

Scientific Visits to Chile — Numerous Opportunities

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ESO operates its observatories in the Chilean Atacama Desert, far from large light-polluting cities. At the same time, there is a rich scientific life on the ESO campus in Santiago de Chile, with more than 30 faculty astronomers, two dozen postdoctoral fellows and around 10 PhD students. This makes ESO's hub in Chile an excellent location to foster scientific collaborations, and a natural starting point to interact with the Chilean astronomical community. Here we summarise the numerous opportunities for astronomers to visit ESO in Chile and connect with its scientific ecosystem.

Observing at an ESO telescope

The classic way of connecting to ESO's Santiago campus (Figure 1) is to combine a visitor mode (VM) observing run on La Silla or Paranal with a scientific talk on the Vitacura campus. ESO organises regular weekly Thirty Minutes Talks, colloquia, and lectures to aid in promoting scientific interactions between ESO staff and the wider community. In 2023 ESO welcomed around 110 visiting astronomers to La Silla, and 70 to Paranal. About 15% of those visiting astronomers gave a talk about their research at the ESO campus in Santiago, Chile. Extensions of observing trips for a couple of days in Santiago to enable such a talk are funded by ESO.

As shown in Figure 2, VM on Paranal is equally as effective as service mode for completing observing runs: 70% of the runs get completed, and 85–90% of the runs get at least 50% of their data. Therefore, VM is still an attractive scientific option, in addition to the advantages outlined by, for example, Rejkuba et al. (2018). Combining the observing trip with a stay at ESO's Santiago Office¹ can further enhance this experience and in particular help younger astronomers to build their collaboration networks.



Figure 1. Roof-top view of ESO's campus in Santiago de Chile³. In the foreground is the roof of the ESO building and in the left background are the offices of the Joint Alma Observatory (JAO).

Not all VM runs require astronomers to travel to Chile. ESO schedules short VM runs (less than about one or two nights) in designated VM, where users join the observing activities remotely from their home or institute². Within the overall VM allocation since the pandemic restrictions were relaxed (the last three observing semesters, P111–P113), about 40% of the time and 50% of the runs have been scheduled in designated VM.

Programmes for scientific visits

ESO's Office for Science in Chile offers various programmes designed to host scientific visitors and facilitate interactions between ESO staff and its community. Tailored to suit scientists at various career stages, these programmes vary in length and purpose, offering a competitive set of opportunities to visit the Santiago campus. In 2023 the Office hosted 40 short- to long-term visitors⁴. Below we briefly describe these various programmes.

ESO scientific visitor programme

The ESO scientific visitor programme⁵ facilitates visits by distinguished senior scientists, with the goal of nurturing scientific collaboration between ESO and its community, and reinforcing ESO's standing as an astronomical centre of excellence. Applications for the scientific visitor programme in Chile are welcome throughout the year, without specific deadlines. The duration of a visit can range from a few days to a year, with an average duration of two to three months.

ESO early-career scientific visitor programme

This programme supports short-term visits⁶ by PhD students and postdoctoral researchers within three years of completing their PhD in astronomy or related fields. It offers them the opportunity to promote their research experience, connect with potential collaborators, and enhance their professional experience by interacting with ESO experts involved in developing and operating ESO facilities. Applications are accepted at any time, with visits typically lasting between one and four months.

Short-term internships

The science internship programme in Chile is designed for students in the final stage of their undergraduate studies or enrolled in a master's programme in astronomy or a related discipline. It serves as an excellent platform for students to gain first-hand experience of conducting scientific or operations-related research projects in an international observatory within a culturally diverse environment. Experience has shown that these internships can help to direct students towards making a decisive choice for their future education and career. Interested students are encouraged to connect with potential supervisors (ESO staff astronomers and/or ESO

