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This document presents work package progress by CASU during July and August 2007. For further details of group activities over the past month and quarter see http://www.ast.cam.ac.uk/vdfs/diary.html. For the minutes of all group meetings see http://www.ast.cam.ac.uk/vdfs/docs/minutes

WFCAM processing status

The remaining NDR data from early 06B was transferred from JAC to Cambridge over the network in about a week, and has now been processed and transferred by WFAU. The quality of the October/ November data up to the 20th was in general quite poor due to: bad weather, lack of enough good calibration frames (especially darks), many missing frames (caused mainly by camera problems), and a lot of interrupted incomplete group MSBs.

All 2007A data has been processed and transferred to WFAU.

Various bits of 06B, 07A service data (Mattila SNe; Watson XMM followup) required urgent access to the processed WFCAM data and were dealt with directly with the PIs.

Raw data tapes for 2007B (1 August onwards) have started to arrive in Cambridge. However, at the time of writing (11 September) only 3 complete nights have been received, which is not enough to begin processing given the almost complete absence of suitable flatfield frames in those 3 nights.

A very small number of minor file fixes have been made to solve problems that showed up during data ingest at WFAU.

WFCAM reprocessing status

A number of reprocessing requests for 06A and 06B data have been received and dealt with.

Some earlier GPS frames from 06A required reprocessing to fix problems introduced by a known feature of the then extant cross-talk correction algorithm in regions of bright spatially varying nebulosity. Several sets of frames with poor sky subtraction were also reprocessed but as most of these were caused by poor weather curtailing observing, not too much could be done about them.

JRL has developed and tested a new, and more CPU-intensive, sky estimation algorithm involving iterative object masking to attempt to handle some of the low level transient "features" visible in some UDS stacks. This is designed to work at the pawprint level, when suitable tiles have not been observed. A similar sky correction method will probably be required for processing of the UltraVISTA survey.
A problem with aberrant master dark frames turned up during jpeg eyeballing for DR3. The first of these was traced to a whole night of bad darks used to make the dark frame corrections. Unfortunately this affected 2 processed nights of data which

required complete reprocessing. A further night had similar problems and also required (partial) reprocessing. This has lead to a further tightening up of procedures for checking master dark frames.

MR contacted the Durham group (Jim Geach) about their progress in manually processing raw WFCAM data to make a deep stack on a COSMOS field and obtained some example processed data. Now that 06B processing is over, he and MJI have undertaken a comparison using the pipeline output as a starting point. This has produced some interesting results.

MJI investigated a problem with the Kron radii and fluxes found by Anthony Smith and forwarded and investigated by Nick Cross. Together we found that: there was indeed a problem; the Kron estimates could be improved from the existing catalogues; and that Petrosian estimates were much better anyway and were working well.

EGS investigated a photometric redshift issue in DXS after conversations with Michael Rowan Robinson and Steve Warren about this. He concluded that some of this was caused by MRR comparing WFCAM aperture magnitudes with 2MASS isophotal magnitudes from the extended catalogue. When using the correct magnitudes the WFCAM and 2MASS apertures agree well. There is still an issue that when introducing the WFCAM magnitudes in the *photoz* code the *specz* and *photoz* show a large disagreement, but this is probably due to the fact that MRR has been using Petrosian magnitudes from the WFCAM catalogue rather than matched (to the optical) aperture photometry.

WFCAM recalibration

MJI wrote a robust MLM estimator to counter assorted problems with the curve fitting to nail the zero-point offset for the Y and Z-band data. Analysis of the Z and Y zeropoint offsets is now complete. Photometric recalibration of all processed data will be undertaken over the next week and made available to WFAU. This will include the new offsets and individual detector zero-points, and (TBD) tables detailing the remaining residual spatial systematics. No changes are required to the colour equations.

A draft of the paper describing all of this is in progress with the usual incomprehensible maths bit from MJI.

Internet transfers

PSB worked closely with Horst Meyerdierks to experiment with a JANET connection between CASU and ATC. HM installed seaforth.roe.ac.uk and carried out some requested software installation and tuning. Results were 25MB/s using hpn-ssh and 45MB/s using ftp (much more lightweight protocol). This compares very favourably with the best ~12MB/s using the multi-threading technique used originally by WFAU and the current rock-steady ~3MB/s over UKLight. A similar set of tests over UKLight to seaforth using realistic test WFCAM transfer rates (ie. a ~50 GByte whole night of real processed WFCAM 06B data) yielded ~30MB/s using un-encrypted hpn-ssh.

PSB has also been investigating with JAC personnel the feasibility of transmitting raw WFCAM data to Cambridge via the Internet. An outline plan was sent to JAC and we

are iterating on a procedure. If we can make good progress on this we should be able to reduce manpower overheads, increase data integrity and improve lead time to processing and thence science delivery.

VISTA pipeline

We continue to receive requests from ESO for updates to the pipeline, e.g. concerning the CPL switch to CFITSIO, or name changes to various parameters. The current version is 0.6.3, the next release is being prepared for compatibility with CPL-4.0 (the CFITSIO version).

VIRCAM Tests

CASU have received around 2300 VIRCAM data frames taken in July from the Paranal engineering run of VIRCAM, with apparently only two being lost semi-permanently. Because of some technical difficulties with the camera, the data needed reformatting to be able to be processed (semi)automatically. JRL and PSB have been running tests on this camera data, which has already turned up a few bugs, albeit minor ones. A detailed report on the findings is being prepared and a draft of this is being sent out shortly.

Other Stuff

CASU will revisit the VDFS work plan by the beginning of the next quarter (07q4) and clarify reporting for the 6 months of the extension funding.