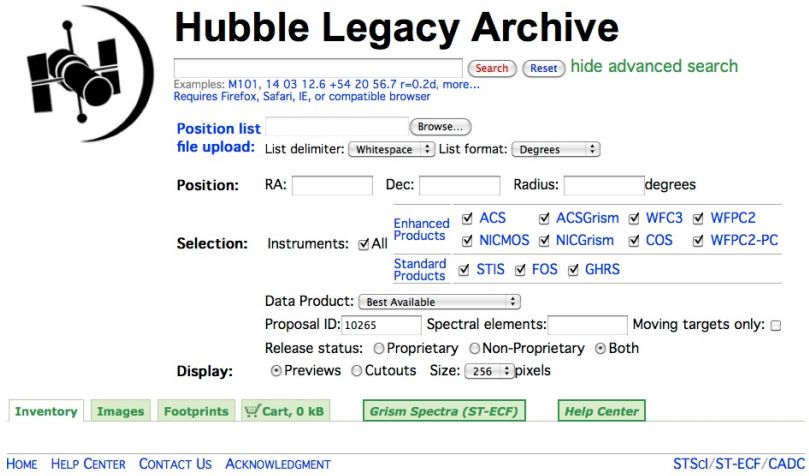
A Basic Hubble Source Catalog (HSC) Walkthrough

Example # 1 : Tom Brown's M31 dataset (ID= 10265)

Step 1 - Enter the HLA (type hla.stsci.edu in your browser window). Click Enter Site here.

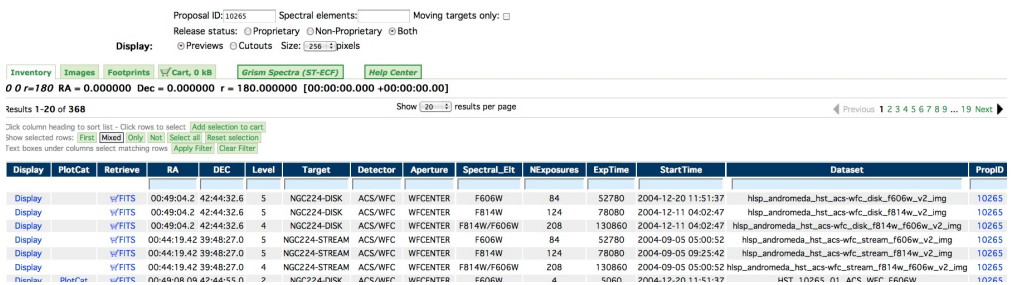
NOTE: If you have not previously used the HLA you may want to check out "Getting started" in the Help Center



Step 2 - Click advanced search. Enter 10265 in the Proposal ID: box and click. This puts you in the Inventory view.

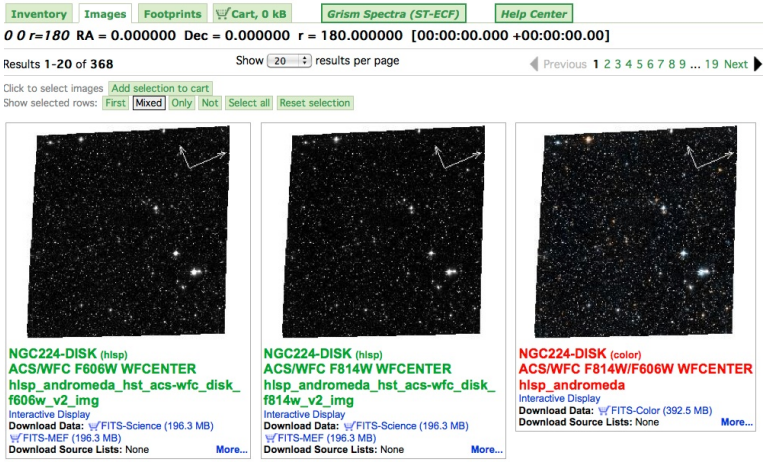
Step 3 – Note there are High Level Science Products (Level 5) with 84 F606W and 124 F814W images. The HLA source list used by the HSC are for single visits with 4 exposures.

