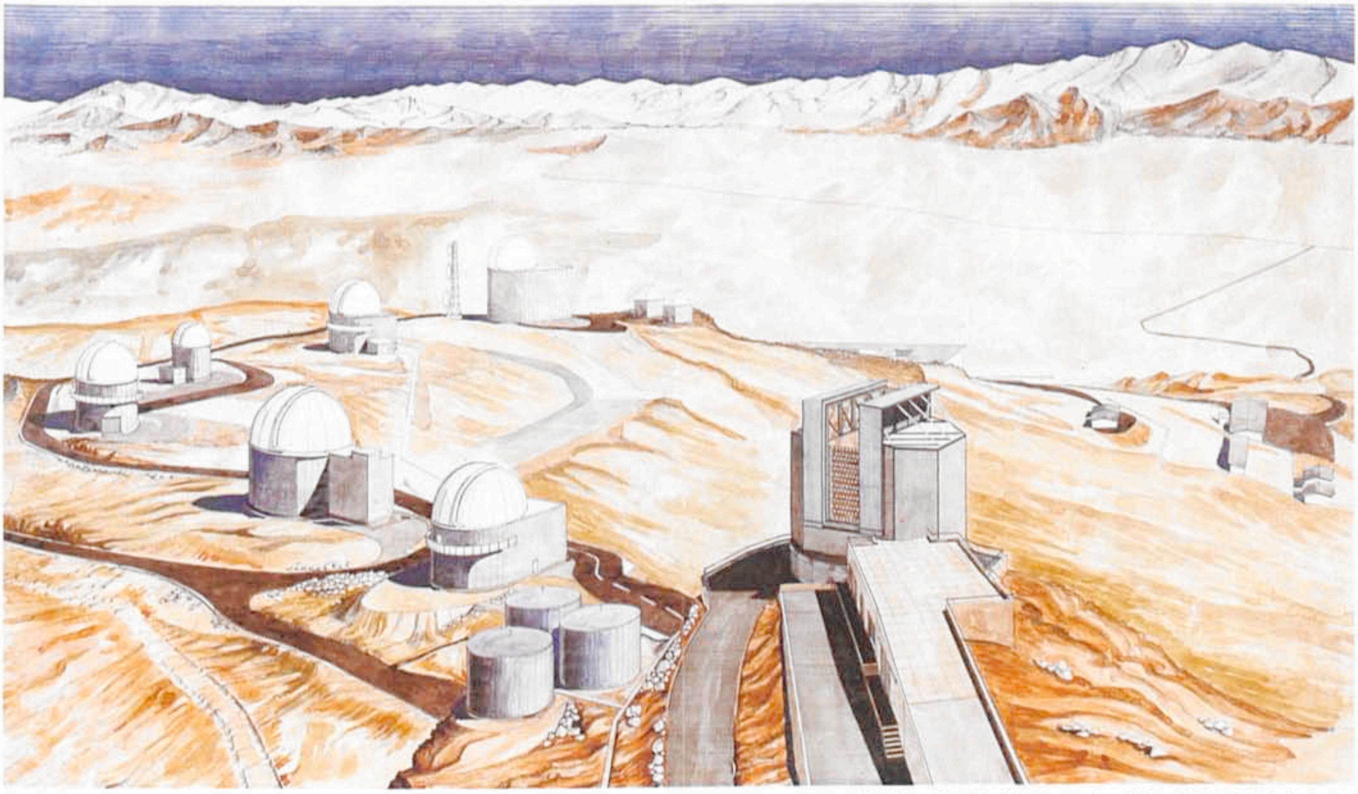

Figure 2: *The NTT building on La Silla (Arch. U. Tolomeo).*

NTT Progress

Since the last issue of the *Messenger*, the mechanical pre-assembly of the NTT at INNSE Brescia (Italy) has been completed and the electronic hardware and software integration has started.

Figure 1 shows the telescope structure. The optical elements are being polished at Carl Zeiss and completion is expected by summer 1988. In the meantime, the primary, secondary and tertiary mirrors are substituted by steel concrete dummies while the telescope enters a phase of functional tests. It is expected to be shipped to Chile in March 1988.