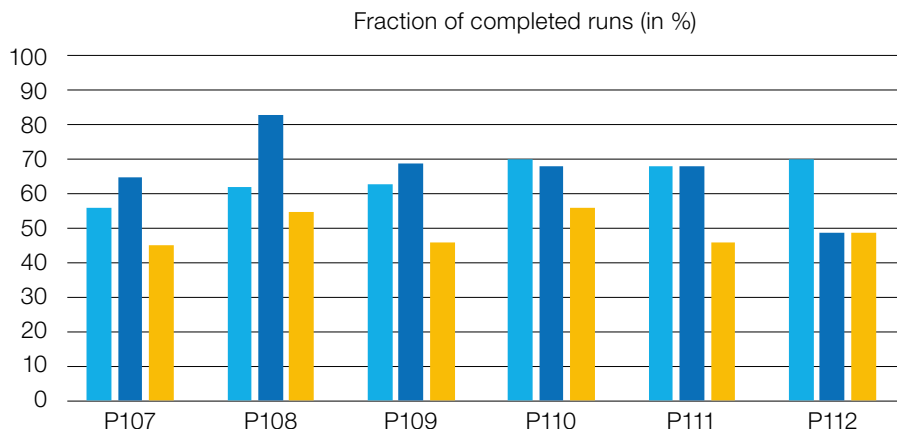


Figure 2. Completion fraction for visitor mode (VM, light blue) and A-ranked service mode (SM, dark blue) runs at Paranal, and VM at La Silla (there is no SM at La Silla, yellow). The bars indicate the fraction of observing runs that are completed to 100%, for runs that are scheduled in the given semester. For Paranal, the completion fraction is remarkably similar between VM and SM runs, at around 70%. The SM completion for P112 will still increase because some A-ranked P112 runs will be carried over to subsequent semesters. Runs that have only partial completion are not included in this Figure. For example, 85–90% of VM runs for both sites get at least 50% of their data.

Fellows)⁷ to discuss science projects. The selection process takes place through an annual internal call, with the deadline typically falling in the third quarter of the year.

ESO PhD studentships

Students enrolled in a PhD programme, preferentially in an ESO Member or Partner State, or a Chilean university, can apply for ESO studentships⁸ with a duration of between six months and

two years. The ESO Chile studentships provide excellent training opportunities for the upcoming generations of astronomers and ESO telescope users. Additionally, they facilitate connections between students, their host university supervisors, and ESO scientific personnel. In Chile, students have the chance to visit the observatory and engage in self-contained technical projects. Two applications per year are announced on the ESO recruitment portal⁹ with deadlines in April and October.

Agreements with specific ESO Member States

Acknowledging the importance of training the next generation of astronomers at the most productive ground-based astronomical observatory in the world, several Member States have signed dedicated agreements with ESO to fund early-career scientists for long-term visits to the observatory. With this goal in mind, the

Ministry of Education, Youth, and Sports (MEYS) of the Czech Republic sponsors an on-the-job training programme for Czech students and interns at ESO¹⁰. Similarly, the Irish Research Council has signed a partnership agreement with ESO to fund studentships of one or two years duration¹¹.

La Silla Observing School

The La Silla Observing School¹² is organised every one to two years, targeting PhD students in astronomy or MSc students in their final year. During two weeks of intense work the participants obtain hands-on real-life experience of the full cycle of activities, including observation planning, observing with professional 2–4-metre telescopes and the data reduction & analysis afterwards. All this is done with the help of experienced tutors who also provide lectures on the basics of observing techniques (Figure 3). The school is free for the students, and ESO covers lodging in Santiago and at La Silla plus travel to/from Santiago/La Silla. After a very successful, and highly oversubscribed, school in February 2024, ESO will organise another La Silla Observing School in 2025.

In summary, the ESO office in Santiago in Chile provides a unique environment for scientific collaboration and professional development. Through observing runs,

Figure 3. Right: Introductory lecture to the La Silla Observing School 2024, in the main lecture hall of the ESO Chile premises. Left: A talk in the ESO Chile library.



scientific talks, and various visitