

The WFCAM Science Archive

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**(work carried out as part of the VISTA Data Flow System,
or VDFS, e-Science project)**

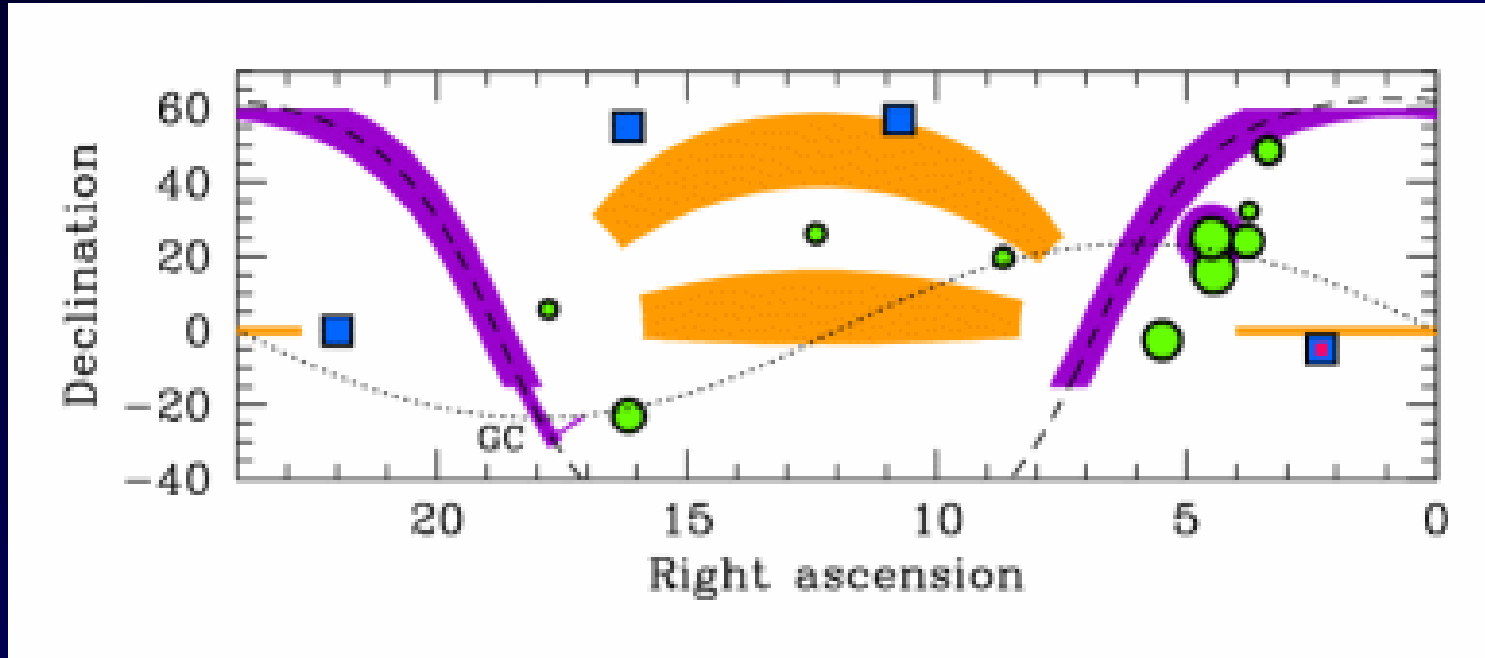
<http://surveys.roe.ac.uk/wsa/pre>

The need for a science archive

New survey science requires a new solution to the data management problem: *the science archive*.

- **a science archive is more than a simple repository of data (e.g. CDS, LEDAS etc.)**
 - flexible querying
 - science driven data products
- **a science archive is a system that enables science exploitation of large-scale surveys**
 - data volume: SSS => WFCAM => VISTA
 ~1TB ~10s TB ~100s TB
 - (re)calibration issues: centralised, controlled releases
 - supports diverse usage modes

The new generation of IR surveys: e.g. UKIDSS




- LAS: 4000 sq. deg. to K=18.4
- GPS: 1800 19.0
- GCS: 1400 18.7
- DXS: 35 21.0
- UDS: 0.8 23.0

Science Archive hardware



- designed and set up a stable, scalable HW platform
- economical RAID array maintenance in-house
- modular design (ease of maintenance & expansion)

