European Southern Observatory

MIDAS Courier

Newsletter of the MIDAS Users' Community

Volume 2, Number 2 January 1993

Editorial

The new 92NOV release of ESO-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 ESO-MIDAS frozen in August. This frozen version first goes through a one month α-test inside ESO Headquarters, after which a β-test version is sent out to 5 to10 test sites. The final release version is prepared during the month 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. More information about the test period of the new release can be found elsewhere in this *Courier*.

There are now around 175 registered ESO-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, the number of registered sites represents quite 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 5th ESO/ST-ECF Data Analysis Workshop will be held in Garching on 26-28 April 1993. The announcement together with a participation form can be found in the back of this *Courier.*

After the scientific part of the Workshop, on April 28th, the MIDAS Users' Meeting will take place. As can be seen, the program is slightly different from the previous workshop programs. After the succesful ST-ECF/STScI Workshop on "Science with the Hubble Space Telescope", held at Chia Laguna, Sardinia, Italy, it was felt that it would be too early to have the usual HST session after the regular workshop this year. Instead, the time will now be used for a session about new developments in graphical user interfaces and data acquisition.

This year, from September 6-11, the first ESO-MIDAS Summer School will be organized. The program will be focused on both data reduction and programming in MIDAS, and primiraly intended for reasearch students in astronomy. A separate announcement of the summer school can be found on page 18 of this *Courier.*

In this ESO-MIDAS Courier:

General, System and Application News

The MIDAS Group, *European Southern Observatory*

General News

New Release 92NOV

As announced in the Editorial, the new release of ESO-MIDAS is now being distributed. Copies are sent on magnetic tapes, written in either VAX/ VMS backup or tar format. It can also be obtained via anonymous ftp.
If you have not issued your request for this new release of ESO-MIDAS, or if you wish to get it via “anonymous ftp” but you have not yet been provided with a valid password (in our “anonymous ftp” account 92NOV is under a restricted “midas” subdirectory), contact Resy de Ruijsscher to request a tape or to activate a password to sub-login “midas” under “anonymous ftp”.

This 92NOV release of MIDAS has been installed and verified on the following machines:

- Alliant Concentrix 5.7.00,
- Apollo DSP10000. DomainOS release 10.4,
- IBM AIX Version 3 for RISC System/6000,
- Silicon Graphics IRIX Release 4.0.1 System V,
- Convex 3440,
- DecStation ULTRIX V4.3 (Rev. 44),
- HP-UX A.08.07 E 9000/750,
- HP-UX B.08.00 A 9000/380,
- Sun SunOS 4.1.2,
- Solbourne OS/MP 4.1A,
- Stellar Stellix Release 2.3,
- VaxStation 3100 VAX/VMS V5.3 and V5.4 (VAX/VMS).

Patches for the 92NOV release

Patches for this release of MIDAS and a summary of their contents will be published periodically in the ESO-MIDAS *Courier.*

Patches are distributed mainly via our “anonymous ftp” account (`ftphost.hq.eso.org` or IP 134.171.11.4) under the `midaspub` directory. The distribution tape contains, besides the latest official release of ESO-MIDAS, the patches that had already been released at the time the tape was generated. These patches for ESO-MIDAS are included in the distribution tapes as a separate tar-format file. When patches are included in the distribution tape, the sources of the command “patch” are also included as the third tar file.

Patches will not be distributed on tape to sites that have already received the distribution tape, except for very particular cases (e.g. those sites without access to internet). Sites that have received and installed the distribution tape are strongly recommended to check for the existence of new patches in our “anonymous ftp” account under `midaspub` directory on a regular basis.

System News

MIDAS installed on Open-VMS (Alpha CPU)

The new architecture from Digital Equipment Cooperation (DEC) is already available in many countries in Europe. MIDAS has successfully been implemented on this machine running the Open-VMS operating system. The software used for the installation was Alpha Open-VMS 1.0, C compiler “X1.3-003B” and Fortran compiler “EV6.0-289-24AG”.

A beta release of MIDAS for Open-VMS (a 92NOV patched copy from the original 92NOV release) is available in BACKUP/VMS format on DAT/DDS and standard magnetic tapes (1600 or 6250 bpi).

We herewith want to thank the Koninklijke Sterrewacht in Brussels (Belgium), VILSPA (Spain) and the Observatoire de Marseille (France) for their important contributions in the first porting of MIDAS to this new architecture and for their current collaboration with the testing of the beta release.

The next issue of patches for VMS will also include the modifications needed to install MIDAS in the new Open-VMS architecture. Patches for VMS will be announced by mail or email to those sites which already have requested midas 92NOV and they will become available via our "anonymous ftp" account and exceptionally by tape.

If you are interested in the current beta-92NOV release of MIDAS only for Open-VMS, please contact Resy de Ruijsscher to order a tape.

New Installation Guide for VMS Systems

A new version of the installation guide "Installation of MIDAS on VMS Systems" is now available. Like the document for UNIX systems, it contains all relevant information for a smooth installation of the ESO-MIDAS software. The document is/will be sent to all VAX/VMS sites that requested ESO-MIDAS.

Others who wish to receive a copy should contact Resy de Ruijsscher.

Obsolete Commands in the 92NOV version

In the 92NOV release of ESO-MIDAS several commands became obsolete, i.e. these commands have been renamed or really removed. You can list them via the command `HELP [Obsolete]`. For all the renamed commands you can still use the old command names until the 93NOV release. Thus, MIDAS procedures will continue to work even if they use obsolete command names. The first time an obsolete command is encountered by MIDAS, a warning message will be displayed to alert you. After that, MIDAS will silently redirect that obsolete command to its new name. This behaviour can be changed for each individual obsolete command: Every obsolete command has a message counter stored in the integer keyword `OBSOLETE`. Look into the procedure `obsolete.prg` in the `MID_PROC` directory to see which element in keyword `OBSOLETE` corresponds to which obsolete command. If you always want a warning message when entering a given obsolete command (e.g. in order to find all procedures you have to update), set the corresponding element in keyword `OBSOLETE` to -9999. If you don't want any message at all, set the element to 1 in your private `login.prg` file. By default, all elements of keyword `OBSOLETE` are set to 0. For example, if you always want a warning message when using the obsolete `SEND/PLOT` command instead of the new `COPY/GRAPHICS` command, you should enter the line `OBSOLETE(3) = -9999` in your private `login.prg`.

MIDAS and SCCS: Some Statistics

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 program 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

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

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

decreased due to revisions and rearrangement 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 re-using code already written. The 20% increase in documentation since the 91MAY release reflects the emphasis put on better documentation during the ESO-MIDAS 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`)..

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

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

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 stabilizing of the MIDAS core system which has enabled us to put more emphasis on new applications.

Application News

The 92NOV release contains a large number of improvements and new applications. A summary of the most important ones is given below. For a more complete overview users are advised to read the news (command `HELP [NEWS]`).

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 program was introduced by A.T. Young as the first application in a new context for calibrations of point-source photometry. Several separate contributions to this *Courier* will describe these new applications in more detail.

Table File System

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.

FITS Reader/Writer

The FITS reader/writer were upgraded to support the new proposed FITS extensions for Binary Tables and Images.

Graphics and Image Display

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 by the graphic and display software 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&Feel based on OSF/Motif depending on the user feedback.

New Context IRSPEC

The context IRSPEC has been upgraded by Tino Oliva (Osservatorio Astrofisico di Arcetri) for two dimensional data formats (InSb detector 62x58 pixels). In addition to standard spectroscopy functions (wavelength calibration, sky subtraction, flat-fielding, instrumental response), the package includes specific algorithms to correct for the tilt of spectral lines and bad pixels of the detector. It also includes tutorial commands.

Contexts Spec and Long

Many changes have been implemented in the contexts `spec` and `long` and are described in more details in the MIDAS News (command `HELP [NEWS]`). Among these changes are:

- new commands have been introduced in the context `spec`, notably a command `MERGE/SPECTRUM`;
- The wavelength calibration has been revised: table line.tbl in world coordinates, double precision computations, guess mode involves a cross-correlation;
- the default file names have been changed to

lower case (e.g. `line.tbl`).

New Context TSA

In order to facilitate time series analysis, in particular of unevenly sampled data, a new context TSA is now available in the new 92NOV release of MIDAS. The context is written by A. Schwarzenberg-Czerny and was developed from an earlier stand-alone version of the University of Warsaw. It aims to satisfy the needs of those interested in periodic phenomena, in particular in galactic astronomy, as well as the needs of those who are more interested in handling data of stochastic processes.

Context Echelle

In the Echelle package, the most noticeable development is the additional wavelength calibration method `TWO-D` (command `IDENTIFY/ECHELLE`). In this method a bivariate polynomial is fitted to the initial interactive identifications.- Four methods are now available:

- Methods `PAIR` and `ANGLE` are based on the echelle relation (see MIDAS Documentation, VOl. B, App. E), which allows to reduce the number of interactive identifications to 4. These methods now involve a mathematical diagnosis tool, which in case of initial misidentifications helps to spot the error. The echelle relation, however, is not valid for all optical configurations.
- The method TWO-D requires more initial identifications, but is always valid. It is the recommended method for EFOSC spectra.
- The method GUESS assumes that the calibration has been performed already with one of the three above methods and avoids interactive identifications. It now involves an estimate by cross-correlation of the shift between the reference and calibrated arc spectra.

Interface XSpectra

A new version of the graphical user interface XSpectra has been implemented by Cristian Levin in the release 92NOV. The main new features are the following:

- a batch menu to perform complete reductions in a non-interactive way. Calibration files like bias, dark, flat-field, response curve and extinction table can be specified along with reduction parameters to reduce catalogs of spectra;
- an extraction menu to specify sky and object coordinates interactively from the display window.

