



OmegaCam Science Archive

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WFAU main pipeline

- Ingest nightly processed image and catalogue data from CASU – more than 1 month after observations, once it has been fully calibrated.
- Basic QC: Assess images / catalogues for quality. A mixture of automatic scripts and input from Survey teams. Feedback appreciated, e.g. list of frames in final data release.
- Flag individual catalogue objects
- Merge pass-band catalogues to create source tables
- Add in team generated catalogues (when available)
- Create neighbour tables to link external catalogues
- Release data products to users

OmegaCam Science Archive

The screenshot shows a Safari browser window displaying the OmegaCam Science Archive website. The browser's address bar shows the URL `osa.roe.ac.uk`. The website has a dark theme and a sidebar on the left with a navigation menu. The main content area features a title "OSA - OmegaCAM Science Archive" and a paragraph explaining the archive's purpose. Below the text is a large image of a galaxy with several survey regions outlined in green and blue, labeled "KIDS-N", "ATLAS-N", "KIDS-W2", "VPHAS+", "ATLAS-S", and "KIDS-S". At the bottom of the page, there is a footer with the OSA logo and a list of navigation links.

OSA - OmegaCAM Science Archive

The OmegaCAM Science Archive (OSA) holds the image and catalogue data products generated by OmegaCAM on the VLT Survey Telescope (VST). The primary contents of the archive originate from the VST ATLAS survey. Survey science-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 and processing operations.

Information on the various 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 OSA_Announcelist (contact osa-support@roe.ac.uk).

Navigation Menu:

- OSA Home
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Survey Regions:

- KIDS-N
- ATLAS-N
- KIDS-W2
- VPHAS+
- ATLAS-S
- KIDS-S

Footer:

OSA | [Home](#) | [Overview](#) | [Schema](#) | [Access](#) | [Login](#) | [Cookbook](#) | [Listing](#) | [FreeSQL](#) | [Links](#) | [Contact](#)
WFAU, Institute for Astronomy 2013, University of Edinburgh (IfA | ROE)

ATLAS releases

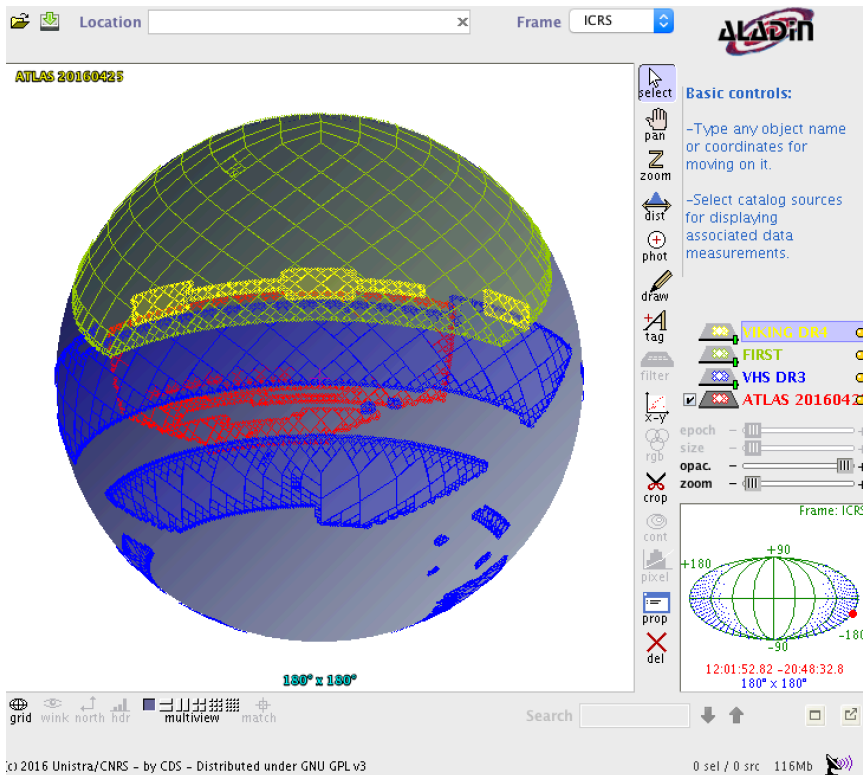
- **Every ESO semester.**
 - **Latest team release ATLASv20160425 (P95)**
 - 152624 frame sets (4687 sq. deg.)
 - 144 million unique sources
 - >900 million measurements
 - u-band: both Chilean and ATLAS
 - **Public / ESO release: ATLASDR3**
 - 132479 frame sets
 - 106 million unique sources
 - >700 million measurements
 - u-band: ATLAS only

Value Added Tables

- Data produced by team and ingested into OSA
- Currently do for e.g. VISTA-VMC and VVV
 - E.g. PSF photometry and variables, 3D extinction maps
- Linked to existing pipeline tables.

- If you would like to add in your own catalogues, email osa-support@roe.ac.uk

Coverage Maps



- Uses Aladin MOC datatype to display footprint of each survey.
- Useful for working out overlaps areas
- Updated after new releases.

