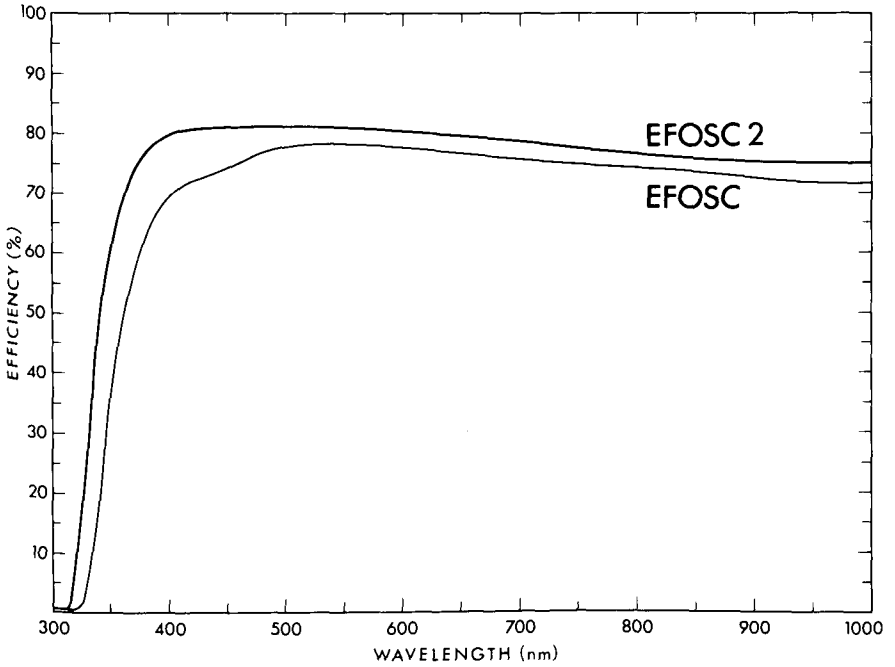

Figure 1: *Measured transmission of the optics of EFOSC and EFOSC2.*

TABLE 1: *Comparison of EFOSC and EFOSC2 optical data.*

		EFOSC/3.6-m	EFOSC2/2.2-m
Camera field (mm)		10 × 15	25 × 25 max.
Field size (arcmin.)		3.6 × 5.8	8 × 8 max.
Wavelength range (Å)		3600–10000	3300 × 10000
Camera focal length (mm)		103	195
Plate scale at CCD (μm/arcsec)		45	52
Dispersion (Å/mm)	grism	up to 120	up to 70
	echelle	55	28
Resolution with 1″ slit		up to 2200	up to 3500

TABLE 2: *Current EFOSC2 grisms.*

Grism #	Dispersion (Å/mm)	Central wavelength (Å)	Wavelength range with TH 1024 × 1024 (Å)	Blaze wavelength (Å)	Blaze abs. efficiency (%)
1	450	4800	3300– 7000	4500	82
2	490	7000	5500–10000	6700	83
3	114	4390	3300– 5800	4000	71
4	124	5620	4100– 7200	4700	76
5	149	7090	5200– 9000	6800	73
6	153	5760	3800– 7700	5100	77

number of lens groups from 6 to 5, a careful selection of glass melts and optical cements used for the production of the optics and by shifting the reflection minimum of the single-layer MgF2 antireflection coating more to the UV. The polychromatic image quality is excellent everywhere in the 25 × 25 mm field; 80 per cent of the light is concentrated in a circle with a diameter of 20 μm (0″.4).

An initial set of grisms has also been completed; their properties are summarized in Table 2. Grisms with higher dispersion and probably also an echelle will be added when the final detector format is known.

In the second half of 1989, EFOSC2 will be used at the NTT for tests. Some scientific work will also be possible, although, because the instrument parameters were optimized for the 2.2-m, EFOSC2 tends to oversample stellar images. On the NTT the scale at the detector is 115 μm/arcsec which yields a field of 2′.9 × 2′.9 with the Thomson 1024 × 1024 chip. With grism # 3 the slit-limited resolution is 13 Å at 4400 Å with a 1″ slit.

After EMMI has been installed and tested on the NTT, EFOSC2 will be moved to the 2.2-m where it will become generally available in the course of 1990.

H. DEKKER, ESO

MIDAS Memo

ESO Image Processing Group

1. Application Developments

Now that system developments in the portable version of MIDAS have stabilized, activities in the area of applications have resumed.

The echelle package is being upgraded to minimize the number of parameters controlling the reduction sequence, and to correct some known deficiencies of the current version. The new package will also be optimized to process data from other instruments like EFOSC and Echelec.

A new package for the reduction of long-slit spectra is now being tested. This package will replace the IPCS context of the old MIDAS version.

In the portable version of MIDAS the implementation of the ROMAFOT crowded field photometry package has been completed for DEC/VMS systems. Currently an upgrade is in progress to port the package to UNIX systems. This upgrade mainly involves the complete implementation of the MIDAS table file system and is expected to be released with the 89 MAY release (see below).

Also in the portable version, the upgrade of the INVENTORY package was finalized. The documentation of the package has been updated accordingly.