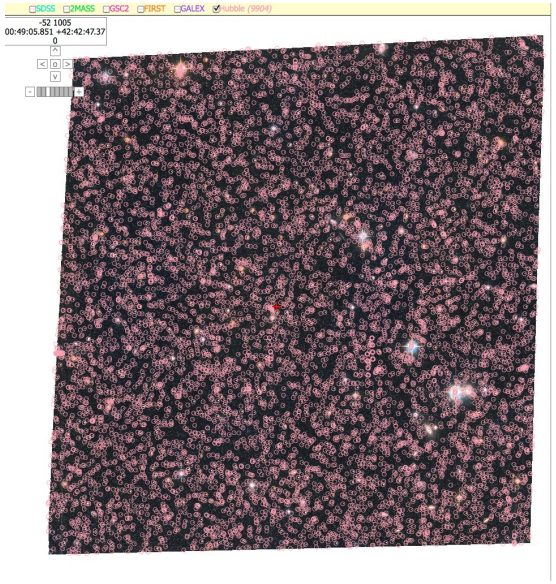
See FAQ # 11 or Detailed Use Case # 1 for a discussion of HSC limitations.



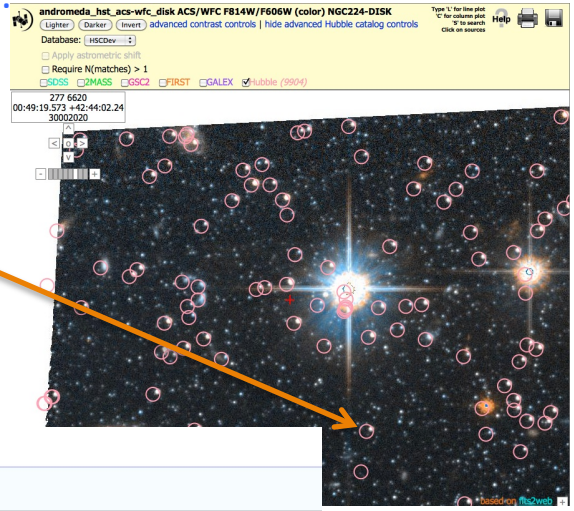
Display	PlotCat	Retrieve	RA	DEC	Level	Target	Detector	Aperture	Spectral_Elt	NExposures	ExpTime	StartTime	Dataset	PropID
Display		FITS	00:49:04.2	42:44:32.6	5	NGC224-DISK	ACS/WFC	WFCENTER	F606W	84	52780	2004-12-20 11:51:37	hlsp_andromeda_hst_acs-wfc_disk_f606w_v2_img	10265
Display		FITS	00:49:04.2	42:44:32.6	5	NGC224-DISK	ACS/WFC	WFCENTER	F814W	124	78080	2004-12-11 04:02:47	hlsp_andromeda_hst_acs-wfc_disk_f814w_v2_img	10265
Display		FITS	00:49:04.2	42:44:32.6	4	NGC224-DISK	ACS/WFC	WFCENTER	F814W/F606W	208	130860	2004-12-11 04:02:47	hlsp_andromeda_hst_acs-wfc_disk_f814w_f606w_v2_img	10265
Display		FITS	00:44:19.42	39:48:27.0	5	NGC224-STREAM	ACS/WFC	WFCENTER	F606W	84	52780	2004-09-05 05:00:52	hlsp_andromeda_hst_acs-wfc_stream_f606w_v2_img	10265
Display		FITS	00:44:19.42	39:48:27.0	5	NGC224-STREAM	ACS/WFC	WFCENTER	F814W	124	78080	2004-09-05 09:25:42	hlsp_andromeda_hst_acs-wfc_stream_f814w_v2_img	10265
Display		FITS	00:44:19.42	39:48:27.0	4	NGC224-STREAM	ACS/WFC	WFCENTER	F814W/F606W	208	130860	2004-09-05 05:00:52	hlsp_andromeda_hst_acs-wfc_stream_f814w_f606w_v2_img	10265

Step 4 - Click the Images button. Find the NGC224-DISK (color) image and click on Interactive Display





Step 5 - Click on the Hubble box to see the HSC sources. Pan out and check the uniformity. In this set of images the uniformity is good, but often it is not (see "FIVE THINGS YOU SHOULD KNOW ABOUT THE HSC").



Step 6 - Zoom-in on the upper left corner of the image and pick the star shown on the right. Click to see the HSC information.

