of the lateral load cells will follow, and we should be able to have full information on the support forces by the end of August this year. Time will be requested before the end of the year to change the force distribution below and around the mirror, and to install springs on the axial astatic levers.

A detailed planning of the intervention on the primary mirror support has been prepared by Roland Gredel. We hope that all the necessary work on the mirror cell can be done within the year.

4. Conclusions

The behaviour of the telescope at large zenith distance in terms of optical quality has been investigated carefully since September last year. Improvement plans have been proposed and work has started already. The phase we are entering now is very delicate as it involves the intervention on the mirror support itself. Everything will be done not to degrade the optical quality at zenith while changes are made. More technical time will be needed before the end of the year to decrease the aberrations for all telescope positions. The 3.6-m is getting better; however, much work still has to be done.

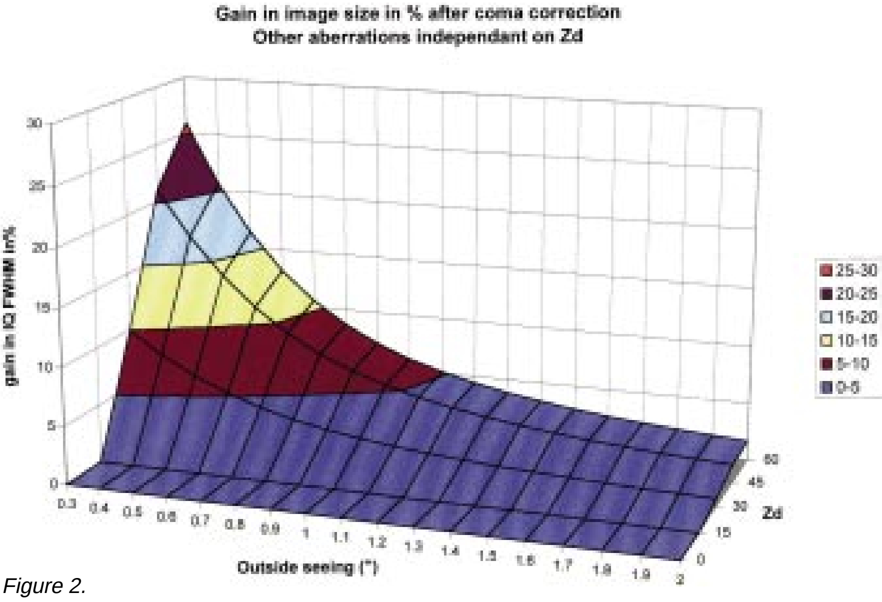

Figure 2.

References

[1] S. Guisard: The Image Quality of the ESO 3.6-m Telescope (Part IV): Better than 0.6″, *The Messenger* No. 86, December 1996.

[2] S. Guisard: 3.6-m + CAT Upgrade, "Report on the test nights 7th and 8th October 1996", 3P6-TRE-ESO-032-009, October 1996.

[3] S. Guisard: 3.6-m + CAT Upgrade, "Report on the test nights 18/10/96 and 19, 20, 25, 26, 27/11/96", 3P6-TRE-ESO-032-010, December 1996.

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From the 3.6-m and 2.2-m Teams

During October 1997, EFOSC2, the imaging spectrograph now at the 2.2-m telescope, will be moved from the 2.2-m to the 3.6-m. The current spectrograph on the 3.6-m, EFOSC1, will be de-commissioned. EFOSC2 on the 3.6-m will have higher throughput, a larger field of view and significantly better image quality than what was possible with EFOSC1. The significantly smaller pixel scale of the EFOSC2 CCD, 0.18 arcsec per pixel at the 3.6-m telescope, compared to 0.61 arcsecond per pixel of EFOSC1, will allow observers to fully exploit the recent progress in the improvement of the 3.6-m image quality (see S. Guisard's reports in *The Messenger*, December 1996, March 1997). Multi-object spectroscopy will not be avaible with EFOSC2 during Period 60 but only in Period 61 and thereafter.

For ESO time during period 60, the 2.2-m will be dedicated to observations with the two infrared cameras, IRAC1 and IRAC2b.

2.2-m Telescope Upgrade Plan

With the 3.6-m upgrade in progress, the 2.2-m telescope will be the only major telescope on La Silla which still runs off an HP-1000 computer. To make sure that the 2.2-m telescope will be maintainable into the next decade, we are preparing an upgrade plan for the telescope which will be presented to the STC in the beginning of May. The upgrade plan will discuss both the possible replacement of much of the electronics and computers as well as possible modifications to the drive system and possible improvements of the image quality. This will be a good opportunity to address some long-standing problems with this otherwise excellent telescope. *J. Storm*

News from the Danish 1.54-m Telescope

J. BREWER and J. STORM

TCS User Interface Upgrade

A new TCS graphical user interface (GUI), written by Gaetano Andreoni using the VLT panel editor, is now in use at the Danish 1.54-m telescope. Observers will find that the frequently used telescope and adapter controls are now contained within a single window, while lesser-used functions are within a dismissable pop-up window. A 'virtual handset' can also be enabled from the main control window. The new interface retains the same functionality as the old interface, though it is simpler and more user friendly. The new interface also offers the advantages that it is significantly more robust than the old system and is easily modifiable.

DAISY

A new instrument GUI, based on the GUI at the Dutch telescope, is now in use at the Danish 1.54-m telescope. DAISY (Data Acquisition Integrated SYstem), written by Eduardo Robledo, combines the control of the CCD Camera, the DFOSC (Danish Faint Object Spectroscopic Camera), the FASU (Filter And Shutter Unit), and the telescope focus control all into one package. Observers will find that DAISY is very easy to use; the operation is intuitive and there is little to remember. The DAISY interface allows observers to define a sequence of exposures with each exposure having its own filter/grism/slit combination. In addition, it is possible to define a sequence of sequences. By combining the various controls into one package, DAISY both optimises and simplifies observations.

