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The VLT Goes to Paranal!

The Council of the European Southern Observatory, in session on December 4, unanimously decided that the world's largest optical telescope, the 16-metre equivalent Very Large Telescope, shall be placed on Cerro Paranal, an isolated mountain top at 2664 m altitude in the central part of Chile's Atacama desert, some 130 kilometres south of the town of Antofagasta and 12 kilometres from the Pacific coast.

In anticipation of the choice of Cerro Paranal as the future site of the VLT Observatory, the Chilean Government has donated a 725 km^2 area around Paranal to ESO in order to ensure the continued protection of the site against all adverse influences, in particular light pollution and mining activities.

For more than six years, continuous, accurate measurements have shown that Paranal is the best continental site known in the world for optical astronomical observations, both in terms of

This aerial picture of Cerro Paranal was taken in late 1990 from the south. The Pacific coast is to the left, at a distance of 12 km. The constructions at the left are the living quarters for the site survey team, in place since 1983. On the top of the mountain various instruments are installed which permanently monitor the atmospheric quality and perform meteorological measurements.

number of clear nights and stability of the atmosphere above.

The meteorological and climatological investigation incorporated a detailed comparison between Paranal and the present site of ESO's telescopes, La Silla, by means of identical measuring equipment. Despite La Silla's worldwide reputation for excellent observing conditions, Paranal was found to be even better, mainly because of its location in a more stable and drier climate in the most arid part of the Atacama desert. *(continued on page 67)*

Superseeing at Paranal

The engineers who build the ESO 16-m equivalent Very Large Telescope and its associated instrumentation are facing great challenges ahead because the sites in the Chilean Atacama desert may be even better than originally thought.

As the ESO seeing monitors (DIMM) have now reached their nominal accuracy, the sites under study have begun to reveal their very best observing qualities. It is imperative that the VLT must be able to take full advantage of nights of superb seeing and transparency which will be used as performance criteria for the total error budget of the telescope after completion.

Though hourly seeing averages better than 0.5 arcsec are not uncommon at Cerro Paranal – this happens during approximately 16% of the total observed time, with a median seeing of 0.66 arcsec over the year – the longest periods of excellent seeing are the easiest to use in a semi-flexible scheduling mode of operation. In that respect, a record of excellence was hit this September when the seeing was better than 0.5 arcsec during a full night, including three consecutive hours better than 0.3 arcsec.

The site monitoring will continue after the decision on the location of the VLT now taken. It will focus on three major tasks:

- construction of a data base for the site parameters which will be used for the development of a prediction model for flexible scheduling.
- analysing the effect of local sources of thermal pollution like the wake of buildings, of metallic structures, and of electronic units, and
- pursuing research and development work on the monitoring of parameters related to interferometry, such as speckle lifetime and outer scale of turbulence.