Click !

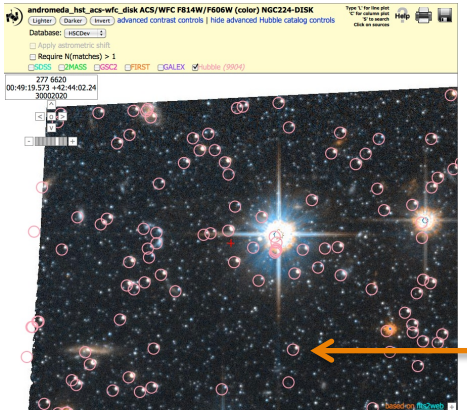
andromeda_hst_acs-wfc_disk ACS/WFC F814W/F606W (color) NGC224-DISK

Hubble

Results 1-1

Click column heading to sort list - Click rows to select
Show catalog columns: Main All Column descriptions: Show Hide
Text boxes under columns select matching rows Apply Filter Clear Filter

MatchID	NumFilters	NumVisits	NumImages	TargetName	MatchRA	MatchDec	StartTime	StopTime	CI	CI_Sigma	A_F814W	A_F814W_Sigma
8934299	2	27	27	NGC224-DISK	00:49:18.777	42:44:16.82	2004-12-11 04:02:47	2005-01-19 01:58:59	1.046	0.036	25.278	0.035



Step 7 - Note that the circles are not centered on the stars. Click (FAQ #2) to find out why. Click on advanced Hubble catalog controls and then Apply astrometric shift. This will generally help the alignment.

andromeda_hst_acs-wfc_disk ACS/WFC F814W/F606W (color) NGC224-DISK

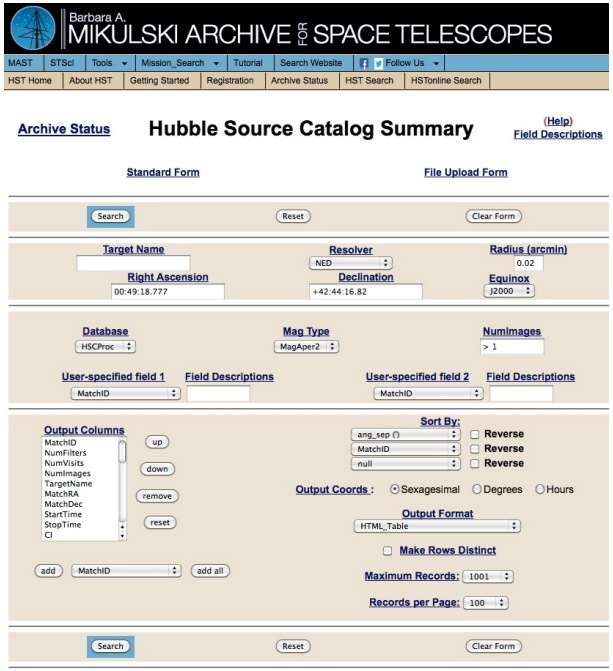
Hubble

Results 1-1

Click column heading to sort list - Click rows to select
Show catalog columns: Main | All | Column descriptions: Show | Hide
Text boxes under columns select matching rows: Apply Filter | Clear Filter

MatchID	NumFilters	NumVisits	NumImages	TargetName	MatchRA	MatchDec	StartTime	StopTime	CI	CI_Sigma	A_F814W	A_F814W_Sigma
8934299	2	27	27	NGC224-DISK	00:49:18.777	42:44:16.82	2004-12-11 04:02:47	2005-01-19 01:58:59	1.046	0.036	25.278	0.035

Step 8 - The HSC includes data from 27 images for this star. Scroll over to see information. For example, for MatchID = 8934299 the mean magnitude in A_F606W is 25.796, the scatter in all the measurements is sigma = 0.032 mag, and the concentration index is CI = 1.046 +/- 0.036 (i.e., typical of a star).

