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The first La Silla – Las Campanas day

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In the third week of June 2025 the first joint workshop between the La Silla and Las Campanas observatories was organised. Staff working in all principal areas took part, and over the two days we reviewed our shared mission alongside key differences in funding, operational models and data management. Presentations were offered by key people covering various aspects of operations, infrastructure and development plans, including upcoming instruments. The workshop aimed to foster collaboration and identify challenges for long-term sustainability, with specific areas of common interest such as safety, communications and light pollution.

Introduction

On 16 and 20 June 2025, the La Silla and Las Campanas observatories held their first joint workshop, organised by the management of the two observatories. On the Monday, a delegation from Las Campanas went to La Silla, and on the Friday staff from La Silla visited Las Campanas.

On each day the programme included a visit to the main facilities followed by a series of talks on the different aspects of operations, given by the team leaders of the various areas.

At La Silla, presentations started with an overview by the site manager, followed by logistics and hospitality, day and night operations with a focus on remote observing, our experience with contracted technical services, and ongoing projects (green energy and condition-based-maintenance in particular). How to manage emergencies with an external company was presented by the safety engineer, while the head of IT/Chile gave an overview of their obsolescence plan and security measures. Finally, current instruments were introduced by one of the instrument scientists.

A similar programme of talks was followed at Las Campanas: an overview was given by the Director, followed by the Magellan operations model, then day and night operations, again with a focus on remote observing, and all aspects of infrastructure maintenance. These were followed by logistics & hospitality, instrument monitoring, safety (security and environment), remote sensing, and applications of open-source tools. Expected new instruments and an overview of IT services were also illustrated. Finally, an interesting addition to the common programme was a presentation about light pollution by the president of Fundación Cielos de Chile.

Commonalities and differences

While the two observatories have the same mission and many organisational aspects in common, some key differences emerged during the discussion. Of course, the fundamental difference is in their foundations: Las Campanas is a private organisation mostly supported by the original endowment by Andrew Carnegie, while La Silla is part of ESO, a public intergovernmental organisation.

Another key difference is the model adopted by La Silla a few years ago that sees most activities (logistical and technical) delegated to external companies, while ESO staff retain supervision and the operation of instruments and telescopes. On the other hand, staff at Las Campanas are all Carnegie employees. Also interestingly, Las Campanas Observatory has established relations with representatives of the Indigenous Diaguita people.

A few other key differences are highlighted below.

Operations

La Silla is visitor-only with remote observing added (called 'designated visitor mode'), and there is a common control room for the two ESO-operated telescopes (and also the Max-Planck-Gesellschaft 2.2-metre telescope), using the same end-to-end data flow system.

At Las Campanas, Magellan telescopes are operated on what they call a 'neo-classical' model, with separate control rooms for visitors and operators, and the added option of remote observing. Furthermore, the du Pont telescope operates in survey mode for the Sloan Digital Sky Survey V, and the Swope Telescope is dedicated to visitor programmes, again with separate control rooms at the respective enclosures.

Data archive

La Silla data are fed to the central ESO archive that is hosted at ESO's headquarters near Munich, while Carnegie Observatories are still working towards a similar goal: again, this reflects the private nature of Las Campanas, where PIs get their data but have no obligation to share them with the community. Observing time is also distributed in line with agreements among different PIs, not by a public time allocation committee (except the 10% owed to Chile). Observing time at La Silla is obtained via a competitive process, with proposals evaluated by panels drawn from the community.

Hosted projects

Las Campanas hosts external projects, as does La Silla, but while ESO only provides technical support to them, Carnegie establishes partnerships with them (for example with Sloan V running in survey mode at du Pont). Partnerships are forged among the scientific interests of the Carnegie community members.

Summary

The workshop's goal was to share experiences at the two sites, particularly with respect to the accelerated growth in computing power and automation, and to the impact of astronomical operations on the environment. We also understood that, while observing facilities usually evolve following parallel paths (for example, as a result of different funding and cultural scenarios), sharing experiences in technical and logistical aspects of operations would benefit all. We also aimed to identify the main challenges of the next decade, share lessons learned, and discuss the best solutions to achieve long-term sustainability.

In this respect, our meeting was a remarkable success, with positive comments coming from all parties. At the same time, it also became clear that this was only a first step to provide everyone with a general overview of the two sites, and that dedicated sessions should be organised in future to discuss the possibility of collaboration in different areas.