Science Archive software

WSA/src/curation/wsatools  [ViewCVS and CVS Help](#)

Current directory: [\[WFAU\]](#) / [WSA](#) / [src](#) / [curation](#) / [wsatools](#)
Files shown: 10

File	Rev.	Age	Author	Last log entry
Attic/ [show contents]				
DataTypes/				
DbConnect/				
DbRpc/				
FitsIO/				
Pairing/				
DataFactory.py	1.3	17 hours	iab	Small changes
DataOps.py	1.5	17 hours	iab	Small changes
ExternalProcess.py	1.2	2 months	etws	more output to Logger
Logger.py	1.1	3 months	nch	Copied in files from deprecated subdirectory
Metadata.py	1.3	4 weeks	iab	Small changes
SkipList.py	1.1	17 hours	iab	Moved from deprecated
Slalib.py	1.1	12 days	nch	Added source merging core functions
SystemConstants.py	1.8	12 days	nch	Added source merging core functions
Utilities.py	1.6	12 days	nch	Added source merging core functions
__init__.py	1.10	17 hours	iab	New entries added

- Python/C/C++/Java
 - platform independent
 - syntactically clear
 - multilayered; clean interfaces
- off-the-shelf components
 - Python middleware (mxODBC, SOAPy, ...)
 - HTM spatial indexing
- scalable solutions
 - non-intensive work in Python
 - drop into C/C++ for intensive processing, e.g. bulk ingest
- CVS
 - version control
 - disciplined development
- RDBMS: Microsoft SQL Server

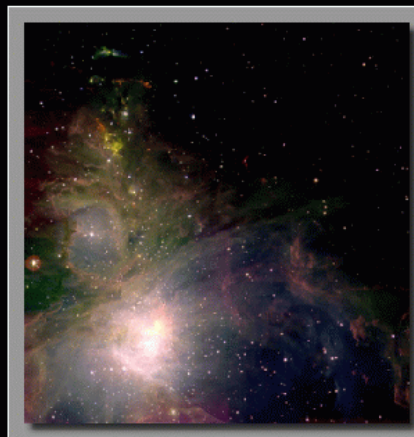
Protection of proprietary rights

- ESO has 18 month proprietary rights on UKIDSS data
- To gain access to UKIDSS data in the science archive you need to be registered (non-proprietary data can be accessed by anyone of course)
- Users are organised into “community” groups & vetting of new users is delegated to the community contacts
- Home-grown system is now in place to implement this
 - “UKIDSS testers” is a community of ~36
- Ultimately, AstroGRID community software will be deployed to aid integration into the VO

WSA – WFCAM Science Archive

The WFCAM Science Archive (WSA) holds the image and catalogue data products generated by the Wide Field Camera (WFCAM) on UKIRT. The primary contents of the archive will originate from the UKIRT InfraRed Deep Sky Surveys (UKIDSS): Large Area Survey, Galactic Plane Survey, Galactic Clusters Survey, Deep Extragalactic Survey and the Ultra Deep Survey.

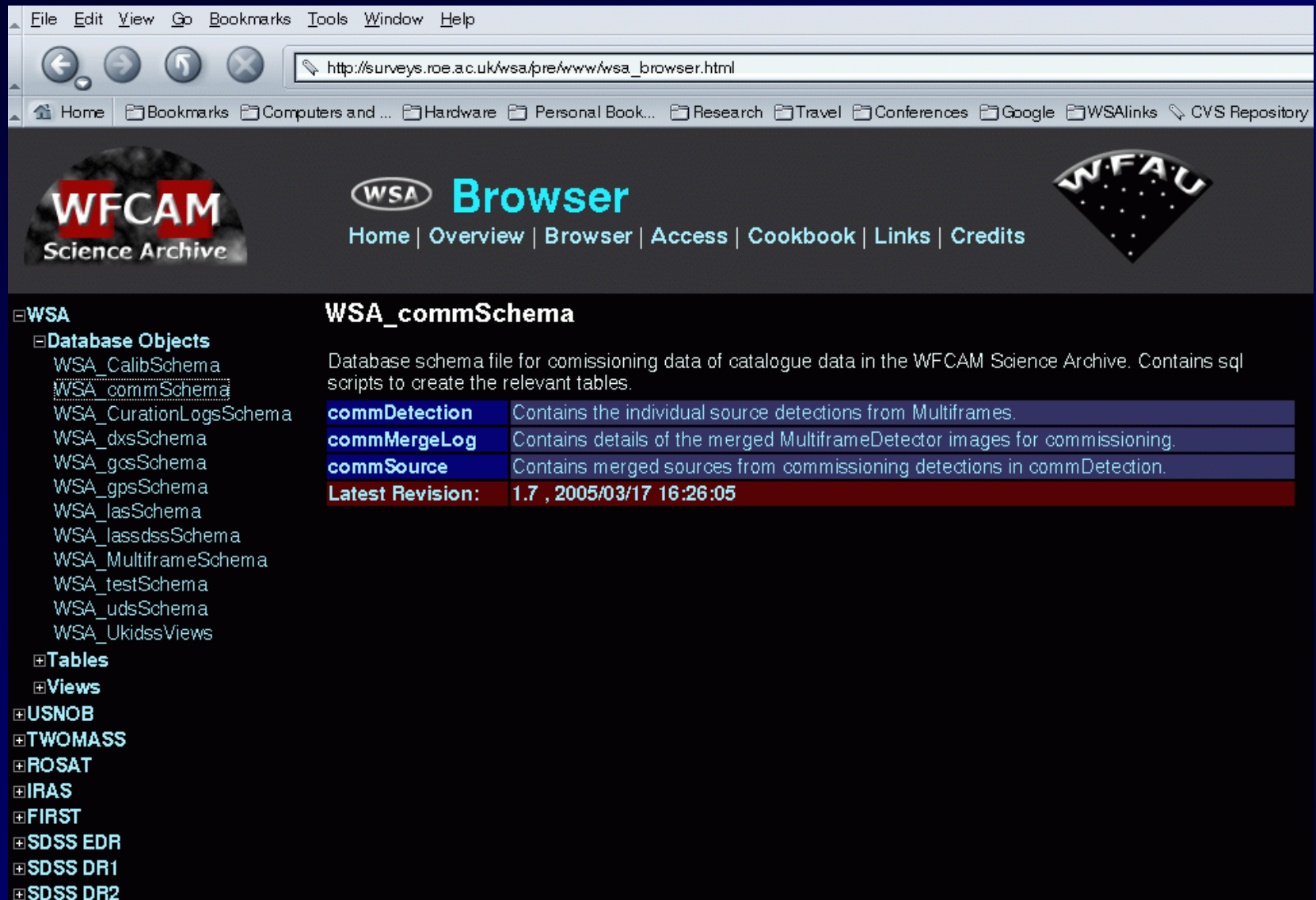
Following WFCAM commissioning, survey data will be released in phases, firstly to the UKIDSS community and then to the public (see [data policy](#)).



Picture: Early Commissioning – Central region of a full tile, showing dramatic clouds of gas and dust illuminated by stars in the southern half of the Orion nebula. This is an image at three infrared wavelengths (red represents narrow-band emission from molecular hydrogen gas at 2.12 microns, green represents K-band emission at 2.2 microns, and blue represents J-band emission at 1.25 microns).

Credit: Joint Astronomy Centre. Data processing by Dr Chris Davis and Dr Watson Varricatt.

Online documentation



The screenshot shows a web browser window with the address bar containing `http://surveys.roe.ac.uk/wsa/pre/www/wsa_browser.html`. The browser's menu bar includes File, Edit, View, Go, Bookmarks, Tools, Window, and Help. The address bar also shows navigation buttons (back, forward, home, stop) and a search icon. Below the address bar is a bookmarks bar with entries for Home, Bookmarks, Computers and..., Hardware, Personal Book..., Research, Travel, Conferences, Google, WSAlinks, and CVS Repository.

The main content area features a dark header with three logos: WFCAM Science Archive on the left, the WSA Browser logo in the center, and WFAU on the right. The WSA Browser logo includes the text "WSA Browser" and a navigation menu: Home | Overview | Browser | Access | Cookbook | Links | Credits.

Below the header, the page is organized into a sidebar and a main content area. The sidebar on the left is titled "WSA" and contains a tree view of database objects and tables. The main content area is titled "WSA_commSchema" and provides a description of the schema file, followed by a table of key components and their latest revision.

