwhm_world<.01 order by p.nuv_mag
```

[Sample \(simple\) query](#)

Output Format HTML CSV VOTable

Load Query

Output is
list of
objects



- **Submit** your SQL query (help at http://skyserver/sdss.org/dr2/en/help/docs/sql_help.asp)
- **Explore** the details of an object

[Click on column header to sort]

1 2 3 4

	<u>objid</u>	<u>ra</u>	<u>dec</u>	<u>glon</u>	<u>glat</u>	<u>nuv_mag</u>	<u>nuv_magerr</u>
1	Explore 2416042799111607906	260.114759065179	59.1983131891286	87.9213	34.6013	11.7392	0.000581
2	Explore 2496192798729968735	11.001271691981	42.7320743049209	121.479	-20.1187	11.866	0.000469
3	Explore 2418857548878713385	31.4460950335021	13.34334393655	149.289	-45.6892	11.8927	0.000614
4	Explore 2431031341621451885	173.52807970351	65.2414330583142	135.381	49.9764	11.9175	0.000613
5	Explore 2496052061241610807	11.5499175744767	40.4256715671443	121.854	-22.4351	11.9182	0.000685
6	Explore 2421179717436579092	132.859178971336	57.5268582811483	159.43	38.5799	11.9471	0.000623
7	Explore 2417942755204402624	8.55156617491691	14.515959881631	116.675	-48.1464	11.9714	0.000636
8	Explore 2497107592404274091	23.8706957810707	31.2882201844793	133.869	-30.6464	12.0377	0.000471

Explore the object image first:

Object information:

id, mode,...

Also displayed are coordinates and number of visits in each observing mode

Near and Far UV information at a glance: thumbnail image, position, magnitude, ellipticity, classification, etc.

Image title (NUV,FUV) is a link to the FITS files download area

IAU Name: GALEX J003753.06-432824.93  Download

Tile Name: ELAISSI_00

objid	vsn	tile	type	ow	prod	img	try	band	xid
2532819730074458505	1	6451	0	1	1	1	4	3	22921

R.A. : 9.471094 DEC : -43.473593 band : 3

Visits in direct mode: 21 Show Photo Objects
 spec mode: Show Spec Objects

FUV RA : 10.687739 DEC : 41.264593

fuv_mag	12.46 +/- 0.00	fuv_fwhm_world	0.2599
fuv_flux	37724.90 +/- 52.50	fuv_exptime	2570 sec.
e_bv	0.7401	fuv_artifact	0
fuv_weight	2398.00	fuv_flags	19
fuv_neat_flux	25097.80 +/- 44.45	pixel scale	1.5"

NUV RA : 10.687157 DEC : 41.265436

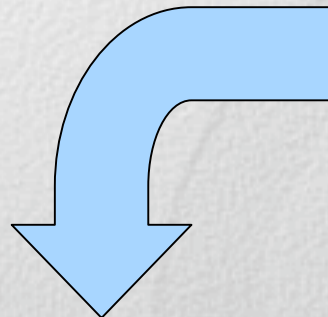
nrv_mag	11.43 +/- 0.00	nrv_fwhm_world	0.3035
nrv_flux	97328.20 +/- 35.70	nrv_exptime	2570 sec.
e_bv	0.7401	nrv_artifact	0
nrv_weight	1631.00	nrv_flags	51
nrv_feat_flux	158226.00 +/- 45.52	pixel scale	1.5"

Positioning the mouse over an object within an image returns a tooltip with the object's coordinates, its classification and wavelength bands. **Clicking** on the object will redirect the user to the summary page of that object. Clicking on a different circled object in the field brings up a page for this object

Also, **keywords** on the page are active. Positioning over RA returns its definition.

Find some good data? Download it:

Clicking on the image label in the return page will bring you to the FITS files downloading area.



Galex Search Results

Your SQL Query. Objects Returned: 100

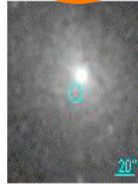
`select top 100 p.objid, p.ra, p.dec, p.glon, p.glat, p.nuv_mag, p.nuv_ma
p.nuv_mag>99 and p.band=3 and p.nuv_fwhm_world<.01 order by p`

[Click on column header to sort]

1 2 3 4

		objid	ra	dec
1	Explore	2664875354391317500	326.337356459487	32.7816143115616
2	Explore	2664875354391317500	326.337356459487	32.7816143115616
3	Explore	2669554862960674579	322.740888470647	-36.5467456740639
4	Explore	2669906745336268725	307.690640306946	-38.577808825007

FUV



NUV



RA : 10.687739		DEC : 41.264593	
fuv_mag	12.46 +/- 0.00	fuv_fwhm_world	0.2599
fuv_flux	37724.90 +/- 52.50	fuv_exptime	2570 sec.
