

Site Evaluation for the VLT: DIMM3 in Operation

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There has been a lot of activity within the VLT sites' study since our last *Messenger* report [1]. The VLT site group in Chile welcomed new members to face the increasing workload due to the simultaneous operation of three seeing monitoring stations in addition to the measurements of precipitable water vapour and cloud cover survey initiated in 1983.

The main instrument on each site is the Differential Image Motion Monitor (DIMM) described in [2] which delivers the image quality of an equivalent one-minute exposure made at the focus of a large telescope of perfect optical quality. In addition to the DIMM, the altitude distribution of the turbulent layers is estimated using a set of three instruments: a scintillometer, more sensitive to turbulent activity occurring at high altitude, an acoustic sounder (SODAR) for the 30 m to 800 m range, and microthermal sensors for monitoring local effects.

The current study focuses on three candidates and is now entering its ultimate year before the final choice of the VLT site. Here is some miscellaneous information:

DIMM 1, installed in April 1987, is consistently providing confirmation that **Cerro Paranal**, 2664 m, is definitely a sub-arcsecond site, with a yearly 50 percentile FWHM of 0.9 arcsec at 0.5 μm in 1988. The minimum 1-min record was 0.27 arcsec, the seeing was lower than 0.5 arcsec during 5% of the observing time, while 95% of the measurements were under 1.6 arcsec.

On **Cerro Vizcachas**, since October 1988, at 2400 m altitude, 6 km south-east of La Silla, DIMM2 has already earned itself a reputation among visiting astronomers. Thanks to the very good correlation between observing conditions on the two sites, La Silla has become the first astronomical observatory to provide seeing information on line:

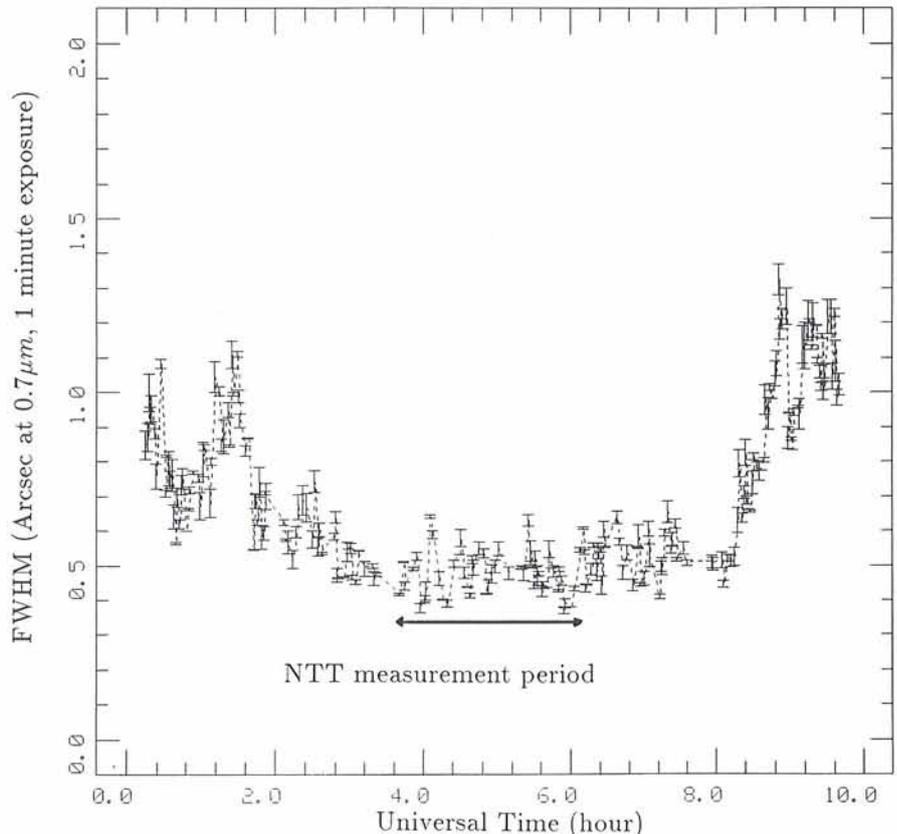


Figure 1: The seeing at Vizcachas on March 23, during the NTT active optics installation.

dial the 4128 from your control room and the Vizcachas operator will give you the current situation and trend. Sorry, no forecast available yet, since seeing meteorology is a brand new science, but there are good hopes that specific numerical models can be developed in the future to adapt the VLT operation to the local observing conditions on the basis of forecasts delivered a few hours in advance.

Recent seeing measurements made at the NTT during the installation of active optics confirmed again the excellent

correlation of the observing conditions at La Silla and Vizcachas. Figure 1 shows of the DIMM2 seeing record on March 23, when a 10-second CCD exposure recorded at the NTT showed an impressive full width half maximum of 0.33 arcsec. During the same period, the best 1-minute average seeing measured 5 metre above ground at Vizcachas was 0.37 arcsec at 0.7 μm . For such a low value the DIMM, with a signal-to-noise ratio greater than 5, was still far from its limit. The oscillations seen on the graph correspond to real

IMPORTANT NEWS ON VLT INSTRUMENTATION

A document "ESO VLT Instrumentation Plan: Preliminary Proposal and Call for Responses" will be distributed in June to Institute Directors, libraries and ESO Committee members. It presents a preliminary instrumentation plan for the VLT and outlines possibilities and requirements for the participation of ESO Member State Institutes in its implementation. Responses from the community are invited by November 1989, after which it is intended to finalize this plan and prepare the first Call for Instrument Proposals. A limited number of additional copies will be available from the Project Division (VLT Instrumentation Plan) at ESO.



Figure 2: DIMM3 tower and control room on Cerro La Montura. The sharp summit of Paranal can be seen in the background.