the controller are software controllable, special or custom read-out sequences (such as drift-scan or skipper amplifiers) can easily be implemented.

Work is currently focussed on what additional elements are necessary to create a complete controller. At a minimum the system must be capable of stand alone operation and have an image display. Both of these features are present in the current Generation II controllers and have proven essential to efficient operation. Currently the work group is trying to divide the display, memory, processing power, and secondary storage requirements between the CCD controller and the data acquisition system.

Current plans call for acquisition and development of the system to begin during 1st quarter 91, testing during 2nd quarter 91, and implementation for second semester 1991.

Christopher Clark and Steve Massey

Optical Tests of the Prime Focus Wide Field Corrector

Prime focus images using the Wide Field Corrector are seldom better than 0.6" FWHM, and never better than 0.5". However, images obtained with the High Resolution Camera at the same focus have been as good as 0.35" or even better. Since this difference in image quality is difficult to explain entirely in terms of image stabilization provided by the HRC, and since the WFC had not previously been subjected to rigorous optical tests, the corrector has been tested interferometrically in the lab.

We were fortunate enough to be able to rent a phase-shift Shack cube interferometer from the Optical Sciences Center of the University of Arizona, together with the gracious services of Dick Sumner the head of their optical fabrication group for a week in October. The Shack unequal path (LUPI) interferometer with its phase-shifting capability can reproducibly measure wavefront errors as small as 1/100 wavelength. In our test setup, the divergent beam from the interferometer's spatial filter passed through the wide field corrector to a high quality spherical mirror which then returned the beam through the corrector back to the interferometer. The reference sphere, stopped down to f/3.77, was checked separately with the same equipment so that any surface errors it introduced could be subtracted from the wavefront map of the corrector-sphere combination. Although the interferometer-corrector-sphere were mounted on a steel frame on air-bearing isolators the system was (painfully) sensitive to vibration. Tests could only be conducted at selected times of the day when all building motors could be turned off.

We are glad to report that the optical quality of the corrector is better than we had expected it might be. Although considerable care had been taken previously in centering and squaring on each of the corrector's three lenses we had anticipated seeing some hint of either pinched lenses or misalignment.

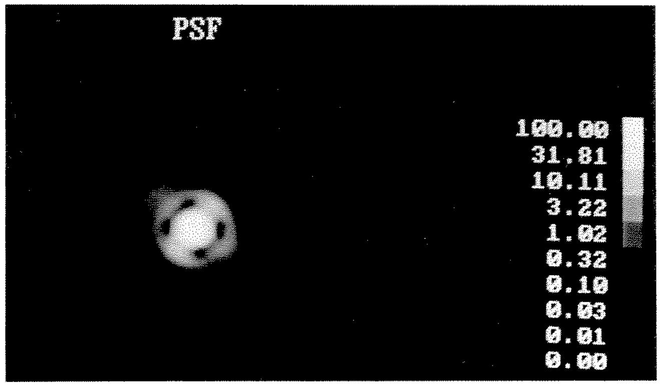

Fig. 12: The diffraction limited image calculated from the wavefront of Figure 11. The diameter of the first null ring is 0.09".

Quite pleasantly this was not the case. In fact, the on-axis, single-pass performance of the corrector alone (as expected in use on the telescope) is 0.43 waves peak to valley, and 0.075 waves r.m.s. wavefront error at 6328 Å, quite near diffraction limited operation. The principle contributors to the wavefront errors are third order spherical aberration and astigmatism. The wavefront map after removal of tilt and defocus, and a point source image calculated from this wavefront are shown in Figures 11 and 12. The diameter of the first zero ring of the diffraction image is 5.8 microns or 0.09".

D. Salmon and S. Béland

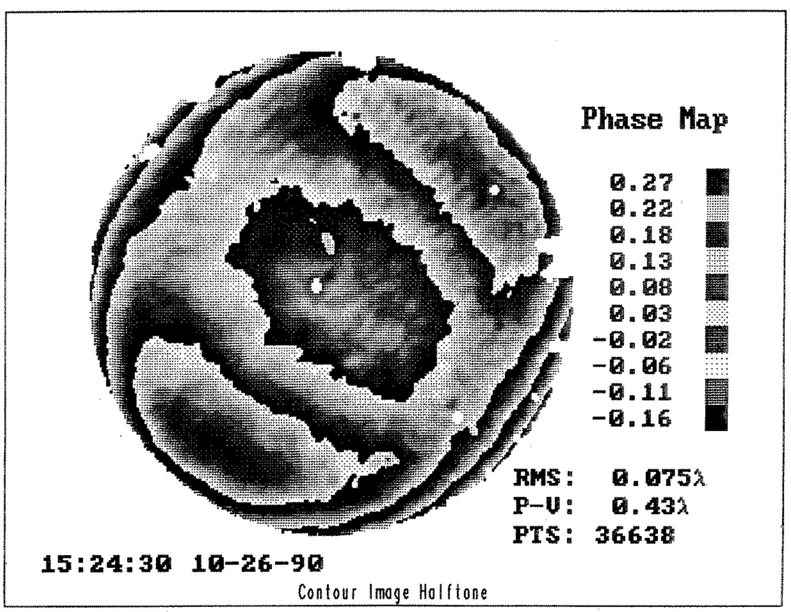

Fig. 11: The single-pass wavefront for the Wide Field Corrector

Status of the Data Acquisition System X11 versus X10

The CFHT data acquisition system's user interface will soon be sporting a new look and feel. As of this writing, a X11/Motif based system has been written and used for the Lick1 2kx2k CCD engineering run. It is expected that most, if not all, of the CFHT instrument runs will be utilizing the new software by the first semester of 1990.

