



Andor helps astronomers find the best observatory site on the planet

Application Note

"An Andor CCD is the southernmost piece of electronics on earth."

That is the news from Dr Michael Ashley, one of the team from the University of New South Wales working on the Antarctic Fibre Optics Spectrometer (AFOS), a mere 650 meters from the geographic South Pole.

December 99



The AFOS building: the 'warm room'

AFOS is part of a battery of instruments at the un-manned Automated Astrophysical Site-Testing Observatory (AASTO), latitude -89° 59' 39". Comprising a 30-inch aperture telescope linked by optical fibers to a spectroscope and the Andor CCD, AFOS' purpose is to contribute to a comprehensive range of observations that will help identify a suitable site for a future large telescope in Antarctica.

Why Antarctica? The fact that the Antarctic plateau is cold, high and dry makes it an ideal candidate for an observatory site. Low temperatures make for darker skies in the infrared; high altitude means there is less atmosphere to look through; and low moisture levels mean less ultraviolet radiation is absorbed - all in all an ideal combination for observing, provided the systems involved can withstand the extreme cold.



The AFOS Telescope Tower at -89° 59' 39"

Mounted on top of a tower at the South Pole, the telescope has to cope directly with the rigors of the Antarctic climate. Made from Invar - a special steel that, practically speaking, neither expands nor contracts with

temperature changes - the telescope can be aligned at room temperature back at the lab in Sydney, and then operated without further adjustment at ambient temperatures of -80°C on the Antarctic plateau.



Special delivery: by Hercules, on skis!

The Andor CCD is in more comfortable surroundings: it is housed 50 meters away from the telescope in a warm room specially designed to operate at year-long intervals without human intervention...in theory at

least! A systems failure earlier this year meant that the camera was unexpectedly subjected to several months of Antarctic cold in an atmosphere of hydrofluoric acid. However, after refurbishment at Andor's Belfast headquarters, the camera is now back on its way to AFOS, where a fully operational warm room awaits. In December the camera flies in on board a Lockheed LC-130 Hercules, specially equipped with skis for a landing on the Antarctic snowfields.

The coming months promise to see much valuable information coming from AASTO, and from AFOS in particular. If you want keep up with the latest developments at the Automated Astrophysical Site-Testing Observatory, visit the website at <http://www.phys.unsw.edu.au/~mcba/aasto.html>. The website features a frequently updated web-cam image from the South Pole - as well as giving in-depth information on the instruments at the observatory!

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