





Curation of the VISTA Science Archive

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Overview

- * Data Transfer and Ingest
 - → Flat File Access
- * Recalibration
- * Post-nightly pipeline data products:
 - Deep Stacks
 - Deep Tiles
 - Difference Images
- * Provenance
- * Quality Control & QC Flags
- * Source Merging & Reseaming
- * Neighbour Table Creation
 - → Release Database





Data Transfer & Ingest



- * Data transfer from to via UKLight [2.5-5h per observing night; run monthly]
- * Compressed Images (JPEGs) for each detector [~2.5-5h per observing night]
- * Extraction, process & ingest of multiframe metadata [~1-2h per observing night]
- → Flat File Access (images, confidence maps, single band catalogues)!
 [1-2 weeks after CASU releases data]
- * Extraction, process & ingest of catalogue data [2-4h per observing night]
- → Parallelised processing, run-time mainly determined by ingest.





Monitor Page



http://surveys.roe.ac.uk/vsa/index.html



Shows progress of ingest procedure. If one of the tickmarks ••• is present, flat file access is available, but all JPEGs may not be created yet.





Post-nightly pipeline Data Products



- * Recalibration (if necessary)
- * Difference images (eg. in WSA: GPS)
- * Deep stacks (eg. in WSA: DXS)
- * Deep tiles (eg. Mosaics in WSA: UDS)
- * Catalogues for these image products
- * Quality control by checking correct magnitude limits
- * Synoptic data products
- *







Provenance & Quality Control

- * Provenance: Information about file provenance
- * Quality Control of detections: done by archive scientists, some files marked as deprecated, e.g.:
 - 0 = good data
 - 60-70 = eyeball check deprecation
 - > 127 = frame superceded by reprocessing
- * Update of *Quality Error Bit Flags* (ppErrBits): deblended sources, bad pixel, boundary sources, saturated sources, cross-talk artefacts, etc.







Source Merging & Reseaming

On detections that passed Quality Control:

- * Source merging: creation of multi-colour source lists from individual passband detections.
- * Reseaming: flagging of duplicate objects as primaries or secondaries (relies on quality error bit flag).







Neighbour Tables

- * Neighbour tables between sources and detections to quickly generate light curves and look for variable objects
- * Neighbour tables with external catalogues to specifications:
 - → SDSS, DENIS, MGC (Millennium Galaxy Catalogue), NVSS (NRAO VLA Sky Survey), 2XMM, 2MASS, ROSAT, IRAS, FIRST, GLIMPSE, SSA, UKIDSS Releases ...







Release

- * Creation of the Release Database
 - Created in individual file-groups for faster access
- * Copying to Public Catalogue Server
 - Update of VSA Browser pages to reflect changes
- → http://surveys.roe.ac.uk/vsa/www/vsa_browser.html







Timeline

		UKIDSS DR3	
Transfer JPEGs Metadata	7h per observation night 2h calc. + 0.3h ingest per observation night 0.2h calc. + 0.2h ingest per observation night	50d (~7d after last pipeline proc.) ~7d calc. (parallel) + 2d ingest ~1d calc. (parallel) + 1.5d ingest	
Catalogue data	1h calc. + 1h ingest per observation night	4d calc. (parallel) + 7d ingest	
Recalibration GPS diff. images UDS stacks DXS mosaics Provenance Quality Control Error bit flags Source merging Reseaming Neighbour tables	depending on PI input UDS+ DXS: 0.5h;GCS: 1d; LAS: 2d; [GPS: 3d] UDS+ DXS: 2h;GCS:2d; LAS: 0.5d; [GPS: ~14d] UDS+ DXS: 1h;GCS:1h; LAS: 4d	4d 1.5d 1d 3d 1d 28d 2d 3d 2.5d 4d	
Release database	15h creation; 7h copying	1 d	



~90d

Total Computational Time





VSA Releases

- * VISTA surveys are released independently
 - → Smaller surveys don't have to wait until processing has finished on larger ones.
- * Quality Control of detections is mainly the PI's responsibility
 - Quick but thorough QC leads to earlier releases.
- * ESO's release policy
 - → Major data releases with uniform photometric and astrometric calibrations at least once per year.
 - → First delivery expected no later than 18 months after beginning of the observations.







VSA Browser

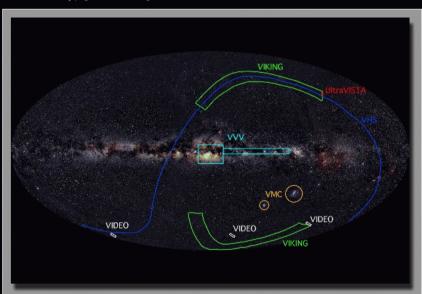
Your portal to VSA data products! http://surveys.roe.ac.uk/vsa/index.html

VSA - VISTA Science Archive



The VISTA Science Archive (VSA) holds the image and catalogue data products generated by VIRCAM on the Visible and Infrared Survey Telescope for Astronomy (VISTA). The primary contents of the archive wiscience-ready catalogue data will be released in phases, while standard flat-file data products (both images and derived single passband catalogues) become available continually after routine observation an archive releases can be found on the surveys page

The history of archive releases, updates and bug fixes is recorded under the release history page. Users wishing to receive email announcements of such entries should subscribe to the VSA_Announcelist (c



Picture: Sky coverage of VISTA surveys, overlaid on a 2MASS image of the whole sky.