Converting the CFHT data acquisition user interface from X windows version 10 to version 11 was mandated by our continued reliance on standards. Vendor support for X10 will be discontinued in 1991, while X11 is widely available and accepted. Motif was chosen both because it uses X11 and to take advantage of it's user interface, which is very similar to that found on PC based windowing systems. In addition, Motif provides a rich set of tools for continued improvements to our user interface.

The new features incorporated by the Motif based user interface include a context sensitive help capability, a more consistent look and feel, better user control of running processes, and an improved image display system (including an entirely rewritten plotting system).

Even as the X11 conversion is nearing completion, many additional features will be mandated by new instrumentation, larger format CCDs, and the continuing drive to improve observing efficiency. This will include a graphical guide star selection method, a more integrated image display system, as well closer communication with the TCS. The current user interface will serve as a stable base for the development of our future data acquisition and control systems.

Steven Smith and John Kerr

Summit Environmental Monitoring Software

A continuing project at CFHT has been the monitoring of the summit environment. The data collected includes such information as the temperature at various points on the primary mirror, temperature of the telescope support structure, pressure at the mirror load cells, inside dome temperature, outside temperature, relative humidity, wind speed, wind direction, plus much more. Twenty-four hours a day, seven days a week, 100 data points are acquired and stored at 10 minutes intervals. Each day we get 14,400 data points.

This information dates back to 1986. Results from previous years have yielded approximately 80% to 85% of all the possible readings. Each past year's data is contained in a single file roughly 30 megabytes in size.

Efforts are already underway to use this valuable record in determining what factors most affect seeing. The first step was to convert all the previous data into a single format. With this accomplished, we are now ready to begin analysis the data and attempt to correlate it with seeing statistics.

This project is one of the first at CFHT to utilize remote procedure calls and distributed processing. The experience gained here will assist us as we move from single-CPU computing towards a distributed network environment.

J. Wright

IRAF and MIDAS Image Preprocessing at the Summit

A Sun 4 Spark Workstation has recently been installed in the control room of the telescope (4th floor). Two image processing systems are available: IRAF version 2.9.1 which is the official reduction package provided by CFHT and MIDAS portable version 90M09. MIDAS has been installed on a test basis, and the future of this facility will depend on the user's response to it. A previous knowledge of the software is required, and CFHT technical staff makes no commitment on providing real-time help to the observers. For further information on MIDAS contact R. Bacon or R. Arsenault.

Requests for observing time on the Canada–France–Hawaii Telescope are made to the member agencies. There are two competitions per year—one for the first semester (January–June) and the other for the second semester (July–December). The mailing addresses and deadlines for proposal submission are indicated for each of the three agencies.

Les demandes de temps d'observation avec le Télescope Canada–France–Hawaii doivent être soumises aux agences associées. L'attribution de temps, sur une base compétitive, est effectuée deux fois par année: une fois pour le premier semestre (janvier à juin) et une fois pour le deuxième semestre (juillet à décembre). Les adresses postales et les délais de soumission sont indiqués ci-contre pour chacune des trois agences.

CANADIAN AGENCY
Canadian Applications Committee CFHT
c/o Director
Herzberg Institute of Astrophysics
National Research Council Canada
Ottawa, Ontario
CANADA K1A 0R6
NOTE: Two originals (not FAX copies).

DEADLINES (Postmark date)
For time in first semester — September 1
For time in second semester — March 1

FRENCH AGENCY
Institut National des Sciences de l'Univers
M. le Directeur
77, avenue Denfert-Rochereau
75014 Paris
FRANCE

DEADLINES (Date of receipt):
For time in first semester — September 1
For time in second semester — March 1

UNIVERSITY OF HAWAII
Director
Institute for Astronomy
2680 Woodlawn Drive
Honolulu, Hawaii 96822
U.S.A.

DEADLINES (Date of receipt):
For time in first semester — September 1
For time in second semester — March 1

AGENCE CANADIENNE
Comité canadien de demandes CFH
c/o M. le Directeur
Institut Herzberg d'astrophysique
Conseil national de recherches Canada
Ottawa, Ontario
CANADA K1A 0R6
A noter: Deux copies originales – pas de FAX.

DATES LIMITES (cachet de la poste):
Pour le premier semestre —1er septembre
Pour le deuxième semestre — 1er mars

AGENCE FRANCAISE
M. le Directeur
Institut National des Sciences de l'Univers
77, avenue Denfert-Rochereau
75014 Paris
FRANCE

DATES LIMITES (date de réception):
Pour le premier semestre —1er septembre
Pour le deuxième semestre — 1er mars

UNIVERSITE D'HAWAII
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2680 Woodlawn Drive
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U.S.A.

DATES LIMITES (date de réception):
Pour le premier semestre — 1er septembre
Pour le deuxième semestre — 1er mars