e_bv	0.7401	fuv_artifact	0
fuv_weight	2398.00	fuv_flags	19
fuv_net_flux	25097.80 +/- 44.45	pixel scale	1.5"

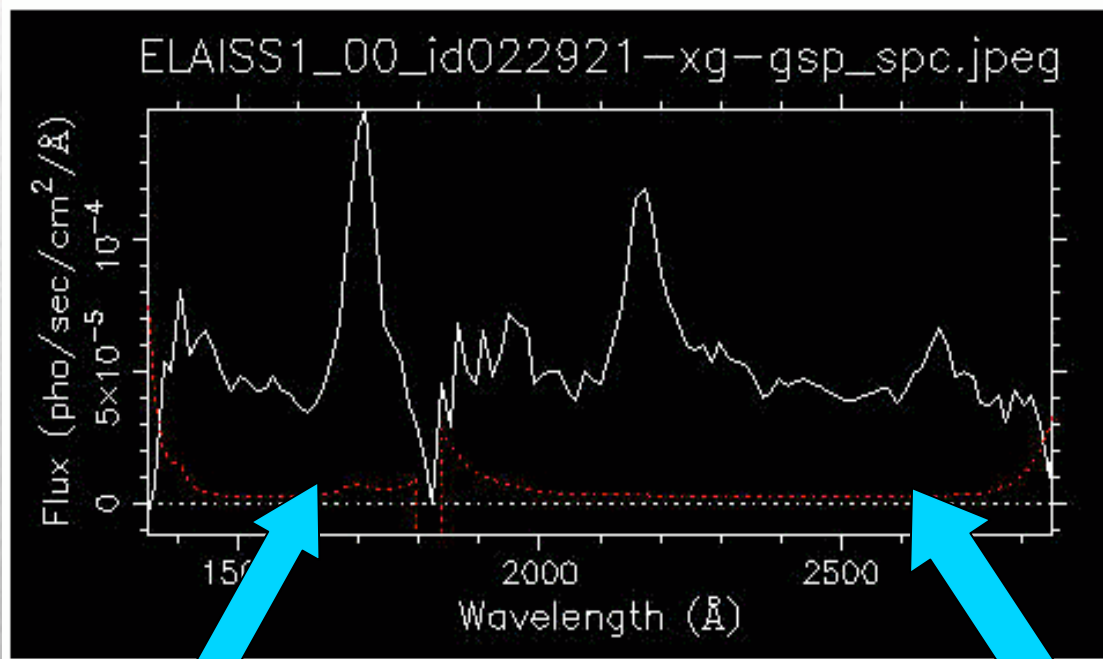
RA : 10.687157		DEC : 41.265436	
nuv_mag	11.43 +/- 0.00	nuv_fwhm_world	0.3035
nuv_flux	97328.20 +/- 35.70	nuv_exptime	2570 sec.
e_bv	0.7401	nuv_artifact	0
nuv_weight	1631.00	nuv_flags	51
nuv_net_flux	158226.00 +/- 45.52	pixel scale	1.5"

Click to download FITS image data (individual and combined visits)

Explore 1D Spectrum (spectra: GR1d release only)

1-D spectrum

specObjID= [226978919884020105](#)



z*	-999.000
zErr*	
zConf*	
UVSlope	
fuv_median_s2n	
nuv_median_s2n	
fuv_effexp	
nuv_effexp	
temperature	

Cojoined nuv/fuv spectral plot
(all visits stacked)

1D Spectrum Information of QSO:
Z=0.4 (from Ly α , CIV, & CIII 1909A)

Explore 2D Spectra

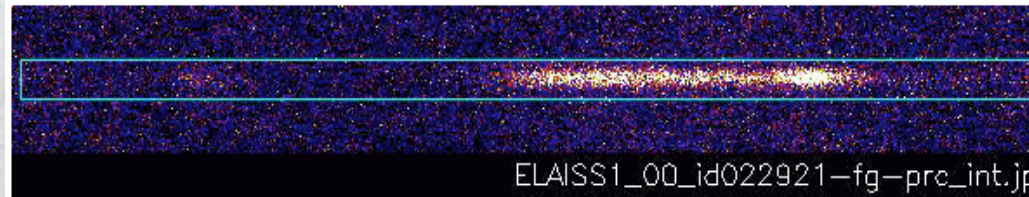
(bottom section, GR1d release only)

Near and Far UV
2D spectra

For each spectrum we display the background-extraction window according to the extraction parameters shown below each spectrum.

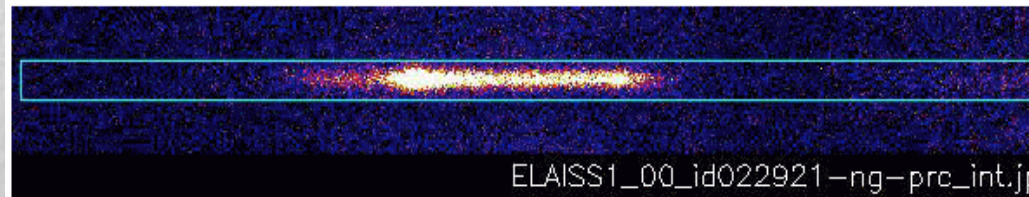
All data represent accumulated visits.

FUV – 2D spectrum – specStripID : 226978919884020105



fuv_xCenter	fuv_yCenter	fuv_objWidth	fuv_bckWidth	fuv_ob
100.00	39.00	15.00	78.00	6.00

NUV – 2D spectrum – specStripID : 226978919884020105



nuv_xCenter	nuv_yCenter	nuv_objWidth	nuv_bckWidth	nuv_o
-------------	-------------	--------------	--------------	-------

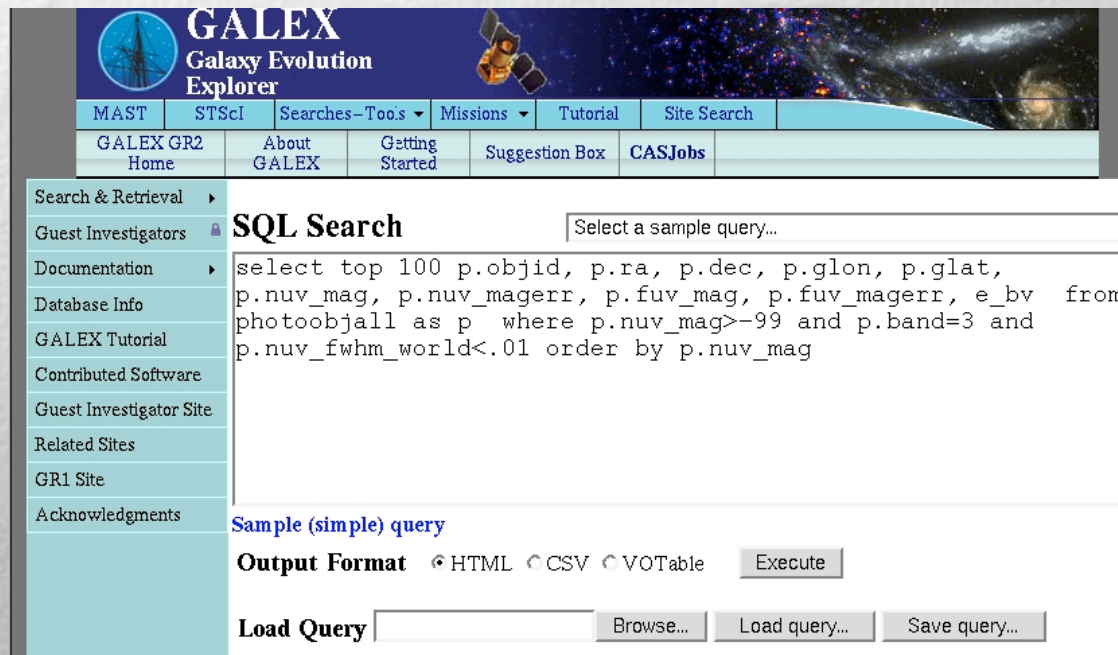
Advanced searches with the SQL Form

In the following example we will match objects with GALEX spectra with SDSS counterparts. We then look at a sample object with spectrum and redshift.

To do this, it will be necessary first to research the names of GALEX tables relating to SDSS spectra

(...OK, we've done this. They are `galexsdssdr3` and `sdssdr3specphoto`. We can now put them into our longish SQL query, shown in the next slide.)

Input SQL Query for cross correlation:



The screenshot shows the GALEX Galaxy Evolution Explorer website. The header includes the GALEX logo and navigation links: MAST, STScI, Searches-Tools, Missions, Tutorial, and Site Search. Below the header is a navigation bar with links: GALEX GR2 Home, About GALEX, Getting Started, Suggestion Box, and CASJobs. The main content area is titled "SQL Search" and features a text input field containing the following SQL query:

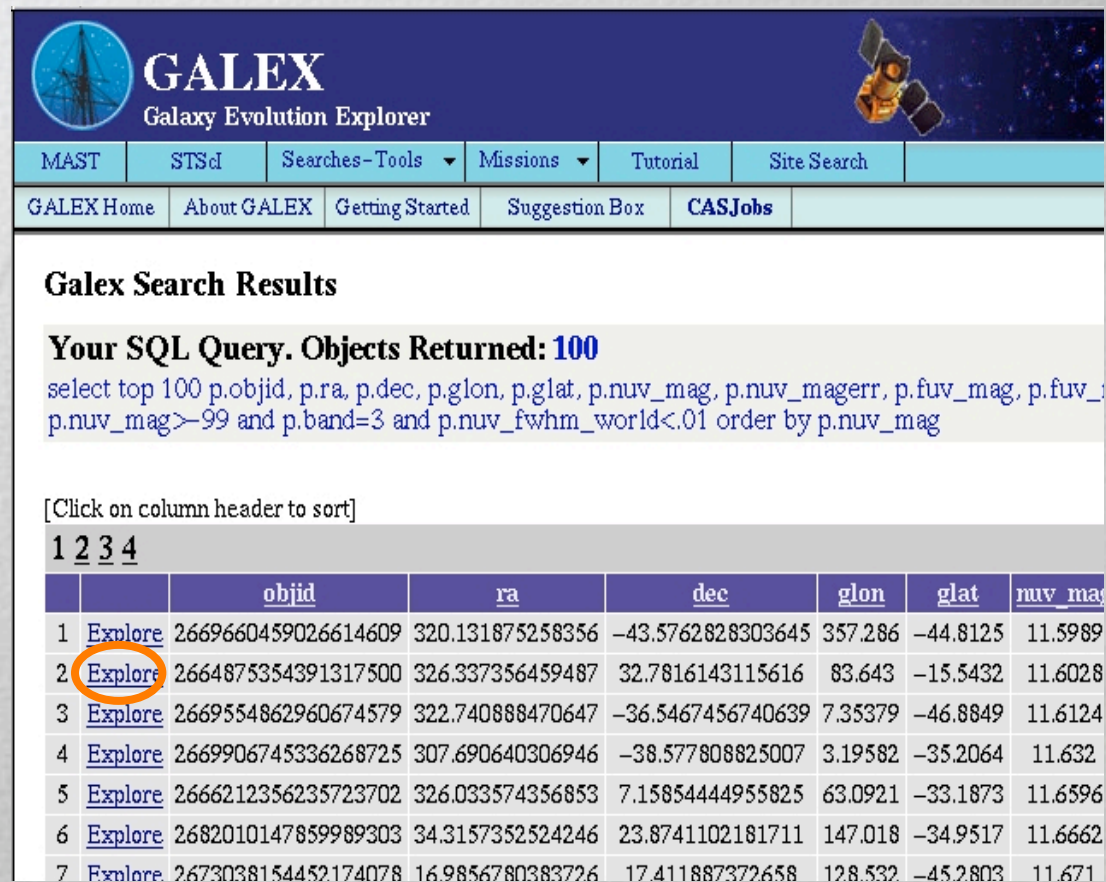
```
select top 100 p.objid, p.ra, p.dec, p.glon, p.glat,  
p.nuv_mag, p.nuv_magerr, p.fuv_mag, p.fuv_magerr, e_bv from  
photoobjall as p where p.nuv_mag>-99 and p.band=3 and  
p.nuv_fwhm_world<.01 order by p.nuv_mag
```

Below the query input, there is a "Sample (simple) query" link, an "Output Format" section with radio buttons for HTML (selected), CSV, and VOTable, and an "Execute" button. At the bottom, there is a "Load Query" section with a text input field, a "Browse..." button, a "Load query..." button, and a "Save query..." button.

