of an obstacle to effective research than the practical aspects of how to move information around. These issues are addressed by Fionn Murtagh's article in this edition of *The Messenger*.

7. Acknowledgements

I would like to thank the many people at ESO and the ST-ECF who provided helpful comments on the manuscript of this article and particularly Miguel Albrecht who gave me detailed information about the proposal submission system and STARMAIL.

Report on ALD-II, Astronomy from Large Databases II

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The colloquium on "Astronomy from Large Databases II" was held from September 14–16, 1992. It was a follow-up to a meeting with the same title ("Astronomy from Large Databases: Scientific Objectives and Methodological Approaches") held in Garching in 1987. The proceedings of both meetings were published by ESO.

If one considers the two terms of the title, "astronomy" and "large databases", then the aim of the conference was the directed link between these. Hence the objective was not so much to cater for new astronomical results – there are many appropriate fora for this – nor to deal thoroughly with database technicalities. Rather the aim was to share experiences, and to focus interests, along the interface between these areas.

The meeting was structured so as to prioritize discussion. Twenty-odd invited talks were complemented by around 70 posters which were on display throughout. A number of talks covered database and archive usage on the part of extant projects (IUE, HST, ROSAT, HIPPARCOS, COBE, etc.). Reference was made to the myriad databases constituting a back-drop to such large projects. Panchromatic astronomy is certainly the order of the day. Subsequent talks included coverage of: classification-oriented front-ends for databases; current research and perspectives in the information retrieval community; data security issues; the astronomer's research environment; and other topics. Poster papers covered such themes as: statistical and pattern recognition studies; visualization; quality control of data; thesauri; sky survey databases; and many descriptions of functionality offered by particular projects.

A feature of note, regarding this conference, was the fact that the role of libraries (paradigmatic large databases, of course, even if not always in electronic form) in astronomy was addressed. A discussion panel involving librarians from ESO, AAO and others, as well as the President of IAU Commission 5 (Data and Documentation), focused further on this topic. What is aimed at is nothing less than the increasingly better integration of data and information that the astronomer has to deal with, whether bibliographic, symbolic, numeric, image, or whatever. Following this conference, one no longer has any right to consider astronomical databases separately from the role played by astronomical libraries.

Conferences such as this are of great help in combating "photonic provincialism" (D. Wells). The lowering of boundaries, and the bridging of what were until recently distinct areas, can only be for the betterment of our science.

The New MIDAS Release: 92NOV

ESO Image Processing Group

The new 92NOV release of MIDAS is now available for general distribution. The one-year release cycle introduced last year has made it possible to extend the validation tests significantly. The current release is actually based on the development version of MIDAS frozen in August. This frozen version is first going through a one month α-test inside ESO, after which a β-test version is sent out to 5–10 test sites. The final release version is made in the course of November, taking into account the different test reports. We hope that this rigorous test procedure and full configuration control of the source code will provide a stable and reliable system for the users.

The introduction of source code control and other CASE tools for code production in MIDAS not only improves the development cycle but also provides interesting statistics as a side effect. The number of source code lines is shown in Table 1 for different types of files, where FORTRAN and C correspond to actual programme code, while prg refers to high-level MIDAS procedures. Documentation is mostly in the form of LaTeX or ASCII help files. In a few cases, the size has decreased due to revisions and rearrangements of old code. For the first time, the new release contains more C than FORTRAN code. The change is caused by a significant number of MIDAS core commands being optimized and rewritten in C. Most of the astronomical applications are still written in FORTRAN. The increase in MIDAS procedures indicates that many new commands are added by combining basic MIDAS applications, thereby reusing code already written. The 20% increase in documentation since the 91MAY release reflects the emphasis put on better documentation during MIDAS command verification in recent years.

The size of the source code can also be divided into the main MIDAS classes. As a sample, Table 2 shows some main categories, namely "core" MIDAS, graphic user interfaces (gui), system applications (applic), standard reductions (stdred) and general application packages (contrib). Whereas the basic system has been constant in size, a major increase for standard reduction packages and general applications can be seen in the last release. This is a direct result of the stabilization of the MIDAS core system which has enabled us to put more emphasis on new applications.

The 92NOV release contains a large number of improvements and new applications. The table file system was significantly enhanced by making it possible to store arrays of values in individual elements. This makes it fully compatible with the Binary Table Extension proposed for FITS. Its basic routines were optimized so that it now can handle big tables with a size of over 100 Mbytes. Important new applications were added, such as a join of tables with uncertainties, which can be used for cross identification of objects in tables when only approximate coordinates are known. The FITS reader/ writer were upgraded to support the new proposed FITS extensions for Binary Tables and Images.