Credit VISTA

Home | Overview | Browser | Access | Login | Cookbook Listing | FreeSQL Links | Credits

> WFAU, Institute for Astronomy, Royal Observatory, Blackford Hill Edinburgh, EH9 3HJ, UK Tel +44 131 668 8356 (office) or +44 131 668 8100 (switchboard)







VSA Browser: Access

Fill in your login details and your database is ready for querying!



VSA Home Start Here Data Overview

Known Issues the Surveys

Schema browser

Data access
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Archive Listing
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MultiGetImage
Ereeform SQL

SQL Cookbook

Q&A Glossary

Release History Gallery

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Users can access the data held in the VSA through web-based forms. These forms parse the user's input parameters and submit SQL (Structured Query Language) queries to the database

- Archive listing retrieve listings of the multiframes held in the VSA. Links are returned allowing the user to view the library jpegs and download the FITS files.
- Freeform query submit an SQL query directly

Catalogue/Table queries

VSA - Data Access

Query results i.e. rows selected from the database, are displayed in an HTML table and/or written to a file (ASCII, FITS or VOTable format) that can be downloaded.

Users should note the following general points:

- HTML table output is only intended as a summary and the number of rows displayed is limited. A note at the end of the table informs the user if this was exceeded.
- The number of result rows written to files is also limited and depends on how many parameters have been requested i.e.

maximum rows written to file = nint(15000 / no. parameters) x 1000

- So if only three parameters have been requested than the file can contain up to 5 million rows. Again users are warned if the limit was exceeded and an indication of how many extra rows were re

 Users who exceed the file row limit should submit their query in parts e.g. by querying sections in RA or Dec or magnitude slices.
- If an email address is supplied queries are allowed to run for 30 seconds before they are placed in the background and the browser window is released. On completion an email is sent informin
 The tables in the database do not contain any NULL values. Where values are unavailable for a given object parameter default values have been inserted. Users should be aware of this when collections are unavailable for a given parameter's default value.
- NULL values can be returned if users JOIN tables. If this occurs the values are written out as zeroes

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> > vsa-support@roe.ac.uk 6/11/2009



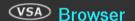




VSA Browser: Schema Browser

Schemas, Tables, Attributes and more...





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VSASV

→ other Browser versions

⊞VSA

■VSA UltraVISTA

⊞VSA VHS

⊞VSA VIDEO ⊞VSA VIKING

■VSA CALIBRATION

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⊞VSA SV NGC253 ⊟VSA SV ORION

ED-1-1--- Obi--

■Database Objects

⊟Tables

svOrionDetection
svOrionMergeLog
svOrionSource
svOrionSourceNeighbours
svOrionSourceXtwomass_psc
ArchiveCurationHistory
AstrCalVers
CurationTask
CurrentAstrometry
ExternalSurvey
ExternalSurveyTable
Filter
Multiframei

MultiframeDetector
MultiframeDetectorEsoKeys
MultiframeEsoKeys
PhotCalVers
PreviousMFDZP
Programme
ProgrammeCurationHistory
ProgrammeFrame
ProgrammeTable
Provenance
Release
RequiredDifflmage
RequiredFilters

RequiredListDrivenProduct RequiredMosaic RequiredNeighbours

🛂 тавье Multiframe

Contains details of all multiframes stored in the archive

Required constraints:

- Primary key is (multiframeID)
- (filterID) references Filter(filterID)

Name	Туре	Length	Unit	Description	Default Value	Unified Content Descriptor
multiframeID	bigint	8		UID of the multiframe (assigned sequentially by the archive ingest process)		ID_FRAME
vistaRunNo	int	4		Original VISTA run number (from filename)		REFER_CODE
creationDate	datetime	8	MM-DD-YYYY	File creation date (YYYY-MM-DD HH:MM:SS) (image primary HDU keyword: DATE)	12-31-9999	TIME_DATE
frameType � ඎ	varchar	64		The type of multiframe (e.g. stack tile mosaic etc.)	normal	meta.code.class
cuEventID	int	4		UID of curation event giving rise to this record		REFER_CODE
julianDayNum	int	4	Julian days	The Julian Day number of the VISTA night		TIME_DATE
fileTimeStamp	bigint	8		Time stamp digits (from the original CASU directory name and file time stamp) for enforcing uniqueness		??
filterName	varchar	8		VISTA combined filter name {image primary HDU keyword: HIERARCH ESO INS FILT1 NAME}		??
filterID	tinyint	1		UID of combined filter (assigned in VSA: 1=Z,2=Y,3=J,4=H,5=Ks)		INST_FILTER_CODE
project	varchar	64		Time-allocation code	NONE	REFER_CODE
telescope	varchar	16		ESO telescope name (image primary HDU keyword: TELESCOP)	NONE	
instrument	varchar	8		Instrument name (image primary HDU keyword: INSTRUME)	NONE	
arcfile	varchar	64		Archive File Name (image primary HDU keyword: ARCFILE)	NONE	
utDate	datetime	8	MM-DD-YYYY	Observation date (MM-DD-YYYY)	12-31-9999	TIME_DATE
28/01/1	10 datetime	8		Observing date	12-31-9999	TIME_DATE



VISTA PSPI Meeting, Cambride





Questions

- * Requests/wishes for post-nightly pipeline data products
- * Requests for specific external (stable) catalogues
- * Proprietary rights on Flat File Access:
 - > 12 month to individual survey groups?
- * Proprietary rights on Catalogue Database Releases:
 - Immediate world wide access?
- * Transfer of flat file products into ESO's SAF?

For questions & feedback please contact vsa-support@roe.ac.uk