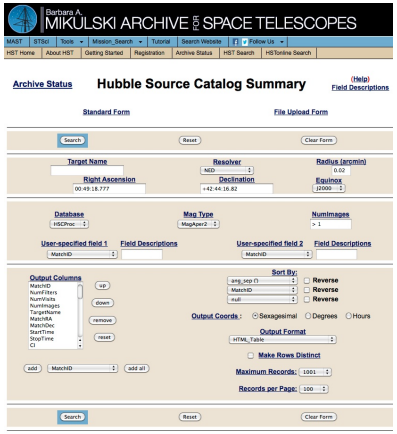


Step 9 – Go to the HSC Summary Search Form (at http://archtest.stsci.edu/hst/hla_cat/). Click on Search with Summary Form now. Enter the coordinate from above in the Right Ascension and Declination boxes and click Search. We find the same information as shown on the interactive display.

number of rows returned = 28

Match ID	Mem ID	Source ID	Det	Target Name	Image Name	Match RA (J2000)	Match DEC (J2000)	D
8934299	1	2142909230	Y	NGC224-DISK	HST_10265_19_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	0.472
8934299	2	2138876556	Y	NGC224-DISK	HST_10265_22_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	0.610
8934299	3	2137380139	Y	NGC224-DISK	HST_10265_21_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	0.823
8934299	4	2137362582	Y	NGC224-DISK	HST_10265_05_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	1.309
8934299	5	2140606079	Y	NGC224-DISK	HST_10265_14_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	1.573
8934299	6	2120774997	Y	NGC224-DISK	HST_10265_04_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	1.631
8934299	7	2132096613	Y	NGC224-DISK	HST_10265_74_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	1.644
8934299	8	2140597057	Y	NGC224-DISK	HST_10265_03_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	1.730
8934299	9	2123628567	Y	NGC224-DISK	HST_10265_01_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	1.736
8934299	25	2132073864	Y	NGC224-DISK	HST_10265_02_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	4.440
8934299	26	2120783652	Y	NGC224-DISK	HST_10265_13_ACS_WFC_F606W	00 49 18.777	+42 44 16.82	7.149
8934299	27	2119363185	Y	NGC224-DISK	HST_10265_06_ACS_WFC_F814W	00 49 18.777	+42 44 16.82	7.263
8934299	28	2138876556	N	NGC224-DISK	hst_10265_22_acs_wfc_f435w	00 49 18.777	+42 44 16.82	0.610
Match ID	Mem ID	Source ID	Det	Target Name	Image Name	Match RA (J2000)	Match DEC (J2000)	D

Step 10 - Click on 8934299 to go to the detailed form to see all 27 separate detections (11 in F606W and 16 in F814W) that have been averaged together for the summary form. Note that there is a 28th nondetection (Det = N) at the bottom for a F435W observations where apparently the star was not bright enough to be included in the HLA source list.



Step 11 – Go back to the HSC Summary Search Form to make a catalog to download.

Change:
radius to 2.0 (arcmin)
Mag Type to MagAper2
Output Coordinates to Degrees
Output Format to IRAF space-separate w/INDEF
Maximum Records to 10001.

Click Search:

A catalog with N = 3338 entries will be sent to your computer to read (e.g. with texedit) and save (e.g., using "save as").

```
MatchID NumFilters NumVisits NumImages TargetName MatchRA MatchDec StartTime StopTime CI CI_Sigma A_F814W A_F814W_Sigma W2_F606W W2_606W_Sigma W2_F814W W2_F81
Filter1 Mag1 Mag_Sigma1 Filter2 Mag2 Mag_Sigma2 Ang Sep (')
integer integer integer integer string ra dec datetime datetime float float float float float float float float float float float float float floa
8934299 2 27 27 NGC224-DISK 00 49 18.777 +42 44 16.82 2004-12-11 04:02:47 2005-01-19 01:58:59 1.046 0.036 25.376 0.026 INDEF INDEF INDEF INDEF 25.860 0.020 IN
8934358 2 27 27 NGC224-DISK 00 49 19.152 +42 44 18.67 2004-12-11 04:02:47 2005-01-19 01:58:59 1.072 0.042 24.523 0.024 INDEF INDEF INDEF INDEF 25.044 0.028 IN
8940306 1 6 6 NGC224-DISK 00 49 19.192 +42 44 16.54 2004-12-20 11:51:37 2005-01-01 13:55:36 1.184 0.035 INDEF INDEF INDEF INDEF INDEF INDEF 26.688 0.056 INDEF
8934323 2 19 19 NGC224-DISK 00 49 18.360 +42 44 17.22 2004-12-11 04:02:47 2005-01-05 09:03:30 1.107 0.052 26.228 0.040 INDEF INDEF INDEF INDEF 26.712 0.031 IN
8940283 1 3 3 NGC224-DISK 00 49 18.730 +42 44 12.01 2004-12-21 13:26:01 2004-12-24 12:28:03 1.136 0.054 INDEF INDEF INDEF INDEF INDEF INDEF 26.713 0.014 INDEF
8934190 2 27 27 NGC224-DISK 00 49 18.385 +42 44 14.24 2004-12-11 04:02:47 2005-01-19 01:58:59 1.020 0.054 25.618 0.034 INDEF INDEF INDEF INDEF 26.092 0.064 IN
8940319 1 10 10 NGC224-DISK 00 49 19.132 +42 44 20.09 2004-12-20 11:51:37 2005-01-03 13:29:11 1.079 0.054 INDEF INDEF INDEF INDEF INDEF INDEF 26.634 0.053 IND
8934506 2 27 27 NGC224-DISK 00 49 19.046 +42 44 21.15 2004-12-11 04:02:47 2005-01-19 01:58:59 1.747 0.037 25.475 0.024 INDEF INDEF INDEF INDEF 25.654 0.021 IN
8934218 2 27 27 NGC224-DISK 00 49 18.286 +42 44 15.15 2004-12-11 04:02:47 2005-01-19 01:58:59 1.034 0.051 24.921 0.015 INDEF INDEF INDEF INDEF 25.308 0.028 IN
8934513 3 27 28 NGC224-DISK 00 49 18.672 +42 44 22.37 2004-12-11 04:02:47 2005-01-19 01:58:59 1.059 0.040 21.648 0.023 INDEF INDEF INDEF INDEF 23.792 0.036 IN
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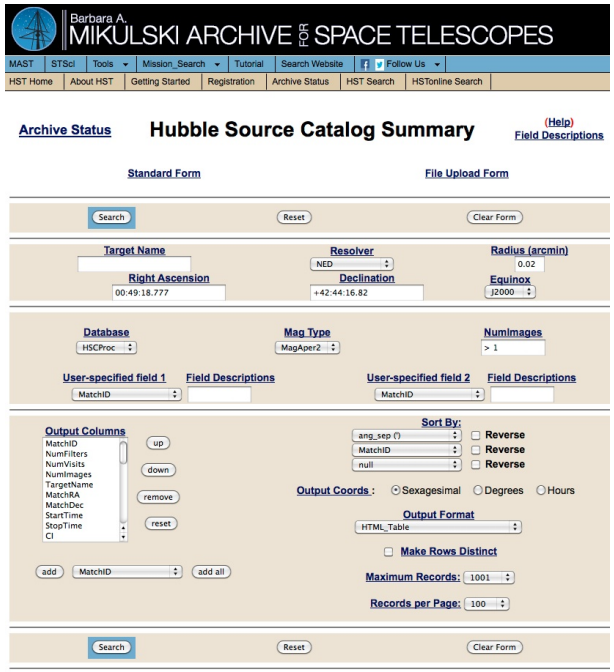
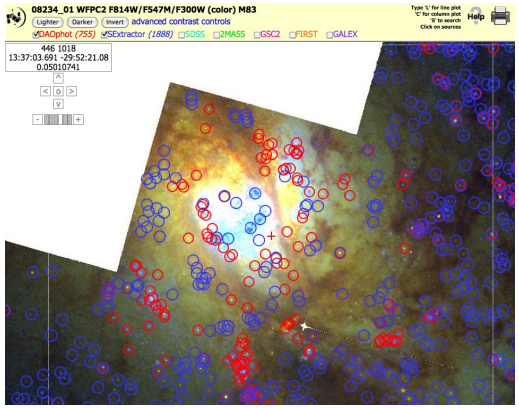
Other Help files you may want to review:

1. A Basic Hubble Source Catalog (HSC) Walkthrough (this document).



2. Advanced search techniques (e.g., customizing search and output options, using a list of targets, …). future

3. Common artifacts and how to minimize their impact. future



Detailed “Use Cases” and Youtube training videos will be available for Version 1 of the HSC.