Document Title:	End of Month Report Q4m1 07
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Document Issue:	1
Document Date:	7/11/2007

This document presents work package progress by CASU during September and October 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

We have received complete nights up to the 3rd of October. We are currently processing September data (the first 12 nights have no data due to WFCAM engineering work). About half of the remaining nights have already been reduced and the remaining ones are currently being processed. There is an interesting new instrumental feature that was particularly strong on the nights when most of the flats were taken, necessitating some reprocessing. The effect manifests itself as a variable channel level "offset" on detectors #2 and #3 and has both a repeatable and a random component, in addition to being strongly, but not completely, anti-correlated between the two detectors. An example of the repeatable part of the effect is available at:

http://casu.ast.cam.ac.uk/surveys-projects/wfcam/data-processing/2007b-known-features

This shows a sky frame formed during the original processing of one of the September nights. Unfortunately, the random component is also about the same level (~1% of sky) and even after sky subtraction affects some science product frames.

After some investigation it was clear that most of the created September flats suffered from this effect as well (contributing to the problem when used in processing) and after a series of tests to ensure that other flatfield characteristics had not changed during the camera engineering work we decided to use the August flats for processing.

So far we have found that the pipeline-created sky frames are a good diagnostic of the problem being present but are still investigating which nights are affected. To date we have not seen this problem in master dark frames produced by the pipeline.

With some misgivings about its general use, we have developed a prototype software fix. Unfortunately, this has to be run at the individual frame level, ie. post-sky subtraction but pre-interleaving and stacking, due to the random nature of some of the effect. This will involve selective partial reprocessing of affected MBSs and possibly significantly add to the overheads of running the pipeline.

Tapes are still coming in batches containing different nights for each chip. The mismatch of detector nights and tapes was discussed during the recent visit of Luca Rizzi. Plans to perform direct FTP data transfer tests from JACH to CASU are also progressing and it is hoped to test this later in November. There is a G-bit link from the summit to JAC and it is intended to use an FTP server at the summit to transfer

some data directly to CASU after some further tests and discussion on transfer protocols are completed.

Transfer of raw data to ESO is still intermittent due to problems at the ESO end. This requires too much monitoring at our end, which we would like to minimise. ESO are upgrading their end to sort this out.

JRL is currently working on a new interface to the WFCAM raw data archive that will allow unregistered users to search and request data that under the current policy is public (ie. older than 18 months or whatever this policy morphs into). PIs will be able to obtain access to data from their project in exactly the same way as before.

Two other things of note: WFCAM has recently taken it's one millionth observation (for the WTS as it happens), and each executed MSB now has a unique transaction ID.

WFCAM reprocessing status

In total 17 nights of UDS data (~700 Gbyte of products) for 06B has had to be reprocessed to allow for more rapid sky tracking to remove some odd features in the science product frames. The reprocessed data has been supplied direct to the UDS consortium for them to finalise the deep stacking and thence make the deep stacks available for DR3.

WFCAM photometric calibration

STH has circulated a first "real" draft of the photometric calibration paper to MJI, PCH, and SJW. The draft is available at:

http://www.ast.cam.ac.uk/~sth/photom_draft.pdf

The new calibration protocol uses a months worh of data to accurately compute the corrections. For a trial period data will be flagged as `ok_to_copy` in monthly batches. The advantage is that this saves having to keep track of and to keep updating the photometric zero-points, the disadvantage is that it slightly delays release of flat files through WFAU.

VISTA pipeline

A number of changes were required to the DRL to make it CPL 4.0 compatible (the version which uses cfitsio, not qfits). This was fairly urgently requested by Sandra Castro because ESO want to install this version in the Paranal pipeline. v0.7 of the software and v1.9 of the DRLD has been released. Problems with using FITS compression via CPL have been identified and reported. There was also a new version of the 2MASS catalogue released with this.

VIRCAM Tests

The July Paranal engineering run produced 2,500 files which have been used for various tests (of the system for VPO use and for DRL development); reports were issued and discussed by telecon.

Naidu circulated an interesting conversion gain non-linearity paper prior to the telecon which highlights some interesting features of NIR detectors including VIRGO and Hawaii-I.

Invesigation of the behaviour of the VIRCAM/VISTA software when doing tile offsets showed up a number of problems: namely in the computation of the WCS rotation matrix; a sign error; and a (just) significant rounding error in the propagation of the sky position angle. It is fully expected that first-light will demonstrate further geometrical transpositions.