A new file system has been implemented in the plot package. In the new release, MIDAS plot information will be contained in only one plotfile. This plotfile is created by the major PLOT commands and will have the name of the frame, table, keyword or descriptor that is plotted. The file extension is ".PLT". Subsequent OVERPLOT commands will append the plot file with the new plot instructions. The SHOW/PLOT command shows the user the name of the current plotfile. MIDAS will allow one version of a plot file: an old plot file with the same name as a newly created one will be deleted. In the SEND/PLOT command, as the second parameter, one can specify which plotfile is to be sent to the graphics device.

2. Data Analysis Workshop

The next Data Analysis Workshop will be held April 18–20, 1989, in the ESO headquarters. Its form will change significantly in the sense that the main emphasis will be placed on astronomical applications rather than on system related software. The first day and a half will be devoted to applications for a specific area, while the last day will be used for MIDAS and ST-ECF sessions.

This year the special topic will be analysis of two dimensional direct images including stellar/surface photometry, search for objects and classification. There will be the possibility of presenting short papers during the workshop and we encourage you to contact us if you wish to give a contribution or just participate. We expect that proceedings of the scientific sessions will be published. Our aim is to create a forum for discussions of different methods and algorithms used in image processing.

3. Portable MIDAS

The first official release of the portable MIDAS, 88NOV, was made with some delay due to verifications of the VMS installation procedure. This first version does not yet include all applications and especially only supported Gould-DeAnza IP 8500 and X-window version 10.4 display systems. It is expected that these deficiencies will be resolved in the 89MAY release which will contain the basic display software for X-window version 11 being adopted as the standard for MIDAS. From the 89MAY release the portable MIDAS will be the *only* official version of MIDAS for both UNIX and DEC/VMS systems.

4. Access to Astronomical Catalogues and Databases

A new version (2.2) of STARCAT is now available; it is accessible from the ESO computer or remotely through networks. Here are some new features of this version:

- astronomical catalogues can be queried by a target radius and position. The position may be specified in many coordinate systems (equatorial at any equinox, galactic, supergalactic, ecliptic);
- J2000 coordinates are computed and listed for every catalogue;
- the result of any query can be stored as a MIDAS table, or as a plain ASCII file;
- remote connections now include IUE-Vilspa, SIMBAD, and EXOSAT (ESTEC) but are only available for local ESO users.

About 30 astronomical catalogues are available on-line, with complete on-line documentation. Among the most recently incorporated ones are for example the new version (1988) of Abell's catalogue of clusters of galaxies, and the most recent version of the catalogue of White Dwarfs (McCook and Sion, 1987).

The same STARCAT interface will be used for the future catalogue of the ESO Archive.

5. Measuring Machine Facility

The central computer of the Measuring Machine Facility is being replaced by a Stellar GS-1000 system. The decision was made after extensive MIDAS benchmarks giving it the best price/performance. The system will be able to analyse the scans of full Schmidt plates which the upgraded OPTRONICS machine is expected to perform later this year. The Stellar GS-1000 system runs a UNIX-like operating system and has an X-window system version 11 for display. It will run MIDAS for reductions of measuring machine data and be connected to the central computers through Ethernet using TCP/IP protocols.

6. AIPS-MIDAS Agreement

An increasing number of astronomers are using observations in several wavelength regions (e.g., optical, infrared, and radio) in their research. In general, different data reduction software packages are used for the different wavelength regions. Also different software packages have different capabilities, strengths, and weaknesses. It is therefore important to ease the transfer of data between image processing systems. As a first step in this direction, AIPS and MIDAS have agreed to write FITS files on disk with identicial specifications. This will enable users of these systems to exchange data files much faster via disk instead of passing through a magnetic tape. AIPS already conforms to the agreement while MIDAS will implement it as of the 89MAY release.

The agreement specifies that FITS disk files have a record size of 2880 bytes, which is the standard FITS logical record length. There shall be no "extra" bytes in a record, such as those used to specify variable lengths on some systems. In this way, FITS disk files may be passed between different operating systems through networks with no ambiguity. The use of a 2880-byte record implies that reading programmes are not required to reblock the data into logical records, although packages such as AIPS and MIDAS can be expected to have that capability in future.

7. MIDAS Hot-Line Service

The following MIDAS support services can be used to obtain help quickly when problems arise:

- EARN: MIDAS@DGAESO51
- SPAN: ESOMC1::MIDAS
- Tlx.: 52828222 eso d, attn.: MIDAS HOT-LINE
- Fax.: +49-89-3202362, attn.: MIDAS HOT-LINE
- Tel.: +49-89-32006-456

Users are also invited to send us any suggestions or comments. Although we do provide a telephone service we ask users to use it only in urgent cases. To make it easier for us to process the requests properly we ask you, when possible, to submit requests in written form through either electronic networks or telex.

Institutes which would like to use the MIDAS system should submit a MIDAS Request Form to the Image Processing Group. This form can be obtained through the HOT-LINE service.

Ethernet at ESO Headquarters

D. CHITTIM, Benney Electronics, ESO

Ethernet is a cable used with associated software packages for connecting computer equipment throughout a building. It has the advantage that equipment can be connected along its length at almost any point. Due to the high data transmission speeds involved, ethernet is most suitable for computer-to-computer communications although terminals can be connected onto it if necessary.

Since the initial installation of ethernet at the ESO Headquarters two years ago, the system has grown steadily. There are now only a few areas of the building which are not close to the network. The system consists of both "Thick Ethernet", which uses an expensive co-ax cable which is almost immune to electrical interference and a thinner cable which is more susceptible to interference but cheaper (hence it's nickname "Cheapernet").

– The main ethernet cable can be five