This query cross correlates the brightest GALEX objects against SDSS ID's and displays the results. Execute.

Looking deeper into browsable products:

As before, click on **Explore** for an object of interest.



GALEX
Galaxy Evolution Explorer

MAST | STScI | Searches-Tools | Missions | Tutorial | Site Search

GALEX Home | About GALEX | Getting Started | Suggestion Box | CASJobs

Galex Search Results

Your SQL Query. Objects Returned: 100

`select top 100 p.objid, p.ra, p.dec, p.glon, p.glat, p.nuv_mag, p.nuv_magerr, p.fuv_mag, p.fuv_magerr, p.nuv_mag>=99 and p.band=3 and p.nuv_fwhm_world<.01 order by p.nuv_mag`

[Click on column header to sort]

1 2 3 4

		<u>objid</u>	<u>ra</u>	<u>dec</u>	<u>glon</u>	<u>glat</u>	<u>nuv_mag</u>
1	Explore	2669660459026614609	320.131875258356	-43.5762828303645	357.286	-44.8125	11.5989
2	Explore	2664875354391317500	326.337356459487	32.7816143115616	83.643	-15.5432	11.6028
3	Explore	2669554862960674579	322.740888470647	-36.5467456740639	7.35379	-46.8849	11.6124
4	Explore	2669906745336268725	307.690640306946	-38.577808825007	3.19582	-35.2064	11.632
5	Explore	2666212356235723702	326.033574356853	7.15854444955825	63.0921	-33.1873	11.6596
6	Explore	2682010147859989303	34.3157352524246	23.8741102181711	147.018	-34.9517	11.6662
7	Explore	2673038154452174078	16.98567803883726	17.411887372658	128.532	-45.2803	11.671

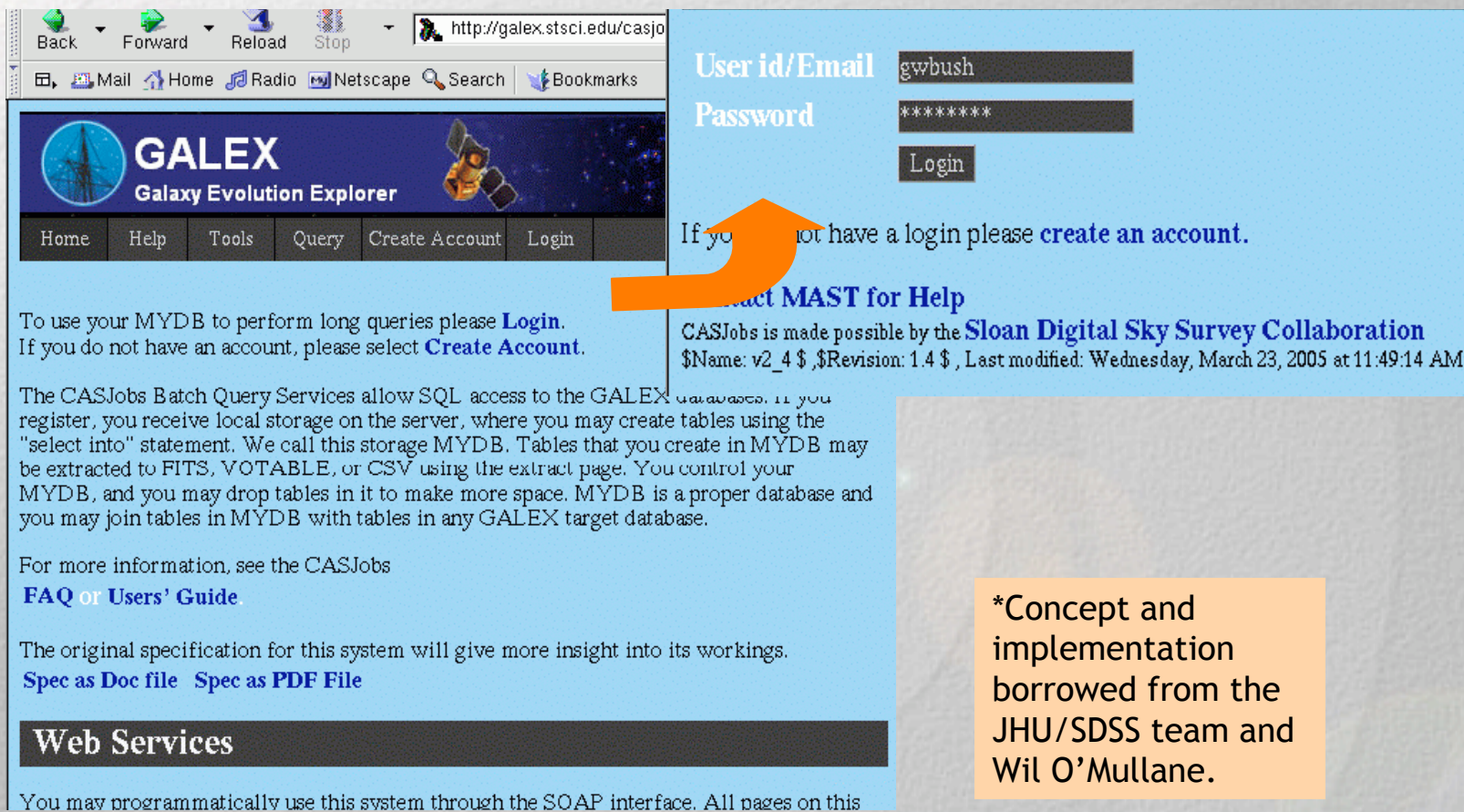
CasJobs: a general purpose tool for batch queries and data access*

Allows:

- All functionality of basic SQL form
 (except no “Explore” and more complex) - EXAMPLE 1
- Data access and sharing (“publish” your database)
- Coordinate uploads for X-correlations (“join” databases)
 EXAMPLE 2
- Batch jobs permit long running queries

*CasJobs is a tool borrowed and adapted from the JHU/SDSS team.

First create an account on CASJobs*



