

Local "Seeing" At CFHT

Optical tests and a recent study of correlations between the image quality obtained with HRCam and "environmental parameters", such as temperature differences in and around the telescope and zenith distance, have yielded the following findings:

1. A primary mirror warmer than the dome air produces $0.4''/\text{°C}$ FWHM of image spread (Fig. 9);
2. Each °C of temperature difference between dome air and outside air leads to $\sim 0.1''$ FWHM of image spread (Fig. 10).
3. Optical tests, and the $\sec z$ dependence of image size when local seeing is weak show that aberrations in the primary mirror (and in HRCam) produce a PSF of $0.38''$ FWHM;
4. Stabilized images from a telescope free of aberrations and local seeing on Mauna Kea would have a median FWHM of $0.32''$, the 10 and 90 percentiles of the distribution being at $0.2''$ and $0.6''$ (Fig. 11).

The actual images currently recorded are two times larger than these natural values.

R. Racine

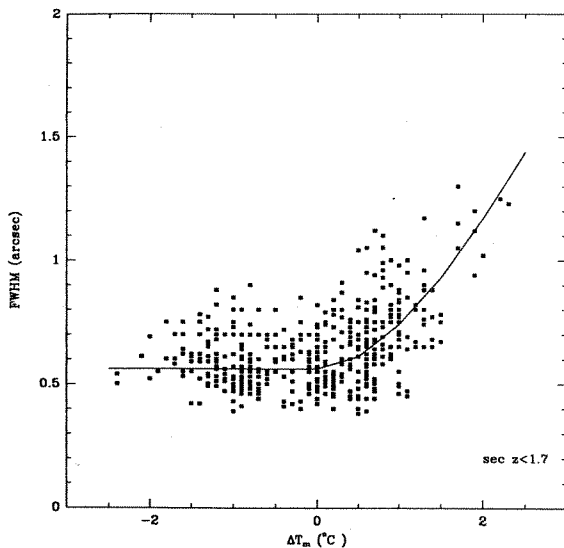


Figure 9: Image quality as a function of the mirror-to-air temperature difference.

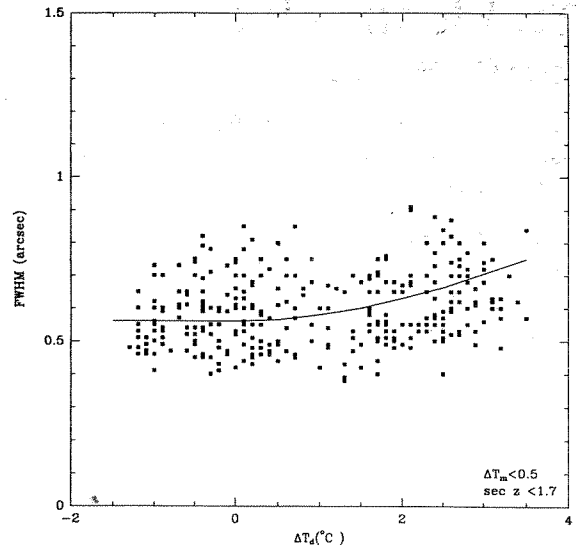


Figure 10: Image quality as a function of the temperature difference across the dome slit.

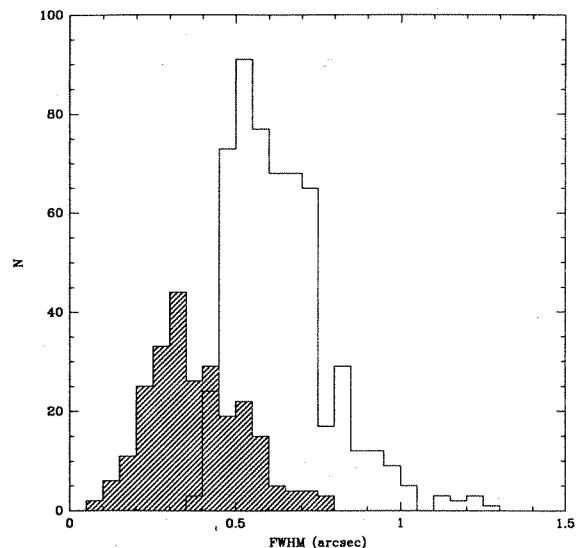


Figure 11: Distribution of image quality for all actual HRCam data (open histogram), and for weak local seeing conditions after correction for optics spread (hatched histogram).

TCS IV Progress Report

TCS IV is progressing at a slow, but steady pace. Due to a lack of available manpower, all work is being concentrated on the Real Time Computer (RTC), and its interface to the existing TCS hardware. When more manpower becomes available, work can start on the User Interface Computer (UIC) portion of the project.

The RTC consists of a Sun Sparcengine 1e running the vxWorks real time operating system. A development system, with VME crate, Sparcengine, and several VME I/O cards is currently installed in the Waimea electronics lab, for development purposes. Bill Cruise and Steve Smith have attended a vxWorks training workshop at the Wind River Corporation headquarters in Alameda, California, in order to quickly get up

to speed with vxWorks. VxWorks software has been installed on the new CCD III development system, titan, which runs Sun OS, and TCS development work is using that computer system as a base of operations.

A new hardware interface, to permit connecting the existing TCS R-Buss to VME standard I/O modules, was designed by John Horne. It has been constructed by Dean Josephson, and tested by J. Horne and myself. The success of this module is a first, major step in the eventual elimination of the HP 1000 computers which have controlled the TCS since its inception. In addition, the lowest level of driver code for R-Buss control has been completed, and is essentially in final form.

Planning for the RTC software has continued, and plans for most of the low level driver and interface library software are complete. Conceptual design of the telescope emulator, shared