Testing the 92NOV Release

Carlos Guirao, *European Southern Observatory*

β-Release Tests

The β-test version of the 92NOV release was distributed for verification to the MIDAS β-test sites last September, three months before the anticipated release.
During that period of three months, this β-test version was made available to the users at ESO-Garching and ESO-La Silla, mainly on SUN and SUN-like systems because they constitute the biggest fraction of computers in our network. However, to check the portability more carefully, the β-test version was also installed and tested in other systems at ESO like Stellar, HP370, HP850, VAX/VMS, Sony/News and PC/SCO.

A number of installations and tests were done at the external β-test sites through the network via telnet and ftp connections to the following institutes:

- Kapteyn Astronomical Institute, Groningen, Netherlands (HP720 and Alliant);
- Max Plank Institut für extraterrestische Physik, Garching, Germany (DecStation/Ultrix);
- Observatoire de Lyon, France (IBM/6000);
- Max Planck Institut für Astrophysik, Garching, Germany (Convex and Silicon Graphics);
- Koninklijke Sterrewacht Belgie, Brussels (Apollo/10000);

- Observatoire de Meudon (Convex 3440).

In addition to these tests, we received test reports from the following β-test sites:

- Observatoire de Lyon , France (IBM/6000)
- Osservatorio Astronomico di Padova, Italy (VAX/VMS);
- ESA Vilspa, Madrid, Spain (VAX/VMS);
- Dip. Astronomia Universita di Bologna , Italy (Dec/Ultrix);
- Lund Observatory, Sweden (HP/HPIX);
- Osservatorio Astronomico di Trieste, Italy (HP/HPIX);
- Koninklijke Sterrenwacht van Belgie, Brussels, Belgium (Apollo/10000);
- Max Planck Institut für Extraterrestische Physik, Garching, Germany (Dec/Ultrix);
- Kapteyn Astronomical Institute, Groningen, Netherlands (HP720 and Alliant/Concentrix).

We herewith want to thank all these institutes mentioned for their willingness to collaborate with us, and all our colleagues at the beta-sites for their time and effort spent at this release of ESO-MIDAS and for all those reports and suggestions that undoubtedly helped us, and in short also the rest of the community of users.

On-going work

On a number of machines the installation of the 92NOV release is still incomplete, or the verification tests have turned up some problems. Patches for these machines and possibly others will be provided as soon as the problems are solved. They will become available through the standard ‘‘anonymous ftp’’ account. Therefore, MIDAS site managers are advised to check this account regularly.

Below, a brief description of some of the installation problems is given.

SONY NEWS-OS Release 4.0

The SONY with NEWS-OS did not give any trouble during the installation, but still has some problems with the AGL library that we believe can be solved easily in the coming weeks.

SUN Sparc 10/30, Solaris 2.1

We tried the installation of the core of MIDAS on the Sparc 10/30, the new workstation from Sun with the SuperSparc CPU and a beta-release of the new operating system Solaris 2.1. The installation did not cause any major problems (System V + ANSI C compiler) but our verification test returned some errors in the execution of some MIDAS applications, which we believe were due to different mathematical functions between C and Fortran code. The official release Solaris 2.n is announced to become available in the first quarter of 1993 and we hope to review these problems if they still exist.

MIDAS on PCs

The first implementations of MIDAS on PCs were done in the Tartu Astrophysical Observatory (Estonia) where PCs-386 and SCO (Unix System V from Santa Cruz Operation) were used. Later the Special Astrophysical Observatory RAS Stavropol (Russia) implemented MIDAS 90NOV on other PC/AT running INTERACTIV 386/ix, another UNIX operating system. These two implmentations were not actively supported by the MIDAS Group because of the many singularities. Many of the modifications suggested by both institutes have been included in the latest MIDAS release (92NOV).

The MIDAS Group has partially implemented the 92NOV release on a PC-386 with SCO/UNIX but has suspended this development in favour of the implementation of MIDAS on a public-domain UNIX system for PCs called Linux SLS 1.0 that is available from “anonymous ftp” accounts in many public data-bases. The final port of MIDAS 92NOV on PCs with Linux SLS 1.0 is waiting for the public-domain GNU-Fortran compiler g77 (February 1993). Once it is completed (foreseen for this spring) it will be announced and offered to the MIDAS community as a patch file for the 92NOV release.

The 92NOV release will also be tested with other implementations of UNIX on PCs, like Solaris 2.1 (May 93), and BSD/UNIX from Berkeley (announced for this spring), as soon as they become available.

The requirements for installing and running MIDAS on a PC, will be the following.

Software:

- Linux SLS 1.0
- Gnu C compiler (included in Linux)
- X11 windows (included in Linux)

- Gnu Fortran g77 compiler
- MIDAS release 92NOV + PC patches. The MIDAS Group will consider the distribution of the 92NOV release for PCs in binary mode.

Hardware:

- PC 386 or 486
- VGA
- 8 Mbytes RAM minimum
- a tape device or access to network
- 150 Mbytes hard disk. The MIDAS Group is currently developing MIDAS with shared libraries. This will reduce the needs for disk space for executables dramatically.

Upgrade of the MIDAS Table File System

Michèle Peron, *European Southern Observatory*

The Table File System (TFS) has been upgraded substantially this last year. Some commands have been rewritten and new features have been added, some others have been optimized. All of them should be able now to handle big tables. We take a closer look in this issue of the *Courier* at some of the commands that have undergone a major enhancement.

CREATE/TABLE

The exchange of data to and from the Table File System is done either through FITS or standard ASCII files. Thus, output files from text editors and database systems containing tabular data in a fixed format can be directly converted into a MIDAS table, using the command `CREATE/TAB`.

The format of such ASCII files must be defined in a so-called format file: The attributes of each column of the output table have to be defined (e.g. type, format). In the previous versions of the TFS, the starting and last position of each field had to be defined. They are not mandatory any longer. Instead, one can supply the list of field separators that are used in the text file from which one wants to create the table. If the blank is used as field separator and if the ascii file contains character strings, the strings will have to be enclosed in double quotes. Let's have a look at one example: Here is the data file:

```
12.3 rtuv bnjk 14.5
2.3   abcfd   34.5
```

A MIDAS table containing three columns can be created using the following format file (TABS are used as field separators):

```
FS = "\t"
DEFINE/FIELD R :X
DEFINE/FIELD C*15 :Y
DEFINE/FIELD R :Z
```

In the next example, TABS and blanks are used as field separators:

```
12.3    "rtuv bnjk"    14.5
2.3     abcfd   34.5
```

The format file should then look like this:

```
FS = "\t "
DEFINE/FIELD R :X
DEFINE/FIELD C*15 :Y
DEFINE/FIELD R :Z
```

PRINT/TABLE

This command can be used to print out table values, or to convert a table into an ASCII file. In that case, one has first to use the command `ASSIGN/PRINT` to redirect the output into a file. The number of characters per line in the output file/device is no longer limited to 80.

COMPUTE/TABLE, SELECT/TABLE

A new version of these commands has been implemented:

- They now give error messages, for instance when the input columns don't exist;
- They are three times faster than the old version;
- They don't create any temporary file on disk any longer, and thus can handle big tables.

New functions have been implemented for the compute command: MIN, MAX, MOD and all the logical operators, CONCAT (concatenation of character strings), TOUPPER, TOLOWER (conversion to uppercase and lowercase), TOCHAR (conversion of numerical values into strings, using the output FORTRAN format associated with the input column). For instance, the command `COMPUTE/TAB mytable :NAME = CONCAT(:STAR,TOCHAR(:SEQ))` will, for each row of the table `mytable`, convert the value of the column :SEQ into a string, concatenate it to the contents of the column `:STAR`, and store the result into the column `:NAME`;

The variable name SELECT (short form SEL) can be used as variable in `COMPUTE`, referring to the select flag of the table entries (the value will be 0 or 1 according to whether or not the entry is selected). This variable can be used to perform computations only on the selected entries of the table. For instance the command:
`COMPUTE/TAB mytable :Z = :Z + (MIN(:Z,:MAG)-:Z)*SEL` will replace the value of the column `:Z` by the mimimum value of the columns `:Z` and `:MAG` for each selected row of the table `mytable`.

Selection of substrings can be done using wild cards. For instance, the command
`SELECT/TABLE mytable STRING .EQ."S*7[ab]"` will select entries of the table `mytable` for which the contents of the column STRING match the following pattern: the character string should start with S and end with either 7a or 7b.

JOIN/TABLE

A new command `JOIN/TABLE` has been added. It gives the possibility to perform cross-matching of tables; that is, to find common objects in two tables by comparing one or two attributes (columns of the table) of the objects (rows of the table) from both files, given an uncertainty for each attribute. For an exact match (uncertainty equal to 0), objects with identical attributes are identified as being the same object. For an approximate match, the attributes have to be the same within a certain tolerance. The command isused as follows:
`JOIN/TABLE intab1 :X1,:Y1 intab2 :X2,:Y2 outtable tolX,tolY`
where `X1,Y1` and `X2,Y2` are the columns to be compared, and `tolX` and `tolY` the uncertainties. The code, using 2-D binary trees, has been optimized for big sets of data.

Electronic Network Access to ESO

The main emphasis for ESO's Wide Area Network connections will be placed on providing fast and reliable access through Internet, although connections to SPAN, EARN, and UUCP will be maintained as long as it is reasonable considering both usage and cost. During the major part of last year, ESO has been allowed to route a significant part of its Internet traffic through an ESA/NASA link. This has significantly contributed to stabilizing and been greatly appreciated by both ESO and its user community.