The screenshot shows a Netscape browser window at the URL <http://galex.stsci.edu/casjobs>. The page features a header for "GALEX Galaxy Evolution Explorer" with a navigation menu containing "Home", "Help", "Tools", "Query", "Create Account", and "Login". A login form on the right side includes fields for "User id/Email" (containing "gwbush") and "Password" (containing "*****"), followed by a "Login" button. A blue callout box highlights the login form and the text "If you do not have a login please [create an account](#)." with an orange arrow pointing to the "Create Account" link in the navigation menu. Below the navigation menu, the page text explains the MYDB service and provides links for "FAQ or Users' Guide" and "Spec as Doc file" / "Spec as PDF File". A "Web Services" section is also visible at the bottom.

User id/Email

Password

If you do not have a login please [create an account](#).

[Contact MAST for Help](#)

CASJobs is made possible by the [Sloan Digital Sky Survey Collaboration](#)
\$Name: v2_4 \$, \$Revision: 1.4 \$, Last modified: Wednesday, March 23, 2005 at 11:49:14 AM

The CASJobs Batch Query Services allow SQL access to the GALEX databases. If you register, you receive local storage on the server, where you may create tables using the "select into" statement. We call this storage MYDB. Tables that you create in MYDB may be extracted to FITS, VOTABLE, or CSV using the extract page. You control your MYDB, and you may drop tables in it to make more space. MYDB is a proper database and you may join tables in MYDB with tables in any GALEX target database.

For more information, see the CASJobs [FAQ or Users' Guide](#).

The original specification for this system will give more insight into its workings.
[Spec as Doc file](#) [Spec as PDF File](#)

Web Services

You may programmatically use this system through the SOAP interface. All pages on this

*Concept and implementation borrowed from the JHU/SDSS team and Wil O'Mullane.