Major advances have been made in the sphere of building activities and site preparation in the civil engineering work has begun on La Silla (construction of road, concrete base and service annex). The rotating building has been manufactured in Europe and is expected to be shipped to Chile in October 1987.

Figure 2 shows an artist's impression of the NTT building in its future location on La Silla. The innovative design of the building distinguishes it from the traditional dome structures.

Both building and telescope are manufactured in such a way as to facilitate mounting and dismounting. *M. Tarenghi*

Site Evaluation for the VLT: a Status Report

M. SARAZIN, ESO

The instrumentation for the VLT site seeing evaluation programme has been progressively installed at La Silla and tested there during the course of 1986. Part of it was calibrated during the Lassca campaign against various optical measurements made on the La Silla telescopes (*The Messenger* No. 44).

It includes a 35-cm diameter optical telescope equipped with the differential motion monitor, an acoustic sounder (sodar) to probe the atmospheric turbulence up to 800 m above the site, a scintillometer which delivers information about the turbulence in the high atmosphere and a local turbulence monitoring system using fast temperature and wind speed sensors.

Figure 1: *Trailed Sodar, Seeing monitor and control room shelter.*

During that time, the cloud cover and water vapour survey undertaken four years ago was continuously confirming the superior quality of the Atacama desert area and in particular of coastal summits between Taltal and Antofagasta. Cerro Paranal was picked up as the best candidate and after the construction of an access road and the erection of a 5 metre high tower, measurements could start in April 1987.

The instruments are gathered at the Northern edge of the summit (Fig. 1). Assuming that most short-scale variations of seeing quality would be mainly produced by boundary layer effects, the acoustic sounder was made easily movable to evaluate the suitability of the mountain slope for long-baseline interferometry. It is also aimed to probe several closeby summits and establish the total housing capacity of the site for other telescopes. It is also of prime interest to use the redundancy of the instruments to check from time to time that the total seeing measured at the telescope corresponds to the sum of the three other specialized instruments.

The type of optical measurements to use for site evaluation has been extensively discussed during the meetings of the Site Evaluation Working Group in 1984–1985 and the best choice for mobile instrumentation appeared to be the differential motion monitor. Such a system does not need a large telescope, neither a very stable mount and is not sensitive to optical quality. It performs a statistical measure of the wavefront quality by comparing the local slopes on two 5-cm diameter apertures, 20 cm apart. The variations of the slope of the wavefront are responsible for the motion of the star image. The image corresponding to each subaperture are physically separated on the intensified CCD detector, and their relative positions are measured in real time at a rate of five 10-ms exposures per second. The better the seeing is, the smaller will be the wavefront distortions and consequently the differential motion of the two images.

The telescope (Fig. 2) is placed a few metres above ground to escape from ground turbulence, dust and human hazards. It works in the open air to minimize self-induced seeing. Apart from the fine centring of the star in the finder, the experiment is remotely operated from the control room (Fig. 3) where the observer checks the telescope guiding and is informed every minute of the seeing variations, as well as of the local turbulence and the scintillation (measured on the same object).