The network problems mentioned in the report in the 1992 MIDAS Users Meeting (*Courier*, Vol. 2, No. 1, June 1992) were the access to German Sites using services of the Deutsche Bundespost Telekom and Deutsches Forschungsnetz.

ESO is now in the process of establishing a faster and more direct link to the European Internet Backbone to accommodate the increasing network traffic.

New Features in the MIDAS Graphics System

Rein Warmels, *European Southern Observatory*

The upgrade of the Astronet Graphic Library (AGL) by Luca Fini last spring, described in the June 1992 issue of the ESO-MIDAS *Courier,* has facilitated the implemention of a number of new features in the MIDAS graphics system. This article describes the most important ones.

Before discussing these features, first a general comment concerning the `command/qualifier` nomenclature of the graphics commands. Up till the 91NOV version some graphics commands had the name `PLOT` as command name (e.g. `PLOT/CONTOUR`), whereas other commands had the name `PLOT` as qualifier (e.g. `SET/PLOT`). In addition, the qualifier `GRAPHICS` was used (e.g. `LABEL/GRAPHIC`). In order to make the nomenclature of the graphics command somewhat more consistent, as of the 92NOV release the name `PLOT` (and `OVERPLOT`) is used for command names exclusively; all `PLOT` qualifiers have been renamed to `GRAPHICS`. Clearly, these changes can be inconvenient for users who have written procedures that make use of graphics commands. In order to make a smooth transition to the new nomenclature, the obsolete commands with the `PLOT` qualifier are still accepted till the next 93NOV release. However, users are encouraged to modify their procedures that contain these commands. More information about the obsolete commands can be found on page 2 in the article "General, System and Application News".

Most of the new features in the graphics system are available via the `SET/GRAPHICS` command. Below you will find these novelties together with a brief explanation. For more information you are advised to (re-)read Chapter 6 of the ESO-MIDAS User's Guide, and, in particular, the on-line help of the command `SET/GRAPH`.

SET/GRAPH

FONTS

You can now make use of 6 different character fonts, numbered 0 to 5, by using the option `FONT`. Font 0 is the default and is the fastest. The other ones are high quality Roman (1), Greek (2), Script (3), Old English (4), and Tiny (5).

PMODE

Because of the `FONT` option there is no need for the `PMODE=3` option. Hence this option has been dropped. `PMODE` now accepts `0` (for data plotting only), `1` (for a graph with frame and name of the data file), and `2` (for data with frame and complete legend). Hence, `PMODE` only determines the layout of the plot.

AXIS SPECIFICATIONS

All MIDAS `plot` commands contain parameters for the scaling and offset of the graph in both the x and y directions. You can now set the defaults for these parameters with the `SET/PLOT` command. The options `XSCALE` and `YSCALE` take care of the scaling, the options `XOFFSET` and `YOFFSET` fix the offset in x and y.

The `XFORMAT` and `YFORMAT` options to prefix the format of the tickmark labels have been enhanced substantially.

SYMBOLS and TEXT

Scaling of text and symbols isnow done by two different options in the `SET/GRAPHICS` command. The option `TSIZE` can be used to set the scaling factor for characters; `SSIZE` is to be used if you want to scale the symbols. The thickness of the text, like the thickness of lines, can be set by `TWIDTH`. This last option only works on PostScript printers.

In the 92NOV release two additional features can be used in plotting text. First, one can use the AGL metacharacters to produce complicated text strings in a similar way as you can using LaTeX or TeX. Secondly, and also similar to TeX and LaTeX, you can use metacharacters to produce special symbols.

MISCELLANEOUS

With the option `CLEARGRA` you can avoid erasing the graphics window and creating a new plot file every time you issue a `PLOT` command. Using the offset parameter(s) in the `PLOT` commands, this new feature makes it easier to produce several graphs on one window or sheet of paper. The option `BCOL(OUR)` determines the background colour of the graphics window, This option only works on workstations or X terminals and can only be used in combination with a colour post-script printer.

ASSIGN/GRAPHICS and COPY/GRAPHICS

Analogous to the command COPY/DISPLAY, the command SEND/PLOT has been renamed to COPY/GRAPHICS. As announced in the introduction, SEND/PLOT will still be available in the 92NOV release.

In the ASSIGN/GRAPHICS command for PostScript printers you can now indicate the orientation of the plot as landscape (default) or portrait by appending to the name of the printer ".l" or ".p", respectively.

Debugging

Previously, you may have been confronted with minor problems during the installation of the graphics part of MIDAS. Although the installation has now been revised and made completely automatic, it was still thought that a simpler debugging facility would be useful. Therefore, the SET/GRAPH command now contains the option DEBUG. If the option is set to ON, the graphics systems will produce a file aglerr.log containing the lower level AGL calls and error code in case of failures. The value OFF obviously will not produce that file, and is the default.

Deadline for the next ESO-MIDAS Courier

The next issue of the ESO-MIDAS Courier, Volume 3, Number 1, will be published in the coming month July. This issue will include information concerning on-going projects of the MIDAS Group. Also, we hope to include a number of contributions by MIDAS users or software developers. Please, send your contributions, preferably in computer-readable format, to the MIDAS account or to the editor before June 30 (see back side for mail addresse).

PEPSYS: a New Photometry Package in MIDAS

Andrew Young, *European Southern Observatory*

The 92N0V release of MIDAS contains part of a contributed photometry package written by A. T. Young. The package is invoked with SET/CONTEXT PEPSYS. It has two main parts: a planning and scheduling routine called by the command MAKE/PLAN, and a reduction routine used by REDUCE/PHOT. In addition, there are some tools needed to convert ASCII files of star positions or data to standard formats.

The planning program is intended to help observers get the necessary extinction and standard-star data in a minimum of observing time, by distributing the required calibration observations nearly optimally in time, position, magnitude, and color. The choice depends on the telescope size (which affects photon and scintillation noise) and the selection of standard stars available. A few files of standards for the UBVRI and uvby systems are provided, but you can make new files in the proper format using the MAKE/STARTABLE command. Any simple ASCII file in the form of a table with all records in the same format can be used as input; the command generates a MIDAS format file (with the extension .fmt), which may need to be edited for standard stars. Program stars, which are not complicated by the need for columns containing standard indices, can be converted directly to the required form by MAKE/STARTABLE, without manual editing.

The planning and reduction programs need information about your telescope size and location, contained in a short MIDAS table file. A sample file, describing the photometric telescopes at La Silla, is called `esotel.tbl`. This, along with other sample files, should be in the `pepsys` subdirectory below the `data` directory, which in turn is under `calib` in the MIDAS system. These programs also need information about your instrument: what filters are available, how many channels are used, what detectors are used, how well controlled the temperatures of filters and detectors are, and so on. This information is most easily set up by using a short interactive MIDAS command, `MAKE/PHOTOMETER`, which will ask you for the relevant information. Before running this, you will need to collect such information, as well as how red leaks are treated, and – if you use pulse counting – the type (extending or non-extending) and length of the dead-time parameter for each channel, as well as error estimates for the dead times. The `MAKE/PHOT` command will accept `UNKNOWN` as an answer to some questions; but you should try to obtain the missing information and correct the file by re-running this command, if possible.

Keeping the observatory and instrument information in files that are more or less permanent allows the user to concentrate on the astronomical problems of planning and data reduction. These files are in MIDAS table format.

Because the needs of different observing programs differ, the planning and reduction programs are interactive. The user tells the planning program what accuracy is required, for example, so the planner can decide how many standard stars are needed. The user can approve the program's selections, or modify the magnitude and declination limits used in selecting stars, and ask the program to try again. This dialog is recorded in the log file, so you can go back and see what you told the program. The final output from the planner is an ASCII file that can be printed on a standard 80-column printer. This printout tells you exactly when to observe what, to get the results you want.

More details about these programs are in the documents in the `doc` subdirectory under `pepsys.` The reduction program will be distributed with the next version of MIDAS, and we will have a short description of it in the next issue of the *Courier.* If you have questions about PEPSYS, you can send e-mail to the author at `ayoung@eso.org` until May, 1993.

IMRES: a New Image Restoration Context

Richard Hook, *Space Telescope-European Coordinating Facility*

Introduction

The spherical aberration of the optics of the Hubble Space Telescope and the resulting degraded images which it produces has led to increased interest in image restoration methods in optical astronomy. Many algorithms have been investigated and compared over the past two years since the aberration was announced and they have also been applied to ground-based data. One of the most successful of these is that invented by Richardson and Lucy in the 1970s and often called the RL method [1,2].

The IMRES context is intended to contain commands which allow efficient and flexible use of the RL method within MIDAS. At present there is a single program which can be accessed via two different commands. The two names illustrate its use for two different tasks: image restoration and image co-addition.

DECONVOLVE/FLUCY

This is the basic fast RL restoration program. It is called 'fast' because it performs the convolutions, which are the basis of the algorithm, using an efficient Fast Fourier Transform code, rather than evaluating them explicitly as was done in the older program `DECONVOLVE/LUCY`. It also incorporates an accelerated algorithm which means that fewer iterations of the method are required to achieve a given degree of restoration [3,4].

As input the program takes a data frame and a Point Spread Function (PSF) frame. These must be the same size and shape and the PSF must be normalised to a total of one and have the peak at the centre of the frame. Note that this convention for the PSF peak position is different from that used in `DECONVOLVE/LUCY`.

The output is a restored image and also the result of convolving this with the PSF. The latter is principally supplied for compatibility with the co-addition method described below but may also be of value as a version of the input image with the 'unfeasible' pixel-to-pixel noise removed.