CasJobs has an extensive help page

Back Forward Reload Stop http://galex.stsci.edu/casjobs/Guide.aspx Search Print

Mail Home Radio Netscape Search Bookmarks

GALEX
Galaxy Evolution Explorer

Home Help Tools Query Create Account Login Not Logged in

Help



FAQ
[Recent Updates](#)
[SQL Tutorial](#)
[Optimizing Queries](#)
[Schema Browser](#)
[Advanced CasJobs Queries](#)

Introduction

Welcome to the Catalog Archive Server Jobs System, or CasJobs. This guide assumes you have experience with basic SQL syntax. If you'd like to learn more about SQL there are plenty of other [tutorials](#) on the web. This guide will cover the slightly simpler variant of SQL that CasJobs uses.

Registration

Before you can query this system you'll need to [register](#) and then [log in](#). Your queries and their resulting data are associated with your account, so don't forget your login! But if lightning

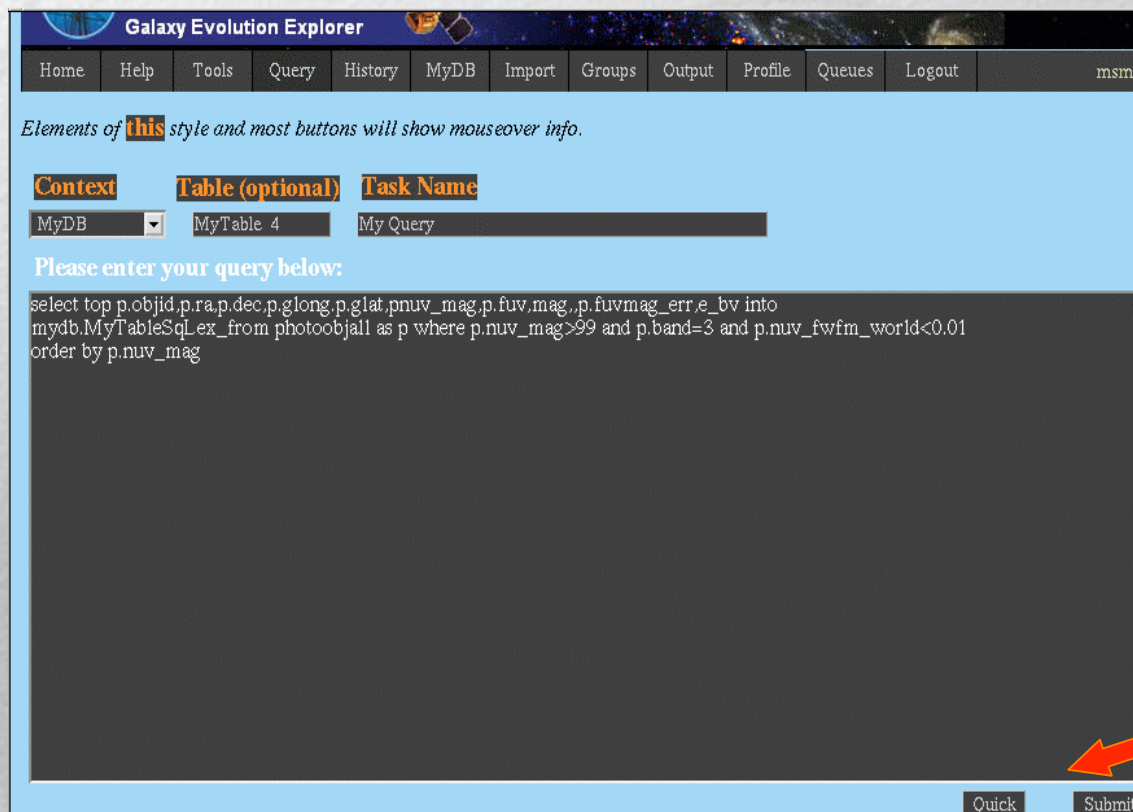
Top bar menu allows navigation to DB, Query, Import, help, etc.

Pay attention to "context" (left tab in query form).

Will your query execute on MyDB or GalexGR1?

CASJobs: Example 1 (simple):

Cut/paste query, e.g. from SQL box dropdown menu



The screenshot shows the Galaxy Evolution Explorer web interface. At the top, there is a navigation bar with links: Home, Help, Tools, Query, History, MyDB, Import, Groups, Output, Profile, Queues, Logout, and a user name 'msmit'. Below the navigation bar, there is a light blue header area with the text: "Elements of **this** style and most buttons will show mouseover info." Below this, there are three input fields: "Context" (a dropdown menu showing "MyDB"), "Table (optional)" (a text input field containing "MyTable 4"), and "Task Name" (a text input field containing "My Query"). Below these fields, there is a section titled "Please enter your query below:" followed by a large text area containing the following SQL query:

```
select top p.objid,p.ra,p.dec,p.glong,p.glat,p.nuv_mag,p.fuv_mag,,p.fuvmag_err,e_bv into mydb.MyTableSql_ex_from photoobjall as p where p.nuv_mag>99 and p.band=3 and p.nuv_fwfm_world<0.01 order by p.nuv_mag
```

 At the bottom right of the form, there are two buttons: "Quick" and "Submit". A red arrow points to the "Submit" button.