Bright stars less then 30 degrees from

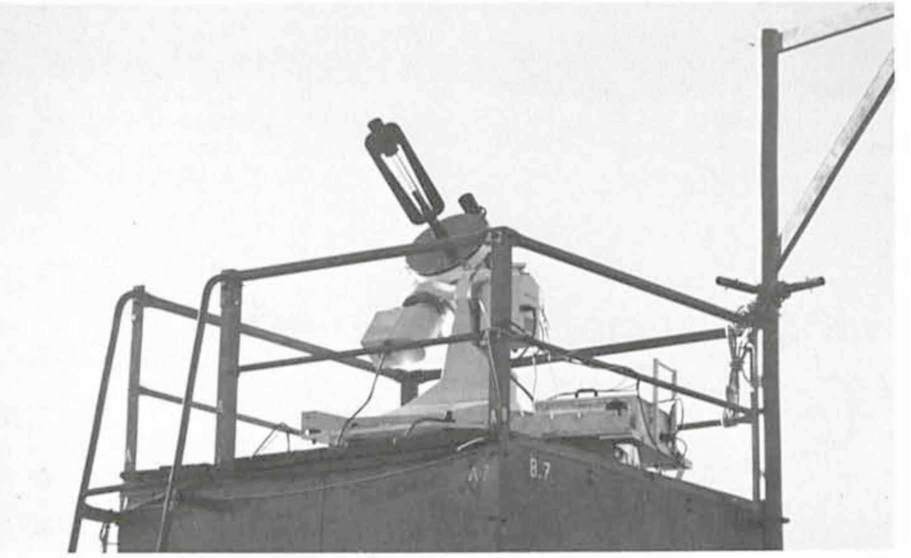

Figure 2: *The Seeing monitor telescope.*

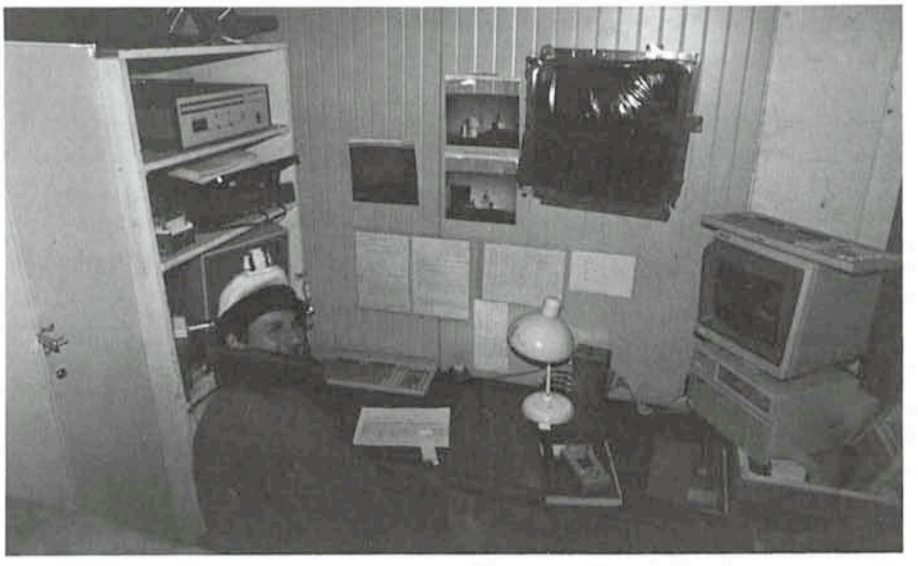

Figure 3: *Paranal control room.*

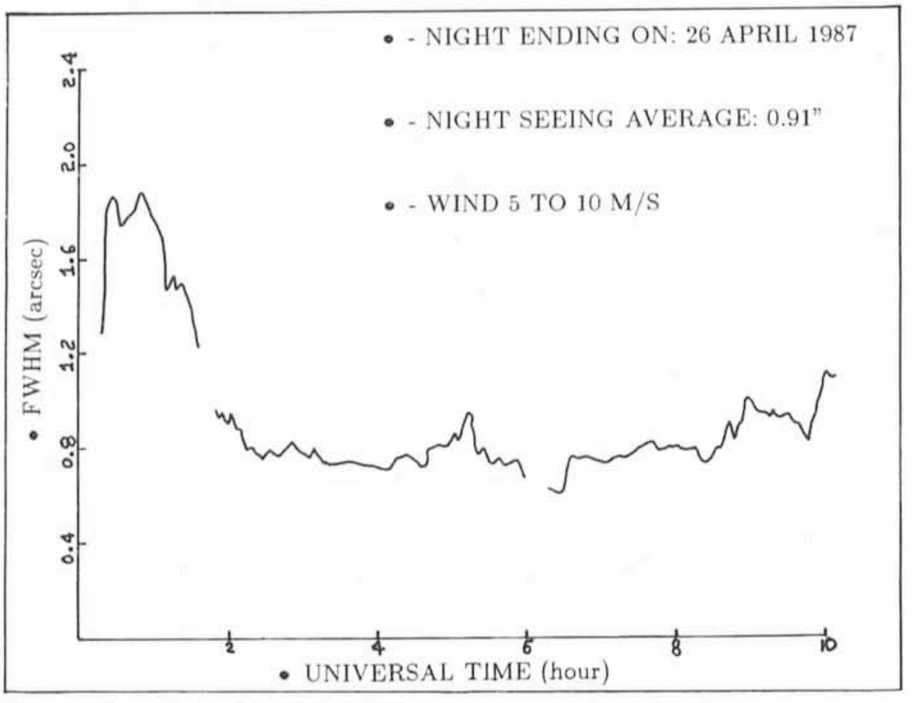

Figure 4: *Example of a Full Width Half Maximum record.*

the zenith are used, three objects are necessary to cover a full night. Results up to now confirm that, as at La Silla, the seeing may vary much during the night and from one night to the other. A typical example is presented in Figure 4 where the data have been averaged with a 5-mn moving window. Due to probable seasonal effects, a full year will be necessary to present a preliminary assessment of the quality of Paranal. At the end of July, thanks to the efforts of the Paranal team and to the technical support of La Silla, more than 70 % of the photometric nights had been monitored. The unique data base thus created will also permit a better parametric analysis and thus a first step towards the ultimate goal for flexible scheduling: the prediction of observing conditions . . .

MIDAS Memo

ESO Image Processing Group

1. Application Developments

An optimized digital filter to remove cosmic ray events from single CCD exposures is being developed in collaboration with M. Deleuil. The filter locates possible cosmic ray events and compares them with the point spread function to determine the probability of it being a cosmic ray. At a given probability level, pixels effected by such events can then be replaced either by a NULL or on interpolated value.

The FITS input/output commands can now also work directly on disk files. This makes it possible to transfer data files in FITS format over a Local Area Network to workstations which do not have their own tape unit.

The table file editor, one of the favourite commands, has been extended; now it is possible to create and delete columns during the editing session and to search for an entry in a given column. A new command allows the interpolation of data using splines; this command, working both on images and/or tables, complements the capabilities already provided by the rebin operator.

The plotting facilities have been further upgraded with some new features and commands. The ASSIGN/PLOT command has been redefined to make it more consistent with the other ASSIGN commands in the system; the old functionality of this command has been taken over by a new SEND/PLOT command. Also, some new OVERPLOT commands have been added. Among the new features the most important ones are: the possibility to specify scales, the support to different line types, and the separate manual specification of the x- and y axis.

2. Communication

