First Release of Images from VISTA

The new ESO survey telescope VISTA (the Visible and Infrared Survey Telescope for Astronomy) was recently commissioned at Paranal and has just released its first public images.

VISTA was conceived and developed by a consortium of 18 universities in the United Kingdom led by Queen Mary, University of London and became an in-kind contribution to ESO as part of the UK's accession agreement. The telescope is described in Emerson et al. (2004, 2006). Project management for the telescope design and construction was the responsibility of the Science and Technology Facilities Council's UK Astronomy Technology Centre (STFC, UK ATC). Provisional acceptance of VISTA was formally granted by ESO at a ceremony at ESO Headquarters in Garching, Germany, attended by representatives of Queen Mary, University of London and STFC on 10 December 2009. VISTA will now be operated by ESO.

VISTA has a 4.1-metre primary mirror with a 1.65 degree field of view. On account of the speed of the primary (F/0.98), the largest mirror to be manufactured with such a low focal ratio, the figuring and polishing of the primary was a formidable task. The secondary is 1.24 metres in diameter. As a survey telescope it has only one instrument, a camera composed of 16 2048 × 2048 infrared detectors. The Raytheon VIRGO HgCdTe detectors have 0.34-arcsecond pixels and a single "pawprint" covers an area of 0.6 square degrees. By combining six offset images, a full field coverage of 1.5 × 1.0 degrees is achieved. The camera was designed and built by a consortium including the Rutherford Appleton Laboratory, the UK ATC and the University of Durham. Figure 1 shows a view of the telescope with the camera in the process of being removed. The camera has five broadband filters *Z*, *Y*, *J*, *H* and *Ks*, with an option for user-provided filters.

The front cover shows a colour-composite image of the dusty star-forming H II region NGC 2024 in the Orion Cloud region, called the Flame Nebula (image from the ESO press release). Figure 2 shows a 1 × 1.4 degree region of the Fornax galaxy cluster, with NGC 1399 and NGC 1365 both visible. The VISTA science verification (SV) programme[1] consists of two mini-surveys: one Galactic, on the theme of star formation and very low mass stars and brown dwarfs in the Orion region; and one extragalactic, on the stellar halo in NGC 253. The SV data will be processed using the VISTA Data Flow System run jointly by the Cambridge Astronomical Survey Unit (CASU) and the Wide Field Astronomy Unit Edinburgh (WFAU), and the reduced data will be publicly released.

VISTA will be dedicated to large surveys and a five-year programme of six public surveys has been assigned. Observations will begin soon. They range from surveys of variable stars in the Milky Way, a survey of the Magellanic Clouds, a southern hemisphere survey and a large area galaxy survey, and two deep small field surveys. Details of these surveys can be found in Arnaboldi et al. (2007).

References

Arnaboldi, M. et al. 2007, The Messenger, 127, 28
Emerson, J. P. et al. 2004, The Messenger, 117, 27
Emerson, J. P. et al. 2006, The Messenger, 126, 41

Links

[1] http://www.eso.org/sci/activities/vltsv/vista/index.html

Credit: ESO/G. Hüdepohl

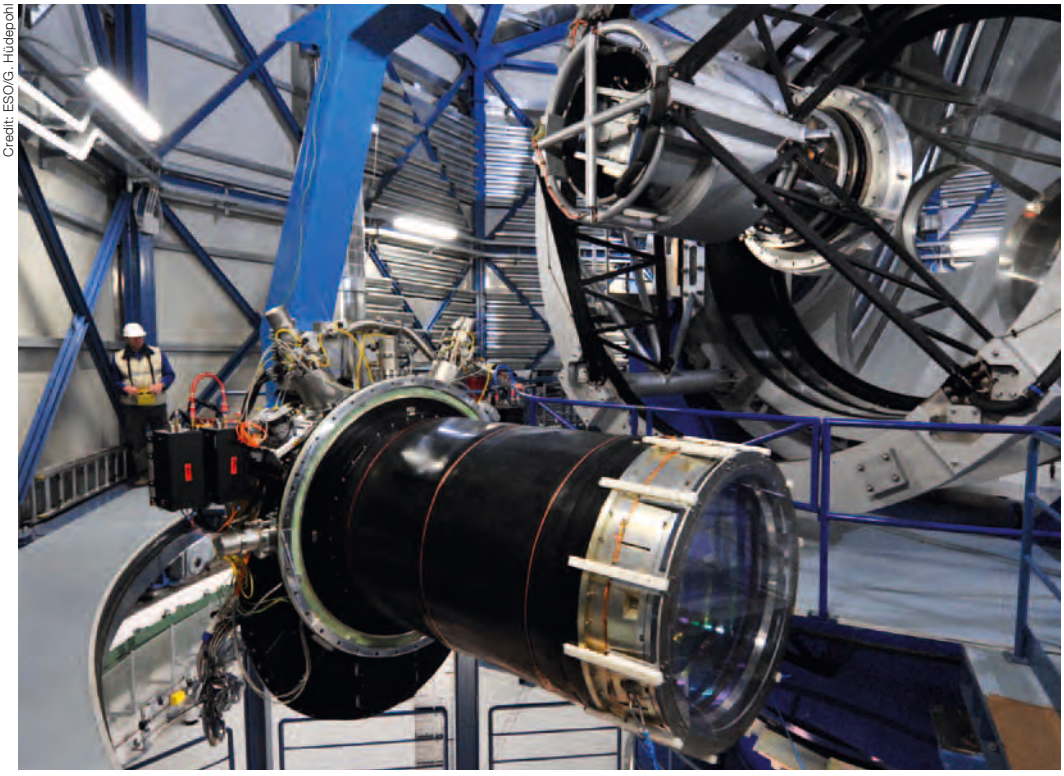

Figure 1 (left). The VISTA infrared camera being removed to allow the primary mirror to be recoated in September 2009.

Figure 2 (right). VISTA colour image (from *Z*, *J* and *Ks* filters) of the Fornax galaxy cluster. At the lower left is the barred-spiral galaxy NGC 1365 and to the upper right the central bright elliptical NGC 1399. The total exposure time per pixel was about 25 minutes.


Credit: ESO/J. Emerson/VISTA
Acknowledgement: Cambridge Astronomical Survey Unit