There are several options which are controlled by flags. They are:

- Whether or not to provide verbose output (default Y);
- Whether to use the accelerated version of the algorithm (default Y) ;
- Whether there is an initial estimate image (default N);
- Whether the data is sub-sampled (default N).

A typical commands sequence would be:

```
SET/CONTEXT IMRES
DECON/FLUCY NGC8765 PSF 20 NGC8765_20 JUNK
```

Here NGC8765 is the input image frame, PSF is a suitable PSF of the same size. 20 iterations are applied (a typical number) and the result written to the frame NGC8765_20. The frame JUNK holds the result of convolving NGC8765_20 with PSF and is probably not of interest in this case. The default switches are used which means that there will be lots of verbose output and the accelerated algorithm will be used. If one wanted to continue this restoration for another 20 iterations, starting with the result already obtained one could use the command:

```
DECON/FLUCY NGC8765 PSF 20 NGC8765_40 JUNK NYYN ? NGC8765_20
```

In this case the verbose flag has been set to N, the acceleration flag remains Y, the 'First Image' flag has been set to Y and the name of the starting image supplied. For further information and an explanation of why, and how, the subsampling option may be used please consult the help information for this command and reference 5.

COADD/IMAGE

Often astronomical images are taken of the same objects and in the same wavelength band but with different PSFs. Very common examples in optical astronomy are images taken during different seeing. It is desirable to combine (co-add) these data in order to maximise the signal-to-noise ratio but undesirable to degrade the higher resolution images by simply adding in the poorer resolution ones. Another case is the combination of high resolution, but relatively weak, images from HST with longer exposures taken from the ground where telescope time is cheaper but the resolution is much poorer.

The standard RL restoration algorithm may be easily generalised to allow the combined restoration of several data sets with different PSFs and this forms the basis of a general co-addition method of which this command is an implementation. Details are given in references 6,7,8 and 9.

Images to be co-added must be well aligned with each other, as must the PSFs. If there is a small shift between the images, but no rotation or scale change, then this may be compensated for by shifting the PSF by the same amount (ref. 9). What is essential is that the convolutions of the images with their respective PSF frames are aligned. The PSFs must be normalised to a total of one and must be non-negative.

Once these requirements are met the data frames may be co-added using commands similar to the following:

```
COADD/IMAGE N123A,N123B PSFA,PSFB 20 N123AB_20 N123AB_CA_20
```

In this case N123A and N123B are the input images and PSFA and PSFB the matching point--spread-functions. 20 iterations (accelerated) will be performed and the resultant restored image will be written to N123AB_20. The co-added image with a PSF matching PSFA will be written to a BDF called N123AB_CA_20_1 and that matching PSFB will go into N123AB_CA_20_2. Note that the names of the output co-added images are generated by appending a number to a root name string which is supplied. All of the options controlled by the flags listed above are also available with this command.

For more details of both these commands it is strongly recommended that the references and the help files are carefully read. Most of the work involved in restoring and co-adding images goes into understanding the methods and their limitations and preparing the data and the PSFs. Actually running the program is the easy part.

References

[1] Richardson, W.H. 1972, Journal of the Optical Society of America, 62, p55

[2] Lucy, L.B. 1974, Astronomical Journal, 79, p745

[3] Adorf, H-M., Hook, R.N., Lucy, L.B.,Murtagh F.M., in Proceedings of the 4th ESO/ST-ECF Data Analysis Workshop, Garching, May 1992, p99

[4] Hook, R.N., Lucy L.B., in Proceedings of the Conference 'Science with the Hubble Space Telescope', Sardinia, 1992

[5] Lucy, L.B.,Baade, D., in Proceedings of the 1st ESO/ST-ECF Data Analysis Workshop, Garching, April 1989, p219

[6] Lucy, L.B. 1991, ST-ECF Newsletter 16, p6

[7] Lucy, L.B., Hook, R.N. 1992, in Proceedings of the 1st Annual Conference on Astronomical Data Analysis Software and Systems, Tucson, November 1991, p277

[8] Hook, R.N., Lucy L.B., 1992, ST-ECF Newsletter 17, p10

[9] Hook, R.N., Lucy L.B., 1993, ST-ECF Newsletter 19, p6

First Announcement and Call for Papers

ESO-OAT International Workshop Handling and Archiving Data from Ground-based Telescopes

Trieste, 21 - 23 April 1993

The workshop is oriented to the discussion of the problems related to the management of data produced by large ground-based telescopes, currently active or being built. Topics of interest are: on-line handling of data produced by instruments and their description, quasi-on-line processing (quick-look, compression, calibration), storage and distribution media, setup of an archive database, data ingest.

The workshop will be based on a set of invited or "solicited" presentations, dealing with current experiences and projects, a number of selected contributed presentations, and an open poster session. Half a day will be dedicated to a round-table discussion. Sessions of informal technical discussion will be encouraged.

The proceedings of the workshop, containing all contributions, the poster papers, and a report of the final round table, will be published by ESO in the Conference Proceedings Series.

The scientific organizing committee includes:

M. Albrecht (co-chairman)	P. Grosbøl
L. Benacchio	F. Pasian (co-chairman)
P. Benvenuti	E. Raimond
D. Crabtree	G. Sedmak
M. Crézé	D. Wells

Please contact the Local Organising Committee:

ESO - OAT International Workshop,
Secretariat Osservatorio Astronomico di Trieste,
Via G.B.Tiepolo 11,
I - 34131 Trieste, Italy,
Tel: +39 40 3199223
FAX: +39 40 309418
E-mail: `ASTRTS::ESO_OAT_CONF` (DECnet)
`38439::ESO_OAT_CONF` (DECnet)
`eso_oat_conf@astrts.astro.it` (Internet and Bitnet)

MIDAS in the IUE Project

J.D. Ponz and E. Ojero,
European Space Agency, Villafranca, Spain

The IUE project is a general-user Space Observatory for high- and low-resolution spectroscopy between 115 nm and 320 nm. The project is a collaboration between NASA, ESA and SERC. The geosynchronous orbiting satellite is operated from Goddard Space Flight Center (GSFC) in Maryland for 16 hours per day, and from the ESA IUE observatory at Villafranca, near Madrid, for the remaining 8 hours. During the 14 years of operations, more than 80,000 observations have been collected and are available to the scientific community through one of the three archive centers at NASA/NSSDC, ESA/Villafranca and SERC/RAL.

MIDAS has been used within the IUE project as platform for the reduction pipeline and as off-line processing system in support of the archival research. This contribution is a summary of our experience with MIDAS in the long history of the IUE project.

The observatory works in a Guest Observer mode. As part of the routine procedure, each observation is reduced using the standard pipeline, IUESIPS, that linearizes the response of the detector, corrects for the geometric distortions, extracts the spectrum and calibrates the observed flux distribution. Raw images, calibrated spectra and intermediate files generated by IUESIPS are delivered to the Guest Observer, and a copy of these files is maintained in the archive centers.

The reduction pipeline has evolved over the years, to include new algorithms and to encompass the advances in computer technology. The first version, fourteen years ago, was implemented on a Sigma-9 computer with very limited interactive capabilities. The processing system was VICAR, developed by JPL, and the interactive functions were based on a RAMTEK display, controlled by a PDP-11.

The second version of the reduction pipeline was implemented on VAX/VMS, using MIDAS as system platform onto which the IUESIPS algorithms were ported. The migration was done at GSFC in 1986, just before the development of the portable version of MIDAS. The interactive capabilities were based on DeAnza machines, the state of the art at that time, when workstations were not so widespread. Later, Villafranca migrated IUESIPS to the portable version of MIDAS, to run the reduction pipeline on VAX stations.

IUE has started a major effort to generate a homogenous and high quality archive, the so-called IUE Final Archive, while the project is in operation. The main reasons for this project are: First, the reduction methods in IUESIPS have evolved during the lifetime of the project, and different sets of calibrations were used; therefore it is difficult to combine low and high resolution data or to compare observations taken several years apart. Second, experience and knowledge about the instrument have been developed in the user community; the appropriate feedback from the IUE community allowed the project to identify new numerical methods that substantially improve the quality of the reduced data. The new processing pipeline, NEWSIPS, is being used to reprocess the complete archive, each observing station being responsible for its own data. The archive will contain raw data, extracted spectra, intermediate data files, and associated parameters stored in FITS format. The estimated size of the archive is 8 Mbytes per low dispersion observation and 11.5 Mbytes for high dispersion. NEWSIPS is implemented on the portable version of MIDAS and, given the performance required by the new algorithms, the production system runs on DECstations.

The analysis facilities to support the archival research have evolved during the history of the project. Stand-alone programs with very limited interaction were developed by the users during the first years of operations. When standard image processing systems became available during the last decade, the algorithms were ported to different processing systems. Each Agency in the IUE project has chosen a different approach for the off-line analysis. Starlink provides a set of software tools used by SERC scientists to analyse IUE data. At GSFC, a Regional Data Analysis Facility has been set up to provide researchers with general purpose software as well as IUE-specific functions. This software, available under IDL, together with the associated catalogues and databases, allows the off-line analysis of IUE observations.

In Villafranca most of the access to the archive is done via the Uniform Low Dispersion Archive (ULDA), which contains more than 44,000 low--dispersion spectra. Nineteen National Hosts have been established, each serving the needs of its own country. Astronomers within a country access their host, using the national networks to run the query and select program (USSP) and downlink the selected data-generating spectral files in ASCII, FITS or MIDAS format..

Within the scope of the Final Archive, several utilities are being implemented as a "context" inside MIDAS. The first of these commands reads IUE tapes in GO format and converts them into MIDAS. The command is available as a compressed `tar` file (circa 57 Kbytes) that includes source code and installation procedure for MIDAS 91NOV or later versions. A copy of this file can be obtained via `ftp` from the SPAN node `VILSPA::` (28843), username `anonymous`, password `user`. The file is copied in `image` mode as `get iue.tar_z iue.tar.Z`

An `ftp` account on Internet, to allow a wider distribution of this software, will be available in the near future.