WSA

- Database Objects
 - WSA_CalibSchema
 - WSA_commSchema
 - WSA_CurationLogsSchema
 - WSA_dxsSchema
 - WSA_gcsSchema
 - WSA_gpsSchema
 - WSA_lasSchema
 - WSA_lasdsSchema
 - WSA_MultiframeSchema
 - WSA_testSchema
 - WSA_udsSchema
 - WSA_UkidssViews
- Tables
- Views

USNOB

TWOMASS

ROSAT

IRAS

FIRST

SDSS EDR

SDSS DR1


SDSS DR2

WSA_commSchema

Database schema file for commissioning data of catalogue data in the WFCAM Science Archive. Contains sql scripts to create the relevant tables.

commDetection	Contains the individual source detections from Multiframes.
commMergeLog	Contains details of the merged MultiframeDetector images for commissioning.
commSource	Contains merged sources from commissioning detections in commDetection.
Latest Revision:	1.7 , 2005/03/17 16:26:05

Logging in to the WSA:

[Home](#) | [Overview](#) | [Browser](#) | [Access](#) | [Login](#) | [Cookbook](#) | [Links](#) | [Credits](#) 

WFCAM
Science Archive

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WSA Login

Only registered users are allowed to access UKIDSS WFCAM data prior to its public release.

Username:	<input type="text"/>	usernames & passwords are case sensitive
Password:	<input type="password"/>	
Community:	<input type="text" value="UKIDSS tester"/>	

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[Listing](#) | [Radial](#) | [MenuQuery](#) | [FreeSQL](#)

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28/2/2005



IFA ROE

WFCAM

Science Archive

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IFA ROE

Logged in as - User.wsa@roe.ac.uk Community:UKIDSS

Archive Listing

This form allows use to retrieve listings of the multifra

Select the programme you wish to list.

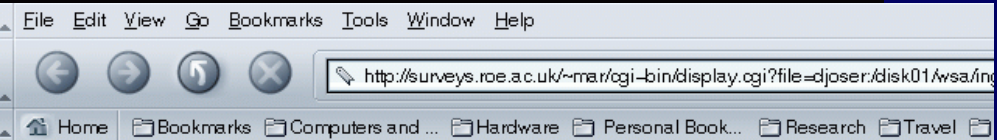
Commissioning

and choose which parameters to list: default subset

Use the parameters below to narrow your search. A maximum

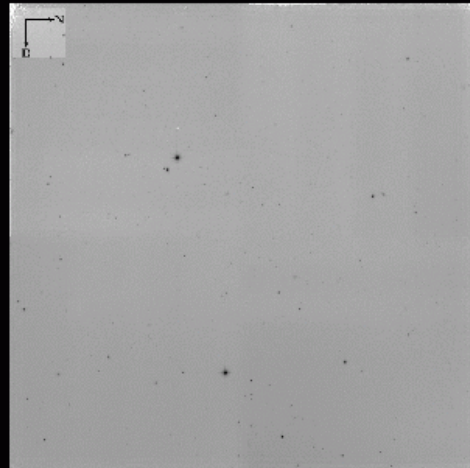
Filter/waveband:	all
Minimum RA of base position:	0.0
Maximum RA of base position:	24.0
Minimum Dec of base position:	-90.0
Maximum Dec of base position:	+90.0
Start Date:	Day --- Mont
End Date:	Day --- Mont

