computer LAN in the administration building with the LAN in Garching. Due to the distances at La Silla (diameter over 3000 m) the transmission media had to be optical fiber. Use of fiber optics also have the advantage of removing problems of earthing and risk for damage to equipments during lightning. It was decided to start implementing a fiber optic Ethernet backbone network. A backbone network only carries traffic between the connected LAN's, while local traffic is contained locally by means of bridges. The hardware components were chosen in such a way that new points of interest easily can be integrated by pulling new fibers and installing new modules. For reliability reasons all fiber links are duplicated with automatic switch over in case of fiber breakage. Fibers have also been chosen to be compatible with the next generation LAN called FDDI (fiber distributed data interface) running at ten times the speed (100 Mbps). The delicate work of installing and terminating fibers, using fusion splicing technology, was carried out by Rolando Medina.

The connection between the backbone LAN and the TDM is implemented using high performance OSI level 3 routers, supporting multi protocols (at present only TCP/IP is used). This approach was chosen in preference to remote bridges because of performance and security reasons. A router gives better performance for short interactive messages and provides much more powerful security and diagnostic facilities.

This implementation gives full connectivity between all computers connected to a LAN in Garching or La Silla using TCP/IP protocol. The routers allow access control on a host basis as well as definition of type of access, e.g. a host may be allowed to send e-mail, but not allowed to do a remote login (TELNET, rlogin).

4. Experience After the First Months of Operation

In the long term, the availability of the link will become crucial. More and more users will realize the advantage using this communication facility and take for granted it should be available. At ESO we can build in redundancy and recovery procedures in our equipment, but we cannot do anything to guarantee the availability of the leased line from PTTs. This situation is very frustrating and it is important to collect statistics and analyse fault conditions in this initial phase.

During the first weeks of operation the downtime of the link was about 30%. This terrible figure has improved, but at the time of writing it is still 10%. It is clear that this is still unacceptable for the future, but hopefully the improving trend will continue. Good working relationship with the PTTs has been established and by identifying weak points and improving recovery procedures the availability should improve.

During the NTT inauguration, three days after the link was available to ESO, a preliminary video image transmission system and one voice channel were operational. The point-to-point connection to the NTT computer has been used extensively for software upgrades and troubleshooting during the last months. It will continue to prove to be an important tool during the integration of EMMI and later IRSPEC software. The fiber optic backbone network at La Silla was taken into operation and connected to Garching LAN without problems. At the time of writing it is normal to see at least one user from La Silla logged in on the main VAX in Garching. It is fair to say that this proves the usefulness of this connection and it is expected that the use of this facility will increase drastically in the near future.

It should be noted that all installations at La Silla have been carried out by local staff, in particular Gaetano Andreoni, Rolando Medina and Luis Aguila. During the commissioning phase the communication system itself was used extensively. Troubleshooting and integration of new components are facilitated by an intense communication via e-mail, file transfers and telephone conversations.

5. Future Developments

During the coming year work will concentrate on implementing remote control of the NTT. This application will have priority and other users will have to accept this.

However, it is expected that other applications will also gain in importance. For example, it is already planned to extend the backbone network at La Silla to other telescopes. New local applications over the backbone network are expected, e.g. data sharing between telescopes, archiving, centralized information accessible on-line from the telescopes (STARCAT, seeing measurements), etc.

Software development and maintenance, not only for telescope and instrument control, but also for MIDAS and other applications, will become much easier.

In the long run, the experience and know-how gained by using this communication link will be an asset for the VLT project.

Atmospheric Extinction at La Silla from September to December 1989

N. CRAMER, Observatoire de Genève, Sauverny, Switzerland

Since November 1975, the Geneva Observatory photometry group has been systematically carrying out measurements in the Geneva 7-colour system at La Silla. Special care has been taken to ensure the conservation of the passbands and of the reduction procedures over the period of almost 30 years that the system has been in use. This guarantees the long-term homogeneity of the data recorded.

The M+D technique developed by F. Rufener (see for example a description in *Astron. Astrophys.* **165,** 275–286, 1986; or in *IAU Symp.* **111,** 253–268, 1985) allows the measurement of the atmospheric extinction coefficients and their evolution with time over the duration of a night of observations. Our observers usually apply that technique when the meteorological conditions are judged to remain good during the whole night; otherwise, the observations are carried out at a constant air mass and the reduction is generally done by using the mean extinction values of the site. During the reductions of M + D observations, however, the instantaneous monochromatic extinction coefficients corresponding to the mean wavelength of each filter are computed throughout the duration of the night.

Over the years, we have frequently

been asked by visiting astronomers at La Silla for these values obtained at given dates. We have therefore offered the editor of the *Messenger* to publish some of these results in the journal. This should be possible, provided that not too much of the valuable space is taken up by these data.

In the table, which covers the last four months of 1989, we present in a concise form the mean monochromatic extinction coefficients measured by the M + D technique during the nights beginning on the given dates. The second line gives the standard deviations over the variations of each value during the night and provides a rough estimate of the stability of the transparency at that time.

The frequency of M + D nights in this table is fairly irregular; no attempt should, however, be made to interpolate between non-consecutive nights. Readers who would like to have more detailed information (for example evolution of the extinction over a given night) may contact me.

Monochromatic Extinction Coefficients (La Silla) at 3464, 4015, 4227, 4476, 5395, 5488, 5807 Å.