Expeditions in the MIDAS Jungle: Keywords

Klaus Banse, *European Southern Observatory*

After the previous expeditions to the HELP system and the internal structures of images and their descriptors, it is time to discover the less obvious details of the MIDAS keywords (some people like to associate that with a swamp ...).

The keywords in MIDAS serve as variables in the MIDAS Command Language, and are used to pass information from one MIDAS application to the next or the MIDAS monitor. Thus, the keywords act as the "glue" among different applications and the Monitor.

Keywords are identified by their name (max. 8 characters, first character not a digit and no distinction between lower and upper case), a type and the number of elements. Currently, the supported keyword types are: *real, integer, character* and *double precisio*n. Keywords may represent single values or arrays. The theoretical maximum size is 32767 elements; however, for such large data sets, images or tables would be more efficient data structures in MIDAS.

Initially, the keywords are stored in an ASCII file named `syskeys.dat` in the directory `$MIDASHOME/$MIDVERS/monit` (in UNIX parlance). The keywords specified in this file are either *reserved* keywords or *standard user* keywords. The reserved keywords are used to hold system parameters and must **not** be changed by the user explicitly. The standard user keywords are default keywords for input/output to/from MIDAS applications, like e.g. `IN_A, OUT_A` for input, output frame names. The ASCII file is converted into a binary file when starting a MIDAS session via `inmidas`[1].The name of the binary file is `FORGRxy.KEY` (`xy` being the MIDAS unit) and it is stored in your MIDAS startup directory which is specified via `MID_WORK.` For all the keywords that are specified in the file `syskeys.dat` detailed information about their layout may be obtained via the command `HELP/KEYWORD.`

The routine `STSPRO` (`SCSPRO`), which is called in the beginning by a MIDAS application program, moves the contents of this binary file into the program's data space. Likewise, the routine

1. From release 92NOV on, also in UNIX you start MIDAS via `inmidas` and not `$inmidas`, and continue MIDAS via `gomidas` instead of `$gomidas`

STSEPI (SCSEPI) called in the end by MIDAS applications puts the keywords from the program data space back into that file. Therefore, the binary keyword file is not updated when you interrupt an application via CTRL–C, or if the application doesn't terminate via a call to STSEPI. By the way, the first character of the keyword APPLIC indicates if an application aborted or terminated normally; see HELP/KEY APPLIC for details.

Except for creation and deletion, keywords may be manipulated via MIDAS commands directly, as well as via the STandard interfaces called from application programs. To safeguard the integrity of MIDAS, applications can neither create nor delete keywords. The commands WRITE/KEYWORD and DELETE/KEYWORD must be used for that, instead. However, unlike descriptors, the MIDAS keywords cannot be expanded after they have been created with a given size[1]. Reading and writing of keywords is done by the commands READ/KEYWORD and WRITE/KEYWORD. SHOW/KEYWORD displays the internal layout of a keyword. COPY/KEYWORD copies the contents of one keyword to another, whereas COPY/KD and COPY/DK copy keywords to and from descriptors. By the way, these COPY commands, together with the application procedure dscedit.prg give you the possibility to also edit keywords with your favourite text editor. This editor is initialized to vi (just to show you how down to earth we can be...) but can be changed to your taste via the SET/MIDAS_SYSTEM command.

COPY/KT copies keyword data to tables and COPY/KI copies keyword data to a newly created image. As for descriptors, the command PRINT/KEYWORD prints the contents of a keyword or stores them in an ASCII file. With PLOT/KEYWORD and OVERPLOT/KEYWORD you plot keyword data.

Keywords play a very important role in the MIDAS command language, where they serve a purpose similar to the variables in a programming language like FORTRAN. They may be used as *global* variables (created and updated via WRITE/KEYWORD) or *local* variables (created via DEFINE/LOCAL and updated via WRITE/KEYWORD) inside MIDAS procedures. Global keywords are known to all applications and procedures executing in MIDAS. For example, all the keywords specified in the syskeys.dat file are global keywords. Local keywords are accessible only in the procedure where they are created and all procedures which are called from this procedure (and the applications executed inside these procedures). In case of name conflicts of global and local keywords the local keywords take precedence. Thus, if a local character keyword with name OUTPUTI is defined in a MIDAS procedure, then inside this procedure the local character keyword will be accessed and outside the procedure the global integer keyword OUTPUTI will be used.

Besides providing the usual arithmetic operations on keywords, the command COMPUTE/KEYWORD offers a rich set of functions to support programming in the MIDAS command language. Thus, for example, there are functions to test if a MIDAS frame or descriptor exists, to get the current time, or to obtain the values of Unix variables or VMS symbols (HELP COMPUTE/KEY gives the complete list...).

Finally, the command LOCK/KEYWORD will put a write-lock on keywords, so you can ensure that essential keywords are not accidentally overwritten.

The number of global and local keywords is fixed initially to 248 and 120, respectively, but can be expanded to m global, n local keywords via the command SET/MIDAS_SYSTEM keywords=m,n. To display the current values use SET/MIDAS_SYSTEM keywords=? or SHOW/KEYWORD ?+, which displays the relevant keyword information in more detail.

For additional information we recommend the following documents (beware, this may not be the most thrilling bedtime reading...) available from the IPG: "The MIDAS Environment", rev. 1.1, November 1992 – for a complete description of the STandard-interfaces in FORTRAN and C of MIDAS.; "The MIDAS User Guide", Volume A, Chapter 3 – for a detailed discussion of local keywords and the MIDAS command language.

1. see "Expedition" in the last MIDAS *Courier*, Volume 2, Number 1, June 1992

MIDAS Questions and Answers

The MIDAS Group, *European Southern Observatory*

In this issue we try to answer some of the questions we received concerning the debugging of MIDAS procedures and application programs.

Problem: I have a MIDAS procedure which runs my new, exciting application written in the MIDAS environment. When I execute the procedure, I get a message like "`segmentation violation - core dumped`". However, if I try the same procedure on another computer (different vendor) in our network the procedure terminates without any error message but the application still does not do any of the foreseen tasks.

Answer: This looks like your application crashed. In the VMS environment you always get a more or less explanatory error message if a program dies, but for Unix the story is different. Depending on the host system you might get an error message similar to the one mentioned above or nothing at all (e.g. on the HP RISC machines). The first step should always be to turn on the *verbose* execution mode for MIDAS procedures via the command `ECHO/ON`. That lets you see which path in the procedure is taken and if your application is started at all.

If you are working on one of those "silent" systems check if a file named `core` has been created in your directory, indicating that your application aborted and a *core dump* was done.

So, now you have to debug your application and there are several possibilities. First, you might just have a careful look at your code again and taking the risk of being considered ready for retirement I confess a liking for the good old program listing (no scrolling around needed there...). Explaining the logic of your program to a colleague also works great. Another (brute force) approach is to insert *WRITE* or *printf* statements (in FORTRAN or C) into the code displaying the values of programming variables at various steps in order to localize the erroneous code segment. If all that does not help, you have to get out the big guns and use a debugger. Since MIDAS applications are written in standard programming languages, you can use straight away the standard debuggers which are available on your system.

So, now you have to recompile and relink your application with the *debug* option:

On a VMS system, you recompile via `FORTRAN/DEBUG/NOOPT test.for` or `CC/DEBUG/NOOPT test.c` for a FORTRAN application `test.for` or a C application `test.c`. Relink via `LINK/DEBUG test,MID_DISK:['MIDASHOME'.'MIDVERS'.LIB]midaslib/L` to obtain an executable module `test.exe`.

For a Unix system, remember that for a FORTRAN application you first have to use the ESO preprocessor to create a *standard* FORTRAN file `test.f`. Recompile the application via `f77 -g -c test.f` or `cc -g -c test.c` and relink it via `f77 test.o $MIDASHOME/$MIDVERS/lib/midaslib.a -o test.exe` or `cc test.o $MIDASHOME/$MIDVERS/lib/midaslib.a -o test.exe`. For further details as well as examples see chapter 5.6 of the MIDAS Environment document, rev. 1.1 (Nov. 1992).

Once your executable module is ready, switch to the *debugging* mode for applications running in MIDAS via the command `DEBUG/MODULE`. After that, execute the procedure again, and your application will be started with the debugger. You can now debug your code according to the instructions of the relevant debugger manual of your system. In VMS there is only one debugger, but different debuggers exist for different Unix systems, e.g. `dbx, sdb, xdb` and the correct debugger name has to be stored in a system keyword at the installation of MIDAS.

Problem: My application runs o.k., but the MIDAS procedure where this application is embedded in crashes with some obscure message.

Answer: Several commands and tools are provided to help you in checking out a MIDAS procedure:

First, as already indicated above, use `ECHO/ON` to display each line of the procedure as it is executed. In order to see also all the symbol substitutions done on a command line use `ECHO/FULL` instead. Here we have to talk a little bit about the *procedure levels* in MIDAS. Working interactively is considered to be working at procedure level 0. Executing a procedure increases the procedure level by one. If that procedure executes (calls) another procedure the procedure level is increased again, and so on up to 10 levels. The `ECHO` commands (and also the `DEBUG/MODULE` command) may work on all or only selected procedure levels. This way you can control exactly how much output you get (since most MIDAS commands are actually implemented as procedures you might be surprised by the amount of lines displayed on your screen when you do an `ECHO/FULL` on all levels...). If these simple approaches don't work you have to switch to the *debugging* mode for MIDAS procedures via the command `DEBUG/PROCEDURE`. After that, execute the procedure again, and it will start up with the debugger for the MIDAS Command Language; this is indicated by the prompt `Mdb`. In the beginning you will be in *stepwise* execution mode, i.e. each line of the procedure is displayed and only executed after you hit `RETURN`. Type `'h'` (without the quotes!) to get a list of all available debugging commands. You switch from *stepwise* to *continuous* execution mode via '`g`'. For that mode you can set breakpoints, show the breakpoints or cancel any of them. The command `r keyname` displays the contents of keyword `keyname`. This is an important tool, because local keywords of a procedure are deleted once the procedure terminates, they cannot be inspected otherwise.