As an illustration, some of the areas of common interest are the following.
- Safety and Security: coordinating mutual help in case of emergencies (for example, adverse climate, accidents)
- Telemetry: sharing experience of retro-fitting legacy hardware
- Light pollution: reaching agreement on common measurements of sky brightness
- Communications: resuming the Lyra project. A few years ago, La Silla started collecting interest from nearby observatories in establishing a network ring to provide backup channels in case of interruptions of their main links. While tests with dedicated antennas between La Silla and Cerro Tololo showed a potential to reach 400 Mbps, the final steps had not been completed. However, Las Campanas now has a high fraction of remote observing, so having a backup, even with low bandwidth, has become more interesting. Discussions with Chile's National University Network, REUNA, could then be restarted, to reach the implementation phase of the project.
- Sharing of instruments: in the recent past, the transfer of the Warm INfrared Echelle spectrograph to Realize Extreme Dispersion (WINERED) from La Silla to Las Campanas could only be done by sending it back to Japan and from there back to Chile. This is because hardware is imported by observatories under their individual conditions regarding, for example, tax exemptions and customs fees, and with a well-defined destination. Thus, it cannot easily be moved to another site, given the legal issues. Although such examples are rare, it would benefit all parties involved if a diplomatic solution with clear procedures for such transfers were established.
- Mirror coating: renewing the coating of telescope mirrors is one of the most critical operations, so malfunctions of coating plants are potentially catastrophic. In such a case, having the backup option of using one of the other observatory machines is interesting. However, handling procedures and liabilities would need to be clearly defined before any such operation could be attempted. As a first step, a common census of plants and their capabilities could be established (for example, limits of mirror size, coating types).

The future

Future instruments

For two years now the Near Infra Red Planet Searcher (NIRPS) spectrograph[1] has been operating routinely on ESO's 3.6-metre telescope at La Silla: its main science case is the search for and characterisation of exoplanets around M-dwarf stars (for example, Suárez Mascareño et al., 2025). These very red and low-mass stars comprise about 80% of the stellar population in the solar neighborhood. NIRPS accesses the near infrared (NIR) wavelength range, from 0.97 μm to 1.85 μm and is assisted by an adaptive optics system that maximises the coupling efficiency and the light distribution uniformity at the entrance fibre. NIRPS can operate alone or simultaneously with the High Accuracy Radial velocity Planet Searcher (HARPS; Bouchy et al, 2025); together the two instruments are able to cover the visible and the NIR wavelength ranges. In these first two years we have witnessed the extraordinary stability of the instrument, reaching about 1 m s^{-1} in radial velocity precision, something unprecedented in the NIR, and its ability to identify various atomic and molecular species in the atmospheres of transiting exo-planets (for example, Bazinet et al., 2025).

At the beginning of this year, the observatory also received Son of X-Shooter (SOXS)[2] for ESO's New Technology Telescope. This is a double-arm spectrograph covering a wavelength range from the ultraviolet to the NIR (350–2000 nm), with a resolution R ~ 5000 and a slit length of 12 arcseconds and widths of 0.5, 1.0, 1.5 and 5.0 arcseconds, plus a guiding camera with a field of view of 3.5 arcminutes which can also be used for imaging in the five Sloan filters. The instrument, now under commissioning, will be dedicated to following up transient alerts, aiming at a quick classification of their nature and subsequent further follow-up. A dedicated pipeline running at the observatory will automatically reduce the observations in real time, making the reduced data available to the users. Half of the time will be owned by the consortium, led by the Italian National Institute for Astrophysics (INAF), who built the instrument, while the other half will be available to the astronomical community for any kind of scientific case.

At Las Campanas, the following instruments are at various stages of production:

Via (ViaSpec)

ViaSpec is a multi-object spectrograph with a fibre positioner at the f/5 Cassegrain focus, 25 metres of optical fibres, and a bench spectrograph on a mobile cart. It will use robotic fibres ($R \approx 15\,000$; 510–595 nm) to observe 600 objects simultaneously. The instrument will have a twin at the MMT Observatory and will power the Via Project's[3] all-sky survey of millions of stars to study stellar streams, dwarf galaxies and dark matter structure in the Milky Way. First light is planned for 2027.