Date	U σU	B1 σB1	B σB	B2 σB2	V1 σV1	V σV	G σG
8. 9.89	.6013	.3083	.2509	.2064	.1327	.1355	.1230
	.0063	.0064	.0057	.0051	.0058	.0046	.0063
14. 9.89	.5909	.2988	.2415	.2032	.1301	.1303	.1186
	.0058	.0064	.0060	.0059	.0064	.0049	.0079
15. 9.89	.5967	.3095	.2476	.2102	.1338	.1345	.1237
	.0075	.0052	.0047	.0050	.0050	.0041	.0067
16. 9.89	.5921	.3007	.2456	.2047	.1272	.1323	.1233
	.0053	.0059	.0058	.0057	.0059	.0048	.0069
18. 9.89	.6102	.3168	.2513	.2102	.1373	.1362	.1230
	.0047	.0045	.0043	.0058	.0048	.0031	.0081
23. 9.89	.6258	.3302	.2666	.2260	.1458	.1493	.1310
	.0060	.0046	.0046	.0040	.0036	.0022	.0058
24. 9.89	.5893	.3026	.2454	.2060	.1269	.1274	.1180
	.0048	.0032	.0027	.0025	.0033	.0010	.0046
25. 9.89	.6092	.3191	.2624	.2230	.1386	.1414	.1278
	.0057	.0056	.0058	.0057	.0059	.0050	.0070
27. 9.89	.6194	.3267	.2674	.2225	.1437	.1458	.1321
	.0083	.0050	.0062	.0036	.0040	.0030	.0047
20.10.89	.5958	.3084	.2515	.2107	.1317	.1339	.1227
	.0038	.0037	.0027	.0030	.0019	.0015	.0028
19.11.89	.6173	.3257	.2663	.2171	.1351	.1337	.1231
	.0047	.0038	.0036	.0040	.0025	.0020	.0036
20.11.89	.6208	.3279	.2690	.2238	.1362	.1368	.1217
	.0036	.0028	.0026	.0026	.0026	.0020	.0041
30.11.89	.5993	.3116	.2507	.2015	.1368	.1287	.1192
	.0048	.0028	.0029	.0020	.0025	.0009	.0018
2.12.89	.6061	.3135	.2547	.2131	.1289	.1251	.1184
	.0068	.0045	.0050	.0047	.0028	.0027	.0031
3.12.89	.5993	.3030	.2468	.2029	.1255	.1197	.1127
	.0075	.0039	.0035	.0035	.0033	.0024	.0032
6.12.89	.5980	.3124	.2491	.2088	.1315	.1265	.1181
	.0034	.0027	.0024	.0027	.0030	.0024	.0032
11.12.89	.6945	.3179	.2578	.2111	.1334	.1293	.1209
	.0070	.0047	.0042	.0050	.0041	.0039	.0042
21.12.89	.6803	.3777	.3145	.2683	.1697	.1723	.1554
	.0095	.0092	.0090	.0094	.0091	.0088	.0096
22.12.89	.6424	.3484	.2868	.2391	.1535	.1505	.1405
	.0138	.0111	.0106	.0098	.0090	.0088	.0096
23.12.89	.6273	.3389	.2770	.2310	.1425	.1436	.1257
	.0084	.0073	.0062	.0061	.0059	.0057	.0073
24.12.89	.7070	.4019	.3353	.2877	.1901	.1905	.1735
	.0051	.0042	.0041	.0036	.0036	.0032	.0035
30.12.89	.7231	.4134	.3446	.2993	.2008	.1969	.1792
	.0109	.0079	.0075	.0072	.0068	.0066	.0077
31.12.89	.7005	.3957	.3270	.2823	.1862	.1845	.1698
	.0143	.0126	.0116	.0113	.0111	.0108	.0116

MIDAS Memo

ESO Image Processing Group

1. Application Developments

Some improvements have been added to the applications related to spectroscopy especially in the LONG SLIT context. All the commands related to the context ECHELLE have now been ported from the old MIDAS into the 90 MAY release and tested on CASPEC data.

A number of irritating problems still exist in many applications either due to unclear documentation or errors in routines often caused by the conversion to portable code. A major effort on validating the basic MIDAS commands will be made in the remaining part of the year. Functionality and documentation of each command will be tested by ESO in-house astronomers in order to find and correct inconsistencies and errors. It is expected that this concentrated effort will significantly improve and stabilize MIDAS and establish a very reliable MIDAS core. The next high priority will be a major revision of the standard reduction packages for major ESO instruments.

2. MIDAS Courses

The first MIDAS course was held in early April on installation of MIDAS on VAX/VMS systems. Eleven system managers from different European MIDAS sites participated in the course which took one day and a half. In addition to a detailed discussion of an actual installation on a VAXstation 3100 with VMS 5.3 and DECwindows, the course covered the general structure of MIDAS and special costumization of the system for individual user sites.

Similar courses for both VAX/VMS and UNIX installations will be made in the future depending on demand. The Image Processing Group also plan to make courses in programming in MIDAS both using the control language and coded application programmes. Such programming courses would however only be started at the very end of 1990 or beginning of 1991.

3. New Positions

Two additional short-term positions (with durations of up to two years) have been allocated to the MIDAS group. They will be used mainly for improvements and developments of new application programmes in MIDAS. Not only will this make it possible to have new algorithms and applications included into MIDAS after a period of limited improvements in this area, it will also at longer term spread the detailed knowledge of MIDAS in the community when people in these positions return to their home institutes.

In addition to these positions, it will be possible to invite people who have made interesting algorithms and programmes to ESO for an implementation of them into the MIDAS environment.