

# Implications for WFCAM and VISTA of CASU and WFAU Budget Cuts

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## **Summary**

The CASU and WFAU STFC rolling grants funding continued data processing and archiving work for WFCAM and VISTA are suffering severe cuts from the current year, 2009/10, onwards. While both Units will endeavour to provide as high a level of service as possible, given their reduced resources, it is inevitable that neither will be able to deliver in full its agreed programme in support of use of WFCAM and VISTA data by the community

In this note, we explain the background to this situation and outline the likely impact on the service that the Units can deliver to the community, given the projected level of funding for the next three years. It is unlikely that STFC can provide further funds for 2009/10, but an improvement for 2010/11 and 2011/12 may follow from strong community support channelled through the Ground-Based Facilities Review and the reviews being conducted by the Near and Far Universe Advisory Panels, so the community is encouraged to use these reviews to comment on the provision of support by WFAU and CASU for the science they intend to do with WFCAM and VISTA data in the coming years.

## **Background**

The processing, curation and publication of WFCAM and most<sup>1</sup> VISTA data is undertaken through the VISTA Data Flow System (VDFS), with work divided between CASU (primarily data processing) and WFAU (primarily data archiving and publication). The first phase of the VDFS (overall system design, development and deployment for WFCAM) was funded by PPARC standard grants, with the final phases (scaling up to VISTA, and continued operations for both instruments) to be supported through the WFAU and CASU rolling grants, which were due for renewal on 1 April 2008. *It is now more than two years since the two rolling grant renewal submissions were made, but neither Unit has had a new grant announced, nor can STFC say when an announcement will come.*

In early 2009, well after the 2008 Programmatic Review, both Units were asked to submit revised Je-S forms on the basis of the rolling grant panel recommendations from a year earlier, on the understanding that the WFCAM and VISTA elements were fully supported. These were to form the basis of the new grant awards and the Units planned accordingly

Both Units have recently received an indication from STFC of the intended level of funding for the first three years of their new rolling grants. The WFAU grant for each of 2009/10, 2010/11 and 2011/12 is being cut by 45% from the figures in its revised Je-S while the corresponding figure for CASU is 35%. Cuts of this depth will significantly affect what had previously been regarded as protected ESO commitments.

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<sup>1</sup> VDFS will process, archive and publish data from five of the six VISTA Public Surveys, namely VIKING, VMC, VVV, VHS and VIDEO. CASU are to process data for the sixth, Ultra-VISTA, to the OB level and deliver processed data directly to the Astro-Wise consortium, who will also process it independently, as well as dealing with the deeper stacking, plus archiving and data publication.

## ***Implications for WFCAM and VISTA surveys***

### **Data Processing (CASU)**

Current staff shortages coupled with uncertainties and delay in the grant announcement, which was due to start April 2008, have curtailed much of the planned software development. Continued support for WFCAM processing, analysis of VISTA commissioning data, delivery of software to ESO, and development and implementation of the essential elements of the VISTA science processing pipeline are, and will remain, the core activities. However, enhancements such as fully automated PSF fitting and reprocessing to fine tune the science output for specific projects will not be possible with one third less staff available. These staff cuts will impact on all operational tasks including QC monitoring, tracking down bugs, dealing with user queries and requests, and in particular limit the possibilities for reprocessing data when problems are later found.

WFCAM is now a mature system and barring unforeseen new developments we anticipate that the current processing setup will satisfy most users. However, requests for reprocessing specific subsets of the data with special requirements are quite time consuming and these may no longer be supportable. The VISTA science pipeline, although benefiting from previous VDFS experience, will take a lot of effort to shake down to a robust reliable system. This takes time and staff effort. Staff reductions on this level will undoubtedly cause quality assurance issues and will inevitably lead to a long term impact on the quality of the ESO deliverables that the UK survey PIs are responsible for.

### **Data Archiving and Publication (WFAU)**

#### **Archive Development**

The staff effort available for the final 18 months of development work will be half what was expected. A moratorium has been placed on further enhancements to the WFCAM Science Archive (WSA), and the remaining development effort will focus on shaking down the VISTA Science Archive (VSA) system with the first VISTA data. WFAU will support the VISTA Public Survey PIs in delivery of required data products to ESO, but will not be able to: (i) integrate complementary optical surveys (e.g. VST-Atlas) into the VSA, thereby precluding source selections on combined optical and near-IR attributes, as is commonly performed with UKIDSS and SDSS within the WSA; (ii) offer users pixel analysis code, such as SExtractor configurations optimised for specific surveys, capable of generating galaxy photometry measurements additional to those provided by the CASU pipeline; and (iii) quantify survey completeness beyond provision of static data release footprint maps, thereby complicating the derivation of spatial masks, etc. The VSA, and the final WSA, will, to a good approximation, offer only what is currently deployed in the WSA, rather than include the many requested enhancements WFAU had planned to provide.

#### **Archive Operations**

The staff effort available for archive operations will be one third lower than expected through the life of the rolling grant. WFAU will continue to ingest new data arriving from CASU, generate data products from them and curate existing data holdings. The level of effort available to support PI-led survey data quality control operations will be reduced, with the result that each survey can have, at most, one data release per year, which compares to the present situation of a UKIDSS release every 6-9 months. This will have a serious impact on the follow-up and exploitation of WFCAM and VISTA data: in cases where data releases are

timed poorly relative to telescope deadlines, follow-up observations will now take place two years after the original survey exposures were taken, thereby threatening the impact of these surveys in competitive fields. PIs of WFCAM non-survey programmes will continue to be given access to flat file data products in a timely fashion, but queryable databases will be provided only if they can be generated automatically using existing procedures. Cuts to the non-staff side of the budget will force WFAU to retain and publish fewer intermediate image data products, and to cancel hardware maintenance contracts, which will inevitably increase archive down-time.

## ***Conclusions***

It is with great regret that CASU and WFAU have made these reductions in their planned services to the community. The VDFS was conceived as a means of providing the WFCAM and VISTA user communities with efficient access to homogeneous, high-quality, science-ready survey data products, sparing them much low-level data manipulation work which could be more effectively done once within a data flow system (rather than many times, separately, by users, as must now be the case). The resulting VDFS system has been judged world-class by external review panels and widely praised by WFCAM users, and it is a great frustration to all concerned that its potential seems likely not to be fully realised, due to substantial budget cuts just at the time that the first VISTA data is flowing through the system. The current Ground-Based Facilities Review and the consultation exercises being run by NUAP and FUAP provide the community with the opportunity to comment on how these cuts to VDFS support will impact on its ability to exploit WFCAM and VISTA data and a strong response from the community may persuade STFC of the need to reduce the cuts for future years, and enable the VDFS team to deliver the service the community expects and requires to support its research.