Neighbour tables to ATLAS

- SDSS – many releases (DR6,7,8, 9, 13, Stripe 82)
- 2MASS (PSC, XSC)
- WISE wise_allskysc, allwise_sc
- SSA
- FIRST
- IRAS
- ROSAT
- MGC
- DENIS
- VISTA: VHS / VIKING
- Future: Gaia, 2MPZ, WISExSCOSPZ, PanSTARRS

Matrix ZPs

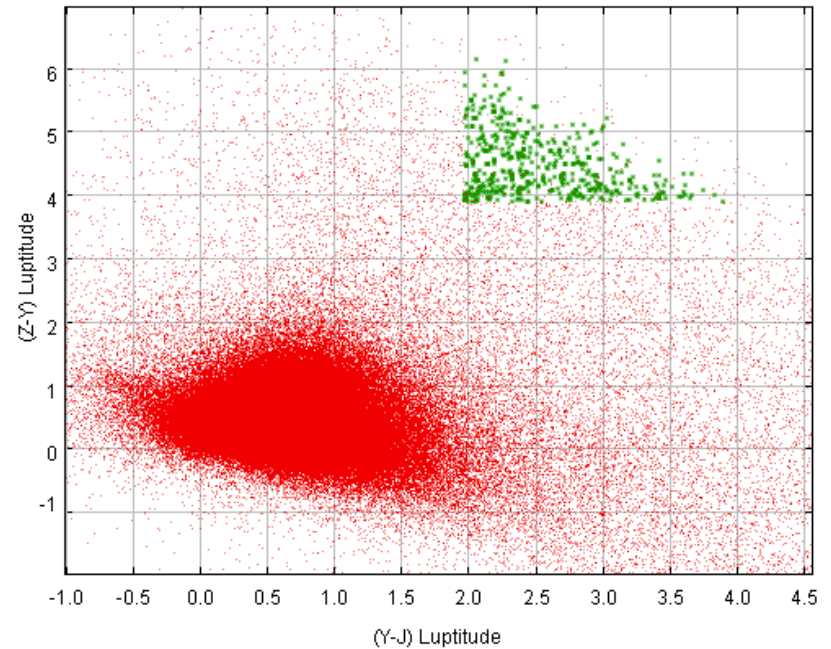
- Existing code to update ZPs - tested with recalibration of WFCAM/VISTA
 - Send as list of filenames, extension number, and new zeropoints, errors, number of calibrators.
 - No need to reingest all data, unless improvements to raw catalogue products.
 - Previous calibrations are stored in DB tables and HISTORY keywords of FITS files.

Illumination Correction

- **Need implementation from CASU**
 - Either maps like WFCAM/VISTA
 - Or code to correct images.
- Necessary for large-scale list-driven, **unless we extrapolate from existing corrections, which may lead to mistakes**
- Necessary for some solutions to **model magnitude calculations.**

List Driven pipeline

- Working large scale list-driven pipeline.
- tested on VISTA-VIKING (500million remeasurements)
 - Steve Warren happy with results
 - Recovered all $z>6.5$ VIKING QSOs very efficiently
 - Other candidates.
- CASU imcore_list / SExtractor DUAL
- Flexible input list (SQL query, or file)
 - E.g. g-band only, all filters, unique sources, VHS
- **Need Illumination correction software/maps for VST data.**
- Good for point-sources, but what about extended sources?
- List driven tables separate from normal extractions:
 - atlasSource
 - atlasRbandSourceRemeasurement
 - atlasIbandSourceRemeasurement
 - Easy to join if one derived from other.
- **Multiple configurable catalogues possible**
 - Different science cases



$Z>8$ QSO colours, VIKING.

- magnitudes,
- luptitudes
- calibrated fluxes (Jansky)

Tiling / CCD overlaps

- Bad colours – assigned by detector, but different bands have significant offsets.
- ESO want band-merged catalogues from ‘tiles’ – we fudge it currently.
- SWARP over different CCDs?
 - Not much overlap, problems with illumination corrections.
 - Catalogue extraction? Already have CASU: don’t want to unnecessarily redo.
- Bulk list-driven photometry in all filters may fix this, by combining and averaging from different detectors to a single set of unique sources:
 - We have code for averaging list-driven photometry from pawprints in VISTA tiles
 - Takes account of error-bit flags
 - Averages calibrated flux, not magnitude.
 - But imcore-list only aperture photometry, no sensible extended source photometry: petrosian values are all at a constant maximum radius.

Model Mags

- No existing WFAU software
- Not enough man-power to fully develop and test.
- Options:
 - ATLAS team create and test basic method, WFAU insert into pipeline and speedup
 - If it uses existing catalogue products, e.g. isophotal areas, aperture fluxes, ellipticity, seeing, it should fit in smoothly.
 - If it runs on images, need illumination correction.
 - Use 3rd party (e.g. SExtractor, GALFIT...):
 - Give different set of detections to CASU catalogues
 - Do we combine catalogues, not use CASU...?
 - Images must be illumination corrected.
 - ATLAS team need to decide on best set of configuration parameters.
 - Some codes are more sophisticated, and slower – need to be realistic.
 - In both cases we can fit the code into our pipeline and outputs into the database.