Again, the command `DEBUG/PROCEDURE` may work on specific procedure levels only, to streamline the debugging process.

For further details see Chapter 3.8 of the MIDAS Users Guide.

1st ESO-MIDAS Summer School

ESO, Karl-Schwarzschild-Straße 2
D-W 8046 Garching, FRG
September 6-11, 1993

MIDAS is a software package for the reduction of astronomical data with particular emphasis on supporting all instruments available on the La Silla Observatory, and in the future also of the VLT. The resulting diversity of MIDAS utilities is thus considerable. At the same time, preserving the high quality of data obtained with modern instruments requires that the data reducer is very familiar with the tools he is applying and is able to write his own applications to extract special quantities in an optimal way. The aim of the school, with lectures and exercises, is to provide the students with a general knowledge of the available tools and to gain experience in writing applications within the MIDAS environment. The course includes a) standard reduction of astronomical data; b) writing procedures using the MIDAS command language; c) writing FORTRAN programs using the standard interfaces to the different MIDAS data structures. Practical exercises will be carried out in groups of two or three students on UNIX workstations.

The school is primarily intended for students working on a PhD thesis in astronomy. A basic knowledge of the ESO-MIDAS system and of FORTRAN programming is required.

Applications forms can be obtained from the Image Processing Group and have to be received by June 1st, 1993. The number of participants is limited to 15. The school will support the local living expenses.

Contact address: Resy de Ruijsscher,
Attn.: 1st ESO-MIDAS Summer School,
European Southern Observatory,
Karl-Schwarzschild-Straße 2,
D-W 8046 Garching, FRG.
E-mail: `midas@eso.org` (Internet)

The MIDAS 92NOV News File (with minor modifications and additions)

The following text contains a detailed summary of revisions and changes in the MIDAS application software during the period between the previous 91NOV and the new 92NOV release. MIDAS users can produce this text with the MIDAS `HELP [NEWS]` command.

SHOW/DESCR - KB 911205 A 3rd parameter has been added to the command SHOW/DESCR - see the HELP for details.
editing of descriptors - KB 911205 Now you can edit descriptors via 'vi' or 'Emacs' or... by using the application procedure 'dscedit.prg'. Use 'HELP/APP dscedit' to get more info about that procedure. Choosing your favourite text editor is done via the command SET/MIDAS_SYS.
multiple displays - KB 911220 You now have the possibility to open display windows on different X-terminals and/or XWorkstations. You must have access right to the other machines, e.g. an account there, and you or somebody else must have already "opened" the display, i.e. logged in. For details see the help of CREATE/DISPLAY and CREATE/GRAPHICS.
perspective view - KB 920103 An application procedure 'perspec.prg' has been added for displaying a perspective view of selected planes of a 3-dim frame. Use HELP/APPL for details.
Midas setup - KB 920107 The application procedure 'showmidas.prg' has been added for displaying the current setup within Midas, e.g. plot device, logging status, etc.
REBIN/LINEAR - KB 920114 The rebinning has been updated to finally take into account that the world coordinate value of a pixel refers to the center of that pixel. Also, all pixels in the result frame outside the original frame are set to the value stored in keyword NULL(2).
Checking the termination status of applications - KB 920115 The layout of the keyword APPLIC has been modified to make it possible to check if the program has terminated correctly or not. Use HELP/KEY APPLIC for details.
FLIP/IMAGE - KB 920115 The option D - flipping around main diagonal, has been removed. Instead, use the command TRANSPOSE/IMAGE.
COPY - KB 920116 New commands COPY/LSDK, COPY/LSKD, COPY/LSDD have been added to copy lists of descriptors/keywords. See the help for details.
CREATE/AUX_WINDOW - KB 920117 New command CREATE/AUX_WINDOW has been added to create an auxiliary zoom window. See the help for details. Accordingly, the window size parameters in the commands GET/CURSOR and VIEW/IMAGE have been removed.
VIEW/IMAGE - KB 920117 Now you can also do column plots and contour plots inside VIEW/IMAGE.
COPY/GRAPHICS - RHW 920122 This new command has been created to improve the naming convention of MIDAS commands (see COPY/DISPLAY). It does the same as the SEND/PLOT command, which will be removed in the future.
Dynamic expansion of command data base - KB 920204 Now it is possible to increase the number of commands and/or qualifiers used in MIDAS via the command SET/MIDAS_SYSTEM. See the help for details.
COPY/TABLE - MP 922901 The command works correctly now on big tables. (it was giving problems if the input table was big and contained selected entries)
FIT/ELL2 - RHW 920217 Yet another method to fit ellipses. The command is available in the 'surfphot' context (set/context surfphot). Read the help to get the details.
long command lines - KB 920217 There exist some "big" MIDAS commands, like PLOT/AXES, which may not fit on a single MIDAS command line. These commands are also difficult to edit and are usually truncated in the command buffer. To handle these long commands one can now proceed in 2 parts: First, each command line with a '+' as the first character is just stored in the command buffer and NOT executed, but may be edited in the usual way. So, one should enter very long MIDAS commands as 2 separate lines with the '+' as the first character in the command buffer. Then, in order to combine these two lines and execute as one command, use 'n+m' where 'n' the command no. of the first line and 'm' the command no. of the second line, e.g. 7+6. Note, that only two lines may be combined.
MIDAS command line - KB 920218 The max. size of the command line in MIDAS has been increased to 256 chars. (from 160 chars. in the 91NOV release).
GROW/IMAGE - KB 920220 An option has been added to allow choice of replicating the base line as lines or columns of result frame. See the help for details.
MAGNITUDE/... - KB 920228 All MAGNITUDE commands have now a zoom_window option like the GET/CURSOR command (with all the added functionality) for selection of subimages. See the help for details.
CENTER/... - KB 920304 The CENTER commands have now a zoom_window option like the GET/CURSOR command (with all the added functionality) for selection of subimages. Also, the qualifier UGAUSS has been removed. See the help for details.
Dynamic expansion of keyword data base - KB 920310 Now it is possible to increase the number of global/local keywords. See the help of the command SET/MIDAS_SYSTEM for details.
.../PLOT - RHW 920312 In order to reduce the confusion between graphics commands with qualifier PLOT and those with qualifier GRAPHICS, all plot commands with PLOT as a qualifier now have the qualifier GRAPHICS. Hence SET/PLOT is now