Focus Pyramid

During Danish time at the beginning of January, a new focusing device was tested and installed in DFOSC by Per Kjaergaard Rasmussen and Michael Andersen from Copenhagen University Observatory. The prism works in the same manner as focus wedges, which have been in use in the focal reducers at La Silla for many years. However, instead of splitting the telescope pupil into two images, as is done with a wedge, the focus pyramid splits it into four components. The advantage is that alignment is not critical for the resulting focus estimate, which makes it simpler to maintain.

A new observing batch has been developed for analysing the images and it is now possible to check the focus in less than a minute. This will enable a much more frequent refocusing of the telescope than has previously been feasible and thus help to improve the image quality.

Image Quality Improvements

Following the promising results which have been achieved at the 3.6-m telescope (see e.g. S. Guisard, *The Messenger* 86, p. 21), an investigation of the image quality of the Danish 1.54-m is also in progress in close collaboration with the group at Copenhagen University Observatory. It is clearly a complex problem and we must proceed one step at a time to achieve consistent results. The first step is to improve the monitoring of the current performance and ambient conditions to determine which are the major sources of the seeing. Apart from the atmospheric seeing there are probably significant contributions to the seeing from the dome, the telescope itself as well as from the finite size of the pixels of the detector.

The physical size of the pixels corresponds to 0.39 arcsec on the sky, but as the overthinned LORAL-CCD smears the charge, the effective pixel size is significantly larger, especially in the blue. Still, images with a seeing of 0.9 arcsec have been obtained with DFOSC so the potential for sub-arcsecond images is definitely there.

To investigate the effect of mirror seeing, the mirror cover has been lifted some 10 cm at the beginning of January and a couple of fans have been mounted following the example of the 3.6-m. The first tests suggest that the forced mirror ventilation reduces the typical FWHM of images by 0.2–0.3 arcsec. More tests under a wider range of external conditions will have to be carried out to derive a clearer picture.

The next step will be to assess the amount of dome seeing and the ways in which this contribution can be reduced.

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E N D O F L A S I L L A N E W S P A G E

New CASPEC Manual and Simulator

S. RANDICH, ESO-Garching, and M. SHETRONE, ESO-Chile

1. CASPEC Operating Manual

A new operating manual for the Cassegrain Echelle Spectrograph (CASPEC) at the 3.6-m telescope is now available.

The manual can be retrieved from the 3.6-m & CAT WWW page:

(http://www.ls.eso.org/lasilla/Telescopes/360cat/html/CASPEC/caspec.html).

Since 1989, when the last operating manual was written (ESO Operating Manual #2), CASPEC has undergone several modifications; the main ones being: the installation of two new (RED and BLUE) cross-dispersers; CCD upgrades; a new clamping system, which reduced the flexure in the spectrograph; and the addition of new colour filters to the CASPEC set. An update to the manual was written in 1993 by L. Pasquini. The major changes since then are the installation of a new high-efficiency CCD (ESO CCD #37) and the fact that only one grating (31.6 lines/mm) and only the Long Camera are presently offered.

The new manual describes CASPEC in its present status. This includes all the information reported in separate documents since 1989 (e.g., new cross-disperser efficiencies, 3.6 + CASPEC + CCD #37 overall efficiency, CCD #37 characteristics), plus new information; in particular, the inter-order separations for the 31.6 lines/mm echelle grating and the long camera for both the RED and BLUE cross-dispersers. Additionally, S/N estimates are given for the two standard configurations (31.6 lines/mm echelle + RED (BLUE) cross-disperser + Long Camera + CCD #37); new bright, 1.6 nm resolution flux standard stars have been added to the table of standards stars; reference exposure times for Quartz and Thorium-Argon lamps exposures with the different neutral density filters and colour filters are given; and, finally, a new Long Slit filter centred at 671.1 nm, which arrived very recently, have been added to the list of Long Slit filters.

The structure of the manual differs with the 1989 version. For example, a more comprehensive introductory chapter is given. It summarises the properties of CASPEC and compares it with the two other high-resolution spectrographs at La Silla, namely EMMI at the NTT and the CES at the 1.4-m CAT telescope. In this chapter, the CASPEC observing modes are listed and all the basic characteristics of the instrument are summarised. This first chapter should be read before writing the Observing Proposal; in particular, it should allow the observer to discern whether CASPEC is suitable or not for your scientific programme. Chapter 2 describes, in detail, the characteristics of the different components, and should allow one to choose the most suitable configuration for a given project. Chapter 3 (Instrument performance) should also be read when writing the proposal in order to ascertain the feasibility of the project and to estimate the number of nights needed to carry out the project. This Chapter is complemented by a simulator (see below). Finally, Chapters 4 and 5, may be skipped when preparing the proposal, but should be read before carrying out the observations.

CASPEC Exposure Time Calculator

The ESO 3.6-m CASPEC Exposure Time Calculator (Version 1.0) has been completed and is available on the 3.6-m Team CASPEC Homepage.

The calculator can simulate the most common observing set-ups for CASPEC; future versions may include Long Slit mode and the Zeeman Analyzer. It is based on both observed and theoretical parameters. The simulator will be used as a starting point for the CASPEC Physical Model.

This calculator takes into account many observing parameters not included in other simulators or S/N estimators (e.g. Chapter 3 of the CASPEC manual). For example, the phase of the moon, seeing slit losses, airmass corrections and basic colour terms in the assumed input magnitude are included. The calculator can either be used to estimate the S/N in the resulting spectra for a given exposure time or to