GetList Reset

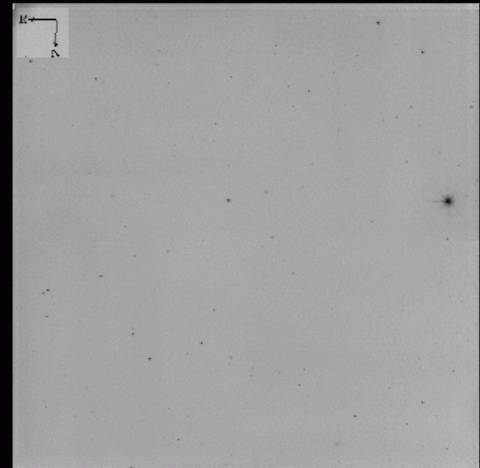


Multiframe: 43 v20041108_00492_st

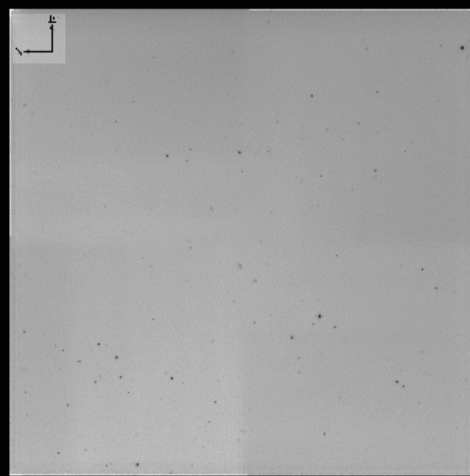
[Download FITS file \(70.49 Mb\)](#)



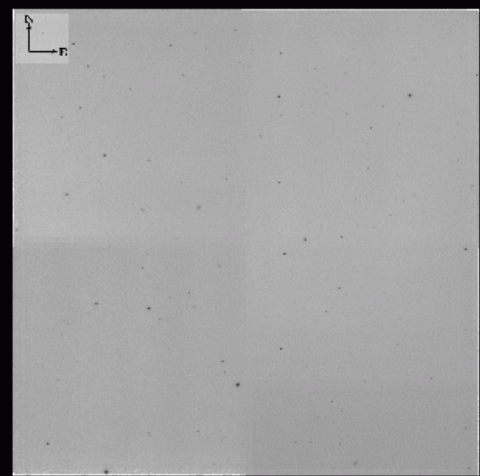
Extension: 1



Extension: 2



Extension: 3



Extension: 4

Browsing images:

Freeform SQL Query

This forms allows you to submit an SQL query to the WSA database.

SQL statement:

```
select kMag, (jnh+hmk) as jnk, mergedClass
from commSource
where |jSeqNum>0 and hSeqNum>0 and kSeqNum>0
```

Submit

Email Address:

the results of

Data Format:

- HTML table summary (selected)
- ASCII File (downloadable)
- FITS File (downloadable)
- VOTable File (downloadable)

(The number of rows written)

File Compression:

- (none)
- GZIP

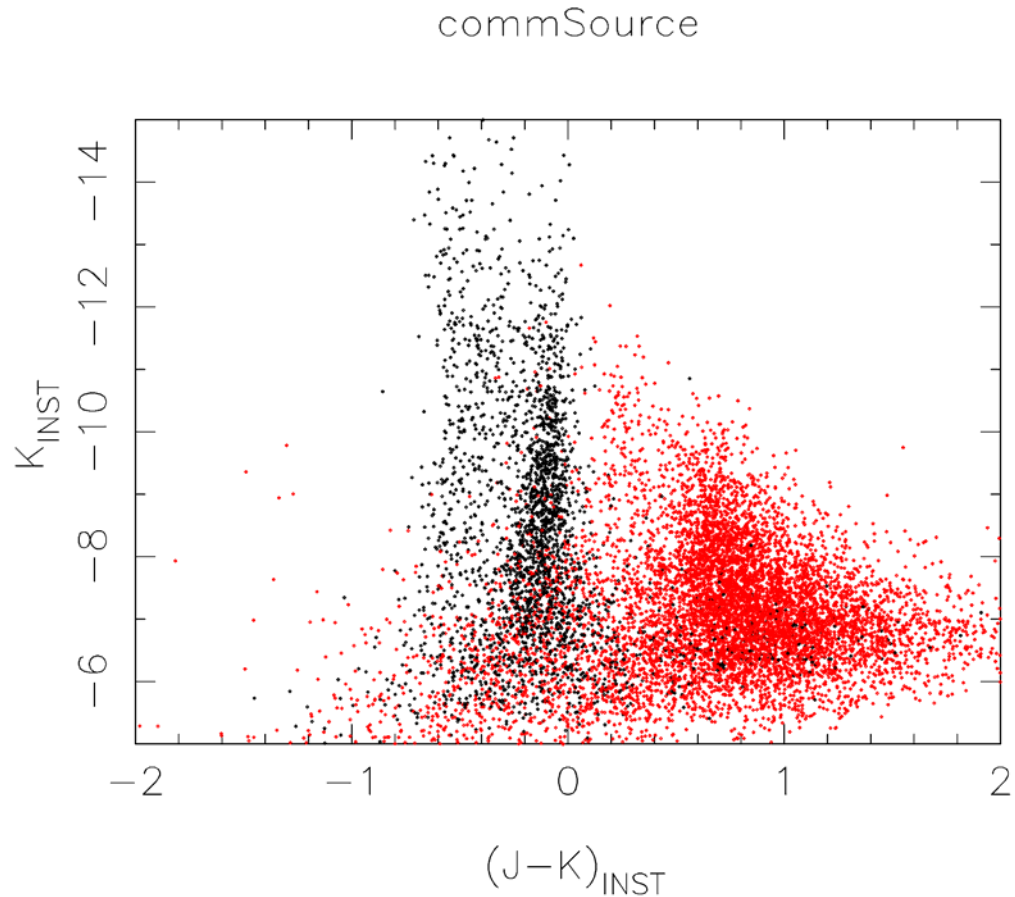
HTML rows:

Number of rows written

Submit

reset form

Browsing Catalogues:



Data access

16	90	+2.4849066
17	91	+2.6390573
18	92	+2.6390573
19	93	+2.9957323
20	94	+3.4011974
21	95	+3.4011974
22	96	+3.7841896
23	97	+3.7841896
24	98	+3.6635616
25	99	+4.1108739
26	100	+4.1588831
27	101	+4.2904594
28	102	+4.2046926
29	103	+4.4067192
30	104	+4.4543473

(Query returned 150 result r

[Download Results File](#), y

[Launch file in Topcat](#) (re

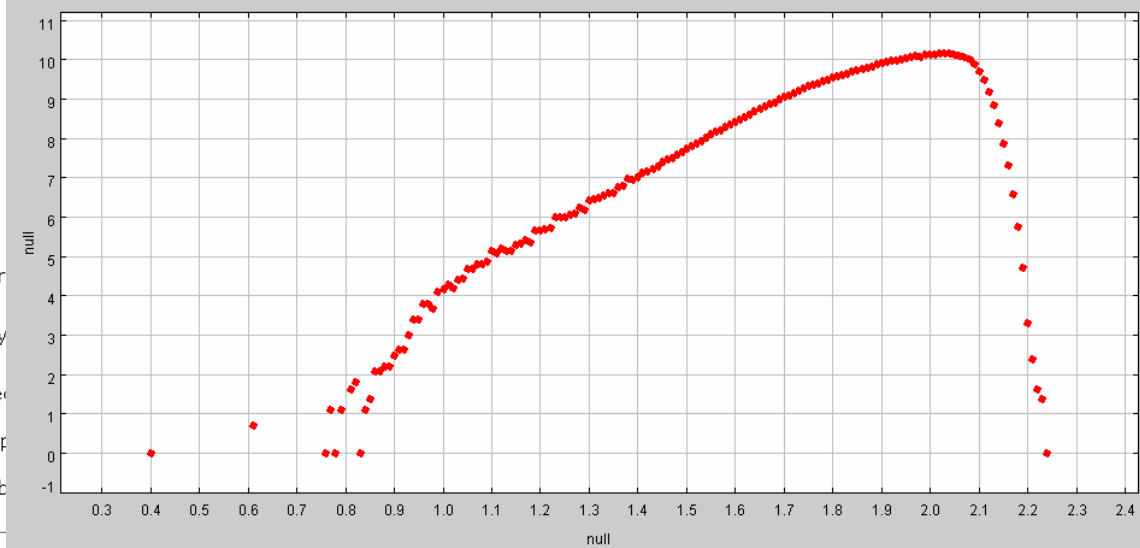
QUERY FINISHED: Thu Sep

Click your browsers 'BACK' b

Page created: 15 September 2005



Table Plotter for 1: results15_11_2_15_22.fits.gz



X axis: null Log plot Flip

Y axis: null Log plot Flip

Row subsets: All

Further information:

- **WFCAM Science Archive URL:**
<http://surveys.roe.ac.uk/wsa/pre>
- **When will data be released to the ESO community?**
 - **first data release anticipated around end of 2005**
- **UKIDSS home page (e.g. registration procedure):**
<http://www.ukidss.org/>
- **Where can I learn more about SQL?**
<http://surveys.roe.ac.uk/wsa/pre/sqlcookbook.html>
- **What about VISTA?**
 - **The same Science Archive system will be available for the VISTA public surveys**