G CLEF

The GMT-Consortium Large Earth Finder (G-CLEF)[4] is a high-resolution optical echelle spectrograph (350–950 nm; $R \approx 140\,000$) designed for ultra-precise radial-velocity measurements (~0.1 m s^{-1}), enabling the detection of Earth-mass exoplanets in the habitable zones of Sun-like stars. It will also enable stellar abundance studies, dwarf galaxy dynamics and investigations of galaxy evolution and high-redshift quasars. Prior to its final installation on the Giant Magellan Telescope (GMT), G-CLEF will see early deployment on the Magellan Clay telescope for subsystem testing and performance optimisation. The instrument will operate with both a natural-seeing interface and an interface to the MagAO-X extreme adaptive optics system, reaching resolutions of $R \geq 200\,000$, and will be housed in a dedicated temperature-controlled room (± 1 K) to ensure exceptional stability.

MagNIFIES

The Magellans' Near Infrared Five band Immersion grating Efficient Spectrograph (MagNIFIES), developed by the Korea Astronomy and Space Science Institute and the University of Texas at Austin, adapts the GMT Near-IR Spectrograph. A single object near- to mid-IR echelle spectrograph, it covers the *J, H, K, L and M* bands simultaneously at R = 45 000 (*J, H and K*) and R = 60 000 (*L and M*). MagNIFIES will investigate the formation and evolution of planetary systems by analysing the chemical composition of exoplanet atmospheres and the environments in which they form.

MIRMOS

The Magellan Infrared Multi-object Spectrograph (MIRMOS)[5] is a NIR instrument with multi-object and integral-field-unit (IFU) modes, covering 0.89–2.5 µm at $R \simeq 3700$. It can deploy 92 robotic slits over a 13 × 3-arcminute field or switch to an image-slicer IFU with a 26 × 20-arcsecond field of view (FoV). A dichroic tree splits light into four NIR channels for simultaneous full-band coverage, plus an optical channel for alignment. Its large-FoV IFU makes it ideal for exploring the high redshift circumgalactic medium and emission line diagnostics of nearby galaxies.

FALCON

FALCON[6] is a conceptual instrument for the Baade telescope, covering 3300–10 500 Å, with imaging, low-resolution (R = 1560–5860) and high-resolution (R = 3110–11 650) spectroscopy. It will offer FoVs of 23 × 23 arcminutes for spectroscopy and 18 × 18 arcminutes for imaging. FALCON is intended to succeed the Inamori-Magellan Areal Camera & Spectrograph and will support a wide variety of science, from galaxy evolution to galaxy-wide dynamical mapping.

HENRIETTA

HENRIETTA is a low-resolution ($R \approx 200$) near-infrared spectrograph on the 1-metre Swope Telescope. Covering 0.6–2.4 µm, it is optimised for high-precision exoplanet atmosphere studies via transmission spectroscopy. First light is planned for late 2025.

Long-term prospects

Thanks to the construction of the GMT at a nearby mountain, there are good prospects for the future of Las Campanas Observatory. Indeed, the GMT was recently notified by the US National Science Foundation that it will advance into its Major Facilities Final Design Phase, one of the final steps before becoming eligible for federal funding. Furthermore, three new instruments for the Magellan telescopes are expected by 2030, which will have to be exploited for science for a decade or so.

Options for the future of La Silla are periodically examined. On a short-to-medium timescale, contracts with hosted telescopes must be honoured, and instruments recently offered to the community, or under commissioning, will be operated until the mid-2030s. Beyond this horizon, the future depends on the interests of the European astronomical community and the possibility of finding a niche within the scientific landscape of the next decade. It should also be noted that ESO has started to poll the community for its next large-scale project, and an installation at La Silla is a possibility[7].

References

Bazinet, L. et al. 2025, arXiv:2508.06626
Bouchy, F. et al. 2025, A&A, 700, A10
Suárez Mascareño, A. et al. 2025, A&A, 700, A11

Links

[1] NIRPS: https://www.eso.org/sci/facilities/lasilla/instruments/nirps.html
[2] SOXS: https://www.eso.org/sci/facilities/develop/instruments/SoXS.html
[3] Via Project: https://via-project.org/
[4] G-CLEF: https://gclef.cfa.harvard.edu/
[5] MIRMOS: https://sites.google.com/carnegiescience.edu/mirmos/overview
[6] FALCON: https://sites.google.com/carnegiescience.edu/falcon/overview
[7] ESO Expanding Horizons process: https://next.eso.org/

ESO/A. Ghizzi Panizza

Standing majestically at the top of a hill at ESO's La Silla Observatory, surveying the watercolour scenery of another sunset in Chile's Atacama Desert, is the New Technology Telescope (NTT). The star of this image has been ticking along, making discovery after discovery, ever since it was inaugurated in 1989. Its home at La Silla sits at an altitude of 2400 metres and is far from sources of light pollution, giving the NTT uninterrupted views of the Universe.