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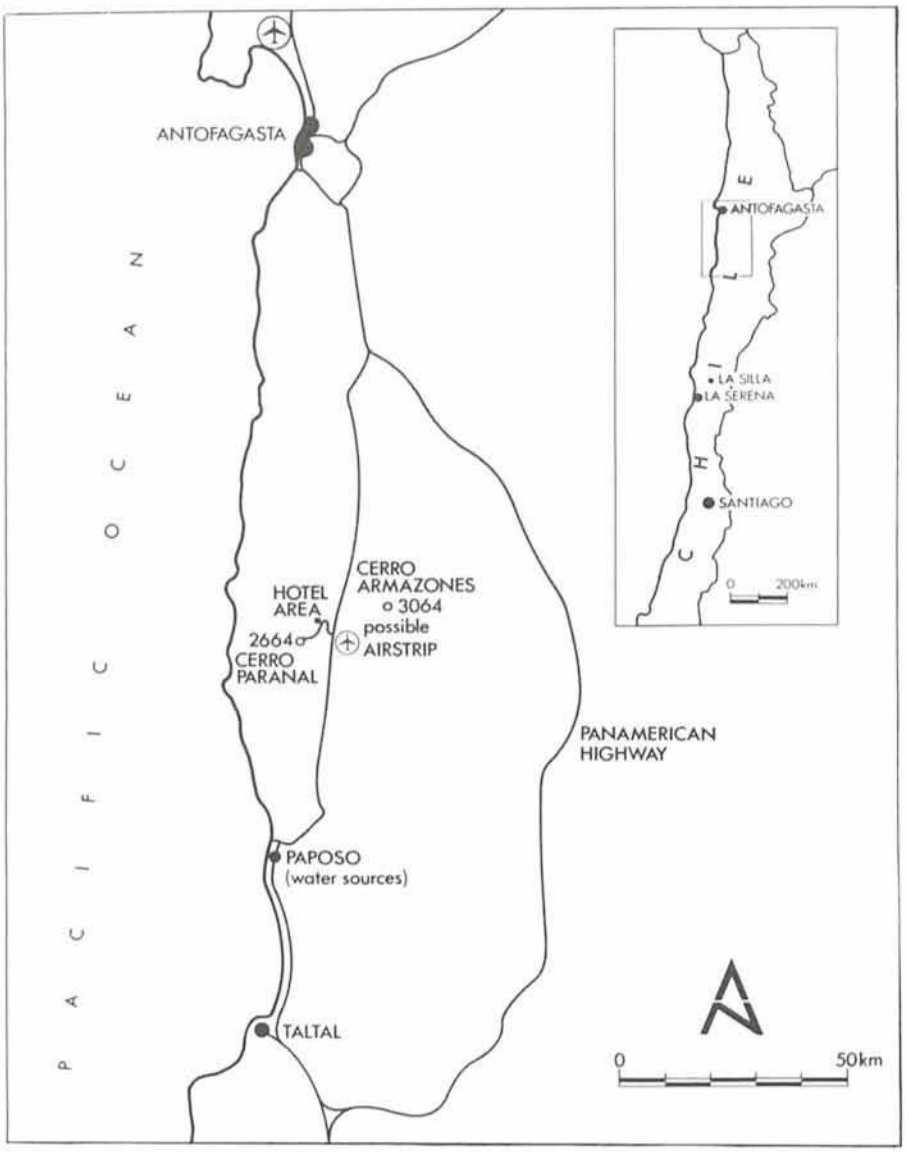

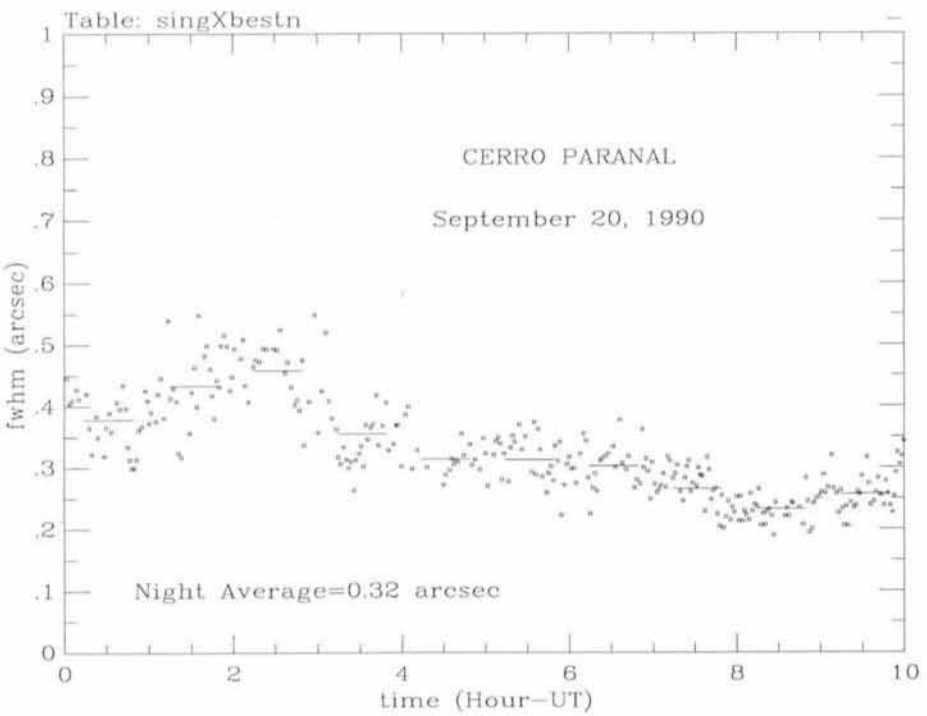

Figure 2: *New seeing record at Cerro Paranal: the dots are individual measurements by the DIMM; horizontal bars correspond to one hour linear binning. The seeing is defined as the FWHM at zenith, at wavelength 0.5 μm, and is measured 5 metres above ground on the summit.*