SET/GRAPHICS, SHOW/PLOT is SHOW/GRAPH, etc. The .../PLOT will be kept in the system for a while; however, users are advised to change to the new names.
SORT/TABLE - MP 920313 The algorithm has been modified in order to be able to deal with big tables (of the order of 50 MB)
SET/GRAPHICS - RHW 920316 After the upgrade of the ASTRONET GRAPHIC LIBRARY by Luca Fini also the MIDAS graphic package was given a major facelift. A number of new features have been implemented and are available via the SET/GRAPH command. For a full description see the help of SET/GRAPHICS (SET/PLOT). A summary of the main new features is: CLEAR=on/off - clear the graphics before starting a new PLOT; BCOLOUR=number - set the background colour; XOFFSET=number - position the plot in x; YOFFSET= number - position the plot in y; XSCALE=number - scale of the plot in x YSCALE=number - scale of the plot in y; FONT= number - set the font type to be used; The plot mode 3 (PMODE=3) has been taken out. To obtain a nice character font one should now use the FONT option. The syntax of the options XFORMAT and YFORMAT has been changed slightly.
PLOT/... - RHW 920316 In all PLOT commands a x- and y-offset parameter has been added. This allows you to position the plot anywhere on the graphics window/device. The offsets are added to the scaling parameters in the command parameter list. Also, as already has been mentioned in the previous news paragraph, a CLEAR option in the SET/GRAPHIC command allows you to switch off the automatic erase at the beginning of each PLOT command. Hence, you can now more easily produce multiple plots, using the main plot commands with the proper scale and offset parameters.
@% - KB 920317 Just for insiders... the % command for executing 'compiled' procedures has been changed to @%.
CREATE/xCAT - KB 920317 The syntax for using frames from a non-active catalogue has been changed to #xyz_catalog, e.g. #21_special, to use frame with entry no. 21 in catalogue special.cat .
COPY/TABLE - MP 920319 A new option has been added to the command to give to possibility to convert a table from/to Transposed/Record mode
FILTER/COSMIC - MP 920320 The command has been updated in order to deal with images containing a lot of spikes.
AVERAGE/IMAGES - KB 920327 This command has been redesigned and basically rewritten. It now offers functionality similar to AVERAGE/WINDOW with the following 'goodies' added: Lots of different options for getting an average value are provided, it works on frames of any size and these frames do not have to have perfect overlap.
COPY/DIMA, ID - KB 920409 The "old" copy commands COPY/DI, COPY/ID for copying descriptors to images and vice versa have been reinstalled as COPY/DIMA (because of COPY/DISPLAY) and COPY/ID. See the help for details.
WRITE/OUT - KB 920413 The char. '\' in the WRITE/OUT command is NOT converted anymore to a blank, since you can have embedded blanks by enclosing the text in double quotes. Check your private procedures if you have to modify them.
CENTER/GAUSS - MP 920415 The algorithm used by this command has been updated in order to provide more stability. The command is now able to deal with undersampled images.
FIT/... - MP 920415 The package has been heavily tested and should now work correctly on 2-d images and tables. A new function MOFFAT has been added.
ASSIGN/GRAPHIC, COPY/GRAPHIC - RHW 920504 All postscript printers offer the possibility to print in portrait or in landscape mode. In order to get the desired format one has to extend the printer name with ".l" for landscape or ".p" for portrait mode. Default (no extension given) is landscape mode.
INQUIRE/KEYWORD - KB 920505 A 'flush option' has been added as 3rd parameter to inhibit the possibility of type-ahead.
INFO/DESCR - KB 920511 A new command INFO/DESCRIPTOR has been implemented. See the HELP for details.
SET/GRAPHIC - RHW 920520 A new option (what another one??) has been included in the graphics setting. With the TSIZE (text size) one can size the text characters. Default is 1.0. The SSIZE option now only takes care of the character sizing. Read the help.
SET/MIDAS_SYSTEM - KB 920529 Several new options have been added to the command. These are mainly things which you could already do before by knowing which specific keyword to set. These were more or less undocumented features, not guaranteed to be stable forever. So, please, use now the relevant options in SET/MIDAS_SYSTEM instead.
OPEN, CLOSE, READ, WRITE/FILE - KB 920601 New commands for handling ASCII files in MIDAS procedures have been added. See the help for details.
CUTS/IMAGE - KB 920602 The functionality of this command has been expanded, see the help for details.
CREATE/TABLE - MP 920605 It is possible now to specify in the format file the field separator(s) which are used in the ascii file from which you want to create a table. When this keyword is present, the position of the fields in the ascii file are not required. See the help for more info
COMPUTE/TABLE - MP 920605 A new version of COMPUTE/TABLE has been implemented: - It gives error messages (for instance when the input column doesn't exist) - It is 3 times faster than the old version - new functions have been implemented (MIN, MAX, MOD, logical functions) - It doesn't allocate any temporary file on disk any longer
SELECT/TABLE - MP 920605 A new version of SELECT/TABLE has been implemented: - It gives error messages (for instance when the input column doesn't exist) - It is 3 times faster than the old version - New functions have been implemented for the treatment of character columns i.e support of wild cards - It doesn't allocate any temporary file on disk any longer
MVA context - MP 920609 Many of the commands were not working on the VMS system. The bug has been corrected.
STATISTICS/IMAGE - KB 920713 This command has been significantly modified: 1) If working on subframes only the relevant area is mapped, for large frames only chunks of the frames are mapped and worked on in a loop => STAT/IMA now works for images of any size,2) a new option PLANE has been added to work on the planes of a 3-dim image in sequence, see the HELP for details,3) layout of output keys and output descriptors has NOT been changed...,4) bugs with calculations using excess bins have been fixed,5) the first mode was actually the second mode in some cases... this also has been fixed
CROSSREF - KB 920714 Labels for parameters which are defined via the CROSSREF command may now be abbreviated on

the command line - minimum match is used. E.g. if in procedure blabla.prg: CROSSREF MINIMUM WEIGHT METHOD then Midas > @a blabla meth=minmax wei=2.2 min=0.7 would be o.k.

Host commands ($, $$) - KB 920715 Sometimes it is necessary to pass a command line "as it is" to the host operating system (normally MIDAS does expansions + substitutions before passing the line to the host system). In that case, use '$$' instead of '$' - see the help for details.

Context OPTOPUS - RHW 920717 The default format file for the OPTOPUS input table (command CREATE/OPTOPUS) has been changed to allow for more flexibility in the object names. The old format table is still available and can be found in the include directory of the OPTOPUS package (see your MIDAS site manager). Also, modifications have been done to remove the problems with objects and plate centre around 0 hours RA. Finally, thanks to Dario Maccagni, a nice tutorial is available now.

VIEW/IMAGE - KB 920720 Quite a lot of new features have been added to this command according to the suggestions received from users. Also the syntax of VIEW/IMAGE has changed! See the help for details.

LOAD/IMAGE - KB 920722 The default calculation of the cut values has been changed from MIN, MAX to MEAN +- 3*SIGMA of the frame. Also the parameter 'cutvals' has been upgraded so you can choose different methods for the cut value calculation. See the help for details.

MIDAS command language - KB 920723 The buffer space for Midas procedures is now adjusted dynamically, so there is no more fixed limit for the size of Midas procedures.

PRINT/TAB - MP 920723 A new parameter has been added to define the number of characters per line in the output file/device. See the help for more details.

Context SPEC - New command MERGE/SPECTRUM - PB 920820 This command allows to merge two 1D spectra and takes care of the overlapped parts of the spectra. Both spectra must be previously flux calibrated. The weight function is a ramp between 0. and 1. There is a possibility to cut the edges of the spectra.

Context SPEC - New command PLOT/RESIDUAL - PB 920820 This command plots in the graphic window the columns :RESIDUAL versus :WAVE of the wavelength calibration table line.tbl

Context SPEC - New command CORRELATE/LINE - PB 920820 Compares the position of arc lines in two tables created by SEARCH/LINE and estimates the shift by cross-correlation. This is used in contexts spec, long and echelle in the guess option.

Context SPEC - Command REBIN/WAVE - PB 920820 The command REBIN/WAVE accepts a parameter [start,step,npix] instead of a reference frame name to specify the output format. The coefficents of the rebinning are now read by default from the table line.tbl.

Contexts LONG and SPEC - Parameter tolerance in IDENTIFY/... - PB 920820 Commands IDENTIFY/LINE, IDENTIFY/LONG, IDENTIFY/RBR involve an additional parameter tol (Tolerance) which controls the limit of the search window which associates the pointed position to the table element.

Contexts LONG and SPEC - Table LINE.tbl renamed - PB 920820 The default name LINE.tbl of the wavelength calibration table has been changed to line.tbl, in accordance with the echelle package.

Contexts LONG and SPEC - Double precision columns - PB 920820 All wavelength related columns in the table line.tbl are now of type R*8. The column :WAVE of the line catalogue should in principle be of the same type.

Contexts LONG and SPEC - SEARCH/LINE in world coordinates - PB 920820 The table line.tbl generated by command SEARCH/LINE now works in world coordinates, so that the positions of lines in columns :X and :Y take into account the start and step values of the input image.

Contexts LONG and SPEC - Tolerance in wavelength units - PB 920820 The calibration tolerance in commands CALIBRATE/RBR and CALIBRATE/LINE can be given in pixels (as before), or in wavelength units, if preceded by a minus sign.

Context LONG - New commands SET/LONG and HELP/LONG - PB 920820 The command SET/LONG enables to assign values to keywords of the context long. The command HELP/LONG provides information about the keywords.

Context ECHELLE - New command DISPLAY/ECHELLE - PB 920820 This command takes care of all preliminary steps required before displaying an image, like creating a display window, the look-up table, a.s.o.

Context ECHELLE - Command ROTATE/ECHELLE - PB 920820 An additional parameter is available in command ROTATE/ECHELLE which provides the default value of the observation time if this value is not present in descriptor O_TIME(7). If no default value is provided, the user will be prompted to enter the observation time.

Context ECHELLE - Command DEFINE/HOUGH - PB 920820 a) The order following threshold can be specified independently for each order by direct assignment in the intermediate table middummr.tbl. The threshold is still estimated automatically if no value is proposed. b) A method CENTER enables to perform the Hough transform only in the central part of the order reference frame. This feature is useful for strongly curved orders. c) A minus sign (-) preceding the name of the method avoids the initial median filtering of the frame. d) An order number verification is performed which renumbers the orders after verification.

Context ECHELLE - Command IDENTIFY/ECHELLE - PB 920820 a) A new method (TWO-D) is available for the wavelength calibration. This method fits from the start a bivariate polynomial to the identified lines. Method TWO-D must be used when the disperser is not a grating, which is the case with EFOSC. b) A diagnosis tool has been implemented in methods PAIR and ANGLE, which analyses input parameters and identifications in the case the initial echelle relation is not accurate enough to start the identifications. The diagnosis proposes replacement values to make the echelle relation more accurate. c) A cross-correlation analysis is performed in mode GUESS to estimate the shift between two wavelength calibration exposures and correct accordingly the dispersion coefficients of the reference guess session.

INTAPE/FITS - PJG 920903 The FITS reader was upgraded to decode the new FITS extensions proposed, namely: Binary Tables (BINTABLE) and Image (IMAGE) extensions.