The number of computers connected to the ESO Local Area Network is steadily increasing. In order to provide a homogeneous interface to external institutes a dedicated communication processor (Bull SPS 7/300) has been purchased. This processor is connected to the ESO network and will act both as a gateway to external electronic networks and provide general services to the ESO community such as bulletin boards. The special computer for communication makes internal changes to the ESO computer systems transparent to external users and should therefore utilize an easier communication between ESO and the user community. The implementation of this system has already been started and is expected to be terminated in the spring of 1988.

3. MIDAS Hot-Line Service

The following MIDAS Support services can be used in case of problems to obtain fast help:

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

Also, users are invited to send us any suggestions or comments. Although a telephone service is provided, we prefer that requests are submitted in written form through either electronic networks or telex. This makes it easier for us to process the requests properly.

Five Nights on a Bare Mountain – an Outsider's Look at La Silla

G. SCHILLING, Utrecht, the Netherlands

The person in front of me is nearly unrecognizable. In the first place, it is very dark around us. Secondly, he is completely wrapped up in a fur jacket, with a cap around his head. The air temperature is just below zero, but that isn't the worst. It's the icy northern wind that blows literally through everything, and that's chilling you to the bone. The person's hands are uncovered, because he has to write, push buttons, turn dials, etc. His fingers must be frozen to death. He has already been working for about six hours, and after a short break for a sandwich and a cup of coffee, he has another six hours to go. This goes on for several nights, all of them cold and windy. No labour union would tolerate such severe working conditions. Nevertheless, this person doesn't complain. He loves his work. He is an astronomer. We are not at the South Pole, but at La Silla, the site of the European Southern Observatory.

Since I am a science journalist rather than a professional astronomer, I have little experience with the way of life at a big observatory. In my home country, the Netherlands, only some small historical observatories exist (apart from the Westerbork Radio Synthesis Telescope of course), and Dutch astronomers are used to do their observational work abroad. For instance at the European Southern Observatory in Chile. The Netherlands has been a member country of ESO since the establishment of the organization in 1962, and always played an important role, not only scien-