1. Type query in box
2. Set headings to input DB (MyDB) and table name
3. Click on "Submit" or (browse only) "Quick"

Return page: browse your data

The screenshot shows a database management interface. On the left, there is a sidebar with a dropdown menu set to 'MyDB' and a 'Key' button. Below this are sections for 'Views', 'Tables', 'Functions', and 'Procedures'. Under 'Tables', several tables are listed: 'myartifacts', 'mysample', 'MyTable', 'MyTable_0', 'MyTable_1', 'MyTable_2', 'MyTable_3', and 'MyTableSQLex_'. The main area displays a query: 'select top 100 p.objid, p.ra, p.dec, p.glon, p.glat, p.nuv_mag, p.nuv_mager1, p.fuv_mag, p.fuv_mager1, e_bv into mydb.MyTableSQLex_ from photoobjall as p where p.nuv_mag > -99 and p.band=3 and p.nuv_fwtn_world < .01 order by p.nuv_mag'. Below the query, it says 'Contains ~100 rows (~8 KB)'. A 'Query:' label and an 'Info' button are present. Below the query, there is a 'First 10 rows:' label and an 'Apply Column Names' button. A table of results is shown with columns: 'objid', 'ra', 'dec', 'glon', 'glat', 'nuv_mag', and 'nuv_mager1'. The data rows are: (2669660459026614609, 320.131875258356, -43.5762828303645, 357.286, -44.8125, 11.5989, 0.00213341), (2664875354391317500, 326.337356459487, 32.7816143115616, 83.643, -15.5432, 11.6028, 0.00178081), (2669554862960674579, 322.740888470647, -36.5467456740639, 7.35379, -46.8849, 11.6124, 0.00214424), and (2669906745336268725, 307.690640306946, -38.577808825007, 3.19582, -35.2064, 11.632, 0.0022902).

objid	ra	dec	glon	glat	nuv_mag	nuv_mager1
BigInt	Float	Float	Real	Real	Real	Real
2669660459026614609	320.131875258356	-43.5762828303645	357.286	-44.8125	11.5989	0.00213341
2664875354391317500	326.337356459487	32.7816143115616	83.643	-15.5432	11.6028	0.00178081
2669554862960674579	322.740888470647	-36.5467456740639	7.35379	-46.8849	11.6124	0.00214424
2669906745336268725	307.690640306946	-38.577808825007	3.19582	-35.2064	11.632	0.0022902

(distance units remain in degrees)

- Having clicked on “Quick”, browse your data
- Having clicked on “Submit”, you click on MyDB & work with the data

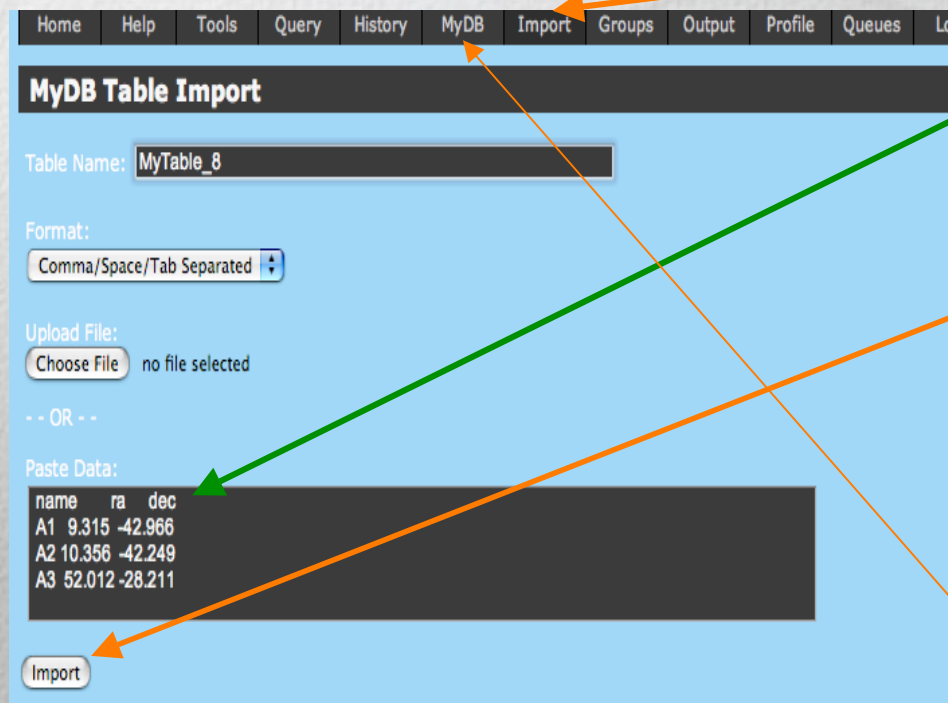
End of example

Example 2: Importing coordinate list to GALEX DB

- We will import a prepared coordinate list.
- A form will appear in the Import page giving the path and file name of the list.
- We will enter the coordinate list in a new DB on our account.
- We'll ask for close matches to objects on our list already observed by GALEX (or SDSS).

STAND BY: next slide is a bit busy looking....