The graphic and display commands have been improved. More and better fonts were added to the plotting package, which also now provides more control to the user. The interactive "VIEW" command gives much better options to display images. The PostScript output files generated are now encapsulated and can be included more easily in other documents. A first set of Graphical User Interfaces has been included in this release to give a feeling for how the man-machine interface can be improved for MIDAS applications. The current interfaces were developed both at La Silla and in Garching as prototypes to evaluate different designs. They will be modified to conform to a general ESO Look

First Announcement of the 5th ESO/ST-ECF

DATA ANALYSIS WORKSHOP

ESO, Karl-Schwarzschild-Straße 2
D-W8046 Garching, FRG

April 26–28, 1993

The aim of the Workshop is to provide a forum for discussions of astronomical software techniques and algorithms. It is held annually during the spring (April/May) and centres on a different astronomical area each time. The Workshop will be held at the ESO headquarters where there is room for 100 participants only. We may therefore have to reject some people and recommend you to register well before the deadline (1993-March-01) either through normal mail or E-mail.

The topic for the 1993 Data Analysis Workshop is the analysis of direct imaging. The scientific section of the meeting will consist of three sessions each starting with a main talk after which papers of approximately 10 minutes duration can be presented. The last day is reserved for the MIDAS user's meeting and special sessions.

The tentative agenda is as follows:

Analysis of Direct Imaging Data

April 26: 14:00–18:00: Surface Photometry
April 27: 09:00–12:30: Point Source Photometry
14:00–17:00: Time Series Analysis
17:00–18:00: European FITS Committee
April 28: 09:00–12:30: MIDAS users' meeting
13:00–14:00: European FITS Committee
14:00–17:00: User Interfaces and Data Acquisition

We especially welcome contributions on algorithms and techniques for: time series analysis of non-equally sampled data, calibration of photometry, and shapes of extended objects. We encourage people to present their work in these areas even if they are only ideas. After each introductory talk, there will be a more informal discussion where such contributions can be made. There will also be a poster session where people can present short contributions. The special session on Graphical User Interfaces and Data Acquisition will also include instrument control and on-line processing. Proceedings of the scientific sessions will be published.

The scientific organizing committee includes: P. Grosbøl (Chairman), P. Benvenuti, D. Baade, S. D'Odorico, R. H. Warmels

Contact address: Resy de Ruijsscher,
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E-mail: daw@eso.org (Internet)

Table 1: *Size of source code for different file types in units of 1000 lines*

MIDAS release	File type				
	FORTRAN	C	prg	LaTeX	Help
90 MAY	211	175	26	42	24
90 NOV	210	199	23	41	24
91 MAY	191	180	33	48	29
91 NOV	210	204	29	59	34
92 NOV	217	275	34	62	36

Table 2: *Size of source code in different directories in Mbytes*

MIDAS release	Directory				
	"core"	gui	applic	stdred	contrib
91 MAY	12.4	–	1.4	1.9	2.0
91 NOV	11.5	–	1.4	1.5	3.4
92 NOV	12.0	3.5	1.5	2.4	5.0

& Feel based on OSF/Motif depending on the user feedback.

Significant contributions were added in the application area as well. The IRSPEC reduction was revised by T. Oliva, while an image restoration and co-addition application, based on ideas of L. Lucy, was added by R. Hook (ST-ECF). A Time Series Analysis context, which includes analysis of non-equally spaced data, was made by A. Schwarzenberg-Czerny. Finally, a photometry scheduling programme was introduced by A.T. Young as the first application in a new context for calibrations of point-source photometry.

There are now more than 160 registered MIDAS sites, of which approximately 100 are in the ESO member States, 30 in other European countries and 16 in North America. Since many of these sites have several different computer systems, this represents a significantly larger number of installations. Our current statistics (not fully complete) show that 70% of the systems run UNIX, while the remainder have VAX/VMS. Of the UNIX systems, the distribution between different vendors is 42%, 21%, 15% and 7% for SUN/SPARC, DEC, HP/Apollo and IBM, respectively. The MIDAS site data-base as well as problem reports are available through the starcat account on the host dbhost.hq.eso.org.

A number of MIDAS information services are provided through Internet or e-mail. A bulletin board can be accessed by login on the esobb account on bbhost.hq.eso.org. Documentation and patches can be obtained through anonymous ftp from ftphost.hq.eso.org. General questions and problems can be mailed to the MIDAS hot-line account midas at eso.org.