OUTTAPE/FITS - PJG 920903 The defaults of MIDAS FITS writer (OUTTAPE) have been changed. Tables will now be written as Binary Table Extensions by default. ASCII tables can be generated by using the 'type=B' option for Basic FITS. When

writing to tape, OUTTAPE will now start at the current tape position and NOT rewind by default. A new rewind flag has been added (i.e. ‘flags=R’) which will force a rewind before writing.
Modified Julian Date - PJG 920903 The IAU standard definition of Modified Julian Date as MJD = JD - 2400000.5 was adopted (in previous releases the constant 2400000.0 was used). This change affects the commands: COMPUTE/UT, COMPUTE/ST, COMPUTE/AIRMASS and COMPUTE/BARY.
Eastern Longitudes - PJG 920903 The IAU standard definition of Longitude as EASTERN longitude was adopted i.e. La Silla long. = -70:43:55.35. (in previous releases western longitudes were used). This change affects the commands: COMPUTE/UT, COMPUTE/ST, COMPUTE/AIRMASS and COMPUTE/BARY.
RESTORE/NAME - KB 920924 New command RESTORE/NAME (to rename files a la ‘data0004.bdf’ to their original name as stored in descr. FILENAME) has been implemented. See the HELP for details.
FFT/... - KB 921026 The restriction to frames with dimensions equal to powers of 2 has been removed from the FFT commands. Also the SPFFT commands (single precision FFT) have been removed, since tests have shown, that no significant speedup could be achieved to offset the loss in precision. Please, check your private procedures and update if needed.
REPORT/PROBLEM - KB 921027 Now, this command uses the text editor specified via the “SET/MIDAS editor=...” command (defaulted to ‘vi’ (Unix) or ‘EDT’ (VMS)) to build up your error report. You also can use an already existing text file instead of editing a report. See the help for details.
Context IMRES - RH 921101 New context IMRES has been added by R. Hook (ST-ECF) to implement methods based on L. Lucy’s algorithm for image restoration.
Version of BDFs - KB 921101 From Nov. 1992 on, the characters string representing the internal version of MIDAS images, tables, etc. has been changed to VERS_006.

The MIDAS Patch File Summary (from the anonymous ftp account)

The following text contains the current (dated 29 January 1993) information about the patch file P92NOV.01 that can be obtained by anonymous ftp (from 134.171.8.4). Please refer to the ESO-MIDAS Courier Volume 2, Number 1 for a detailed description.

Archive-name: P92NOV.01
Submitted-by: cguirao@eso.hq.org (Carlos Guirao)

This is patch 01 for MIDAS 92NOV
Please apply it by:%cd $MIDASHOME (e.g. /midas)
% patch -N -p < P92NOV.01

Note: "patch" is public domain software that can be very easily installed in any UNIX machine. There is a compressed tar file called `pub/patch.tar.Z` availableon our anonymous "ftp" account in "ftphost.hq.eso.org" (134.171.8.4). Follow README for installation details.

Note: This patch file should be applied on the original release MIDAS 92NOV. If you have already modified files by hand, the command "patch" could fail, leaving the file partially or completely unpatched. A correct execution should print only "Hunk" messages like:
Hunk #<a number> succeeded at <a_number>

Note: After applying all the patches, you will have to run the `update MIDAS` procedure, for the modifications to take effect:
% cd $MIDASHOME/92NOV
% ./config
....
Select: 7 (update MIDAS)
Do you want to continue [yn]? (y): y
....
Select: q (quit config)

Below a listing (complete up to 29 January 1993) of the patched files is given. As can be seen a large fraction of the patches are done for Open-VMS.

For the context PEPSYS several patches have been made in order to use a better algorithm for selecting stars. Other fixed are made to improve covergae in the West at the start of the night, and in the East at the end, on-line help, and to solve portability problems. A preliminary version of the reduction program is also included.

The P92NOV.01 patch file includes:

file	fix
/92NOV/prim/proc/report.prg	test for missing editor specs.
/92NOV/prim/display/src/smooth.for	fix FILTER/DIGITAL with large frames
/92NOV/prim/plot/libsrc/plogo.for	correct array boundaries
/92NOV/prim/plot/libsrc/plopn.for	fix call of AGIGET
/92NOV/prim/tc3/libsrc/cc.c	Open-VMS
/92NOV/prim/tw3/libsrc/tfpic.c	Open-VMS
/92NOV/libsrc/idi/cidi/x11/idilocal1.c	correct test for GrayScale terminal
/92NOV/libsrc/os/vms/osx.c	Open-VMS
/92NOV/libsrc/st/makefile	Open-VMS

file	fix
/92NOV/libsrc/st/preinstall.com	Open-VMS
/92NOV/libsrc/st/fsyalpha.mar	Open-VMS
/92NOV/libsrc/st/fsyalphc.mar	Open-VMS
/92NOV/libsrc/st/fsyalphd.mar	Open-VMS
/92NOV/libsrc/st/fsyalphe.mar	Open-VMS
/92NOV/libsrc/st/testvms.c	Open-VMS
/92NOV/libsrc/agl/makefile	Open-VMS
/92NOV/libsrc/agl/fintf.c	Open-VMS
/92NOV/libsrc/agl/tkdrv.c	bug fix for tektronix terminals/windows
/92NOV/contrib/pepsys/........	see text above
/92NOV/install/unix/test/testos.c	better test of SYSV/BSD flag
/92NOV/install/unix/test/signal.c	better test of void/int for signal()
/92NOV/install/unix/select.sh	minor sintax error corrected
/92NOV/install/unix/setup.sh	using “ex” instead of “ed” as editor
/92NOV/install/unix/ed_moptions.sh	using “ex” instead of “ed” as editor
/92NOV/install/unix/install1.sh	correction about executable pathnames
/92NOV/install/vms/preinstallmidas.cnf	Open-VMS
/92NOV/install/vms/make_vms.sh	Open-VMS
/92NOV/incl/ftoc_vms.h	Open-VMS
/92NOV/incl/ok.h	Open-VMS
/92NOV/monit/prepf.c	fix HELP/QUALIFY
/92NOV/monit/preph.c	minor bug fix
/92NOV/system/idiserv/x11/Xtest.c	clean up FONT handling
/92NOV/system/idiserv/x11/textdemo.c	dito
/92NOV/system/idiserv/x11/fontsup.c	dito
/92NOV/system/machine/computer.c	Open-VMS
/92NOV/prim/proc/dazinit.prg	handle colours in companion mode
/92NOV/libsrc/st/midkeya.c	change double key. format in READ/KEY
/92NOV/prim/display/src/magni.for	initiliaze drawing variables
/92NOV/prim/plot/src/oversym.for	resetting of font scaling

First Announcement of the 5th ESO/ST-ECF

Data Analysis Workshop

ESO, Karl-Schwarzschild-Straße 2

D-W 8046 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 centers 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,
Attn.: 5th Data Analysis Workshop,
European Southern Observatory,
Karl-Schwarzschild-Straße 2,
D-W 8046 Garching, FRG.
E-mail: `daw@eso.org` (Internet)

ESO/ST-ECF Data Analysis Workshop
ESO, April 26-28, 1993

Please return this form or notify us through electronic mail as soon as possible but not later than **March 1, 1993**, if you would like to participate in the Data Analysis Workshop. For hotel requests, please use the accommodation form.

Name: ________________________________

Institute: ________________________________

Address: ________________________________

Telephone: ________________ E-mail : ________________

I intend to participate in:
- ________ Scientific sessions, April 26-27, only,
- ________ user meeting/special session, April 28, only
- ________ full workshop

I intend to present a Paper: ________ or Poster ________

if yes, Title: ________________________________

Abstract must be submitted
before **March 1, 1993**

Comments and suggestions:

To be returned to: Resy de Ruijsscher,
Attn.: 5th Data Analysis Workshop,
European Southern Observatory,
Karl-Schwarzschild-Straße 2,
D-W 8046 Garching, FRG.

Internet: `daw@eso.org`
EARN: `daw@dgaeso51.bitnet`
SPAN: `ESO:DAW`

ESO-MIDAS Request Form

This is a request for the latest release of the ESO-MIDAS[1] system. To obtain a new release, please complete this form and return it to us (see reverse). Material will be shipped only to users with a valid ESO-MIDAS User Agreement. If you still have a tape or tape mailing box from the last release, you MUST return these before we send the new release.

ESO-MIDAS User Agreement No[2]: ______________________________

Technical Support Coordinator: ______________________________

E-Mail: ______________________________

Tape format:

- ◯ 1600 bpi VAX/VMS backup
- ◯ 6250 bpi VAX/VMS backup
- ◯ 1600 bpi TAR format
- ◯ 6250 bpi TAR format
- ◯ QIC-24 TAR format
- ◯ Exabyte 8mm TAR format
- ◯ DDS/DAT 4mm TAR format
- ◯ DDS/DAT 4mm VAX/VMS backup
- ◯ ftp (TAR files only)

Dcumentation requested:

- ◯ ESO-MIDAS User Guide 92NOV
- ◯ ESO-MIDAS Environment Version 1.1
- ◯ IDI-routines
- ◯ AGL Reference Manual Version 3.60

Date: ____________________ Signature: ____________________

1. ESO-MIDAS[TM] is copyright protected software developed by the European Southern Observatory for the purpose of Image Processing of Astronomical Data.
2. for new user agreements t.b.d.

The ESO-MIDAS Courier is published twice per year (January and July) by the ESO-MIDAS Group of the European Southern Observatory.

Contributions as well as suggestions and comments are invited and can be sent to the editor. In particular, authors of ESO-MIDAS application software that would be of general interest for the ESO-MIDAS community, are invited to make this software available.

If you are not on the mailing list and want to receive future issues of the Courier, contact the editor. More updated information about ESO-MIDAS can be obtained from the ESO-MIDAS Bulletin Board, accessible via anonynous ftp.

The ESO-MIDAS^{TM} Courier:

Editor: Rein H. Warmels
Typeset by FrameMaker ^{TM}
Published by the European Southern Observatory
Karl-Schwarzschild-Straße 2,
D 8046 Garching bei München,
Federal Republic of Germany

ISSN 1018-3051

The following MIDAS Support services are available for sending suggestions, comments or to obtain help when problems arise.

Telephone:	+49-89-32006456
Telex:	5282822 eso d, attn. ESO-MIDAS
Telefax:	+49-89-3202362, attn. ESO-MIDAS
Span:	ESO::MIDAS
EARN:	MIDAS@DGAESO51
Eunet:	midas@eso.uucp
Internet:	midas@eso.org
Anonymous ftp:	ftphost.hq.eso.org (134.171.8.4)