Example 2: How to match GALEX objects to an imported list on our DB



The screenshot shows the 'MyDB Table Import' interface. The 'Table Name' field contains 'MyTable_8'. The 'Format' dropdown is set to 'Comma/Space/Tab Separated'. The 'Upload File' section has a 'Choose File' button and 'no file selected'. The 'Paste Data' section contains a text area with the following data:

name	ra	dec
A1	9.315	-42.966
A2	10.356	-42.249
A3	52.012	-28.211

An 'Import' button is located at the bottom left. A menu bar at the top includes 'Home', 'Help', 'Tools', 'Query', 'History', 'MyDB', 'Import', 'Groups', 'Output', 'Profile', 'Queues', and 'Lo'. Orange arrows point from the 'Import' menu item to the 'Import' button and from the 'MyDB' menu item to the 'MyDB' table name field. A green arrow points from the 'Paste Data' text area to the 'MyDB' table name field. A grey arrow points from the 'Import' button to the 'MyDB' menu item.

1. In menu click Import
2. Enter path and file name of 3 column data (or type in data entry box)
3. Click on Import (see message: table successfully imported in new box below IMPORT)
4. Click finally on "MyDB" and select newly created table.

Let's check to see if our table is loaded properly:

To get here, you have:

- } Clicked on your new table
- } Put mouse on View Data
- } Click Go

Display of
coordinates
you've imported



The screenshot shows the GALEX Galaxy Evolution Explorer interface. At the top, there is a navigation bar with links: Home, Help, Tools, Query, History, MyDB, Import, Groups, and Output. Below the navigation bar, there is a message: "Elements of **this** style and most buttons will show mouseover info." A green status bar indicates "Query completed". The main interface has three tabs: Context, Table (optional), and Task Name. The Context tab is selected, showing "MyDB" in a dropdown menu. The Table (optional) tab shows "MyTable_10" in a dropdown menu. The Task Name tab shows "My Query". Below the tabs, there is a "Query:" label and a text input field containing "LINE 1, COL 1". To the right of the input field are buttons for "Show", "Clear", "Syntax", "Plan", "Quick", and "Submit". Below the query input, there are buttons for "Plot", "Save As", and "HTML" in a dropdown menu. At the bottom, a table displays the query results:

name	ra	dec	search_id
A1	9.315	-42.966	1
A2	10.356	-42.249	2
A3	52.012	-28.211	3

Your list is imported: now match coordinates with GALEX observations

Go back to DB (top menu).
Click on your new table, and mouse to neighbors:

name	ra	dec	search_id
NText	Float	Float	Int

Neighbors Search

This form will create a new table containing the neighbors for each individual object in this context. Clicking 'Go' will create and submit a new job to the context you've selected. This job is just another job you submit; if you feel you need to add more conditions you can modify the query.

Search for neighbors in this context:

Find neighbors within arcminute(s)

Store the results in a table called

Choose a search radius, give new table name of joined ObjID lists, click "Go"

Select search radius

Input name of new table of GALEX matched positions

Casjobs works, matching...

The screenshot shows the GALEX web interface. The top navigation bar includes 'Query', 'History', 'MyDB', 'Import', 'Groups', 'Output', 'Profile', 'Queues', and 'Logout'. The 'MyDB' tab is highlighted with a red circle. Below the navigation bar, a message states: 'MyTable_6', results are in 'mymatch' Details'. A table displays job details:

Target	Submitted	Started	Finished	Status
GALEXGR1	5/11/2005 12:45:24 PM	5/11/2005 12:45:32 PM	5/11/2005 12:45:33 PM	Finished

Below the table, a 'Message' section shows 'Query Complete'. At the bottom, a SQL query is visible: 'DEC AS UP_DEC,search_id AS UP_ID'.

Wait for blue
"Finish" notice

Next click on MyDB,
then click on your
joined table name

Your new table of GALEX-matched objects:

GALEX
Galaxy Evolution Explorer

Home Help Tools Query History MyDB Import Groups Output Profile Queues Lo

Elements of **this** style and most buttons will show mouseover info.

Query completed!

Context Table (optional) Task Name
MyDB MyTable_10 My Query

Query: Show Clear LINE1,COL1 Syntax Plan Quick Submit

Plot Save As HTML

14 row(s)

name	ra	dec	search_id	matched_id
A1	9.315	-42.966	1	2532925283189683397
A1	9.315	-42.966	1	2532925283190713956
A1	9.315	-42.966	1	2532925283190713798
A2	10.356	-42.249	2	2533347495653678160
A2	10.356	-42.249	2	2675993611708929347
A2	10.356	-42.249	2	2675993611708929344
A2	10.356	-42.249	2	2533347495653678245
A3	52.012	-28.211	3	2518851534355183696
A3	52.012	-28.211	3	2518851534355183905
A3	52.012	-28.211	3	2518851534353086635
A3	52.012	-28.211	3	2518851534354156824
A3	52.012	-28.211	3	2518851534353086578
A3	52.012	-28.211	3	2518851534353086769

GALEX ObjIDs

Matched object positions

Contact MAST
CASJobs is made possible by the Sloan Digital Sky Survey Collaboration
\$Name: v2_8_3 \$, \$Revision: 1.35 \$, Last modified: Monday, November 28, 2005 at 1:15:52 PM

You can now work with these GALEX-matched objects.

END OF EXAMPLE