FFT Removal of Pattern Noise in CCD Images

E. J. WAMPLER, ESO

1. Introduction

The second-generation CCD detectors at ESO have very greatly reduced readout noise. This noise reduction allows ESO astronomers to extend their observations to fainter sources. Unfortunately, with the lower detector background, electronic interference noise now often becomes the limiting background noise source. It is thought that this noise is mostly generated by the switching power supplies that are used in the CCD controllers (Roland Reiss, private communication). These are to be replaced in the near future by less noisy power supplies, but in the meantime it is useful to search for ways to remove the interference from existing frames as well as to develop tools to cope with possible future problems.

After experimenting with the MIDAS Fast Fourier Transform (FFT) packages, a simple way has been found to obtain a considerable reduction in the pattern noise seen in the ESO CCD frames. Because this method may be useful to others, it is described here in some detail. Briefly, the technique is a crude approximation of Wiener, or optimal, FFT filtering. See Brault and White (1971) or Press et al. (1988) for descriptions of Wiener filtering using FFT.

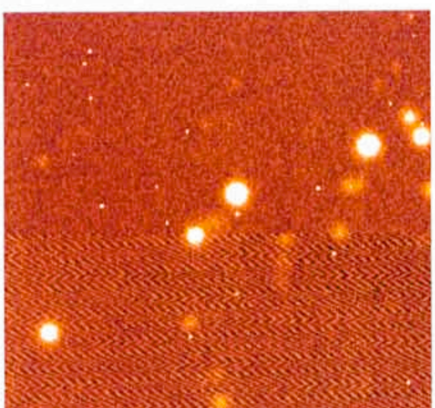

Figure 1: *A comparison of an unfiltered frame (lower half of the image) with a FFT filtered image (upper half).*

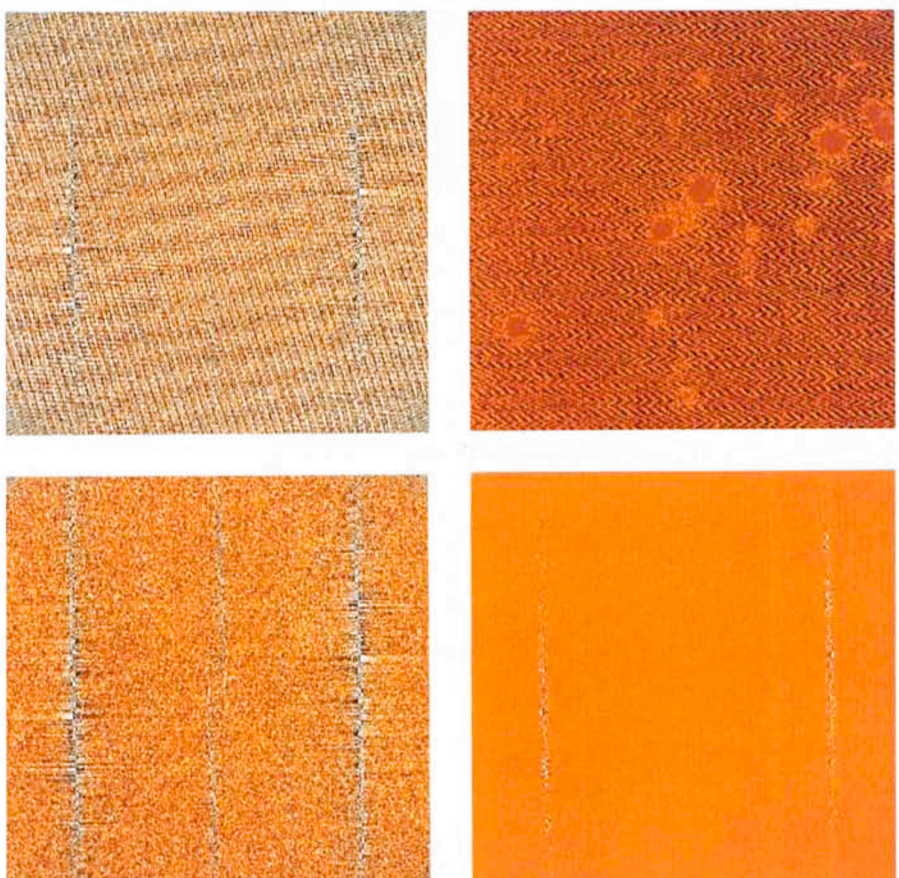

Figure 2: *Frames produced during the filtering process.* a: *The real FFT image of the raw input frame.* b: *The raw input frame with the stars replaced by the median value of the background.* c: *The real FFT image of the frame shown in panel b.* d: *The real FFT image after setting all low amplitude pixels (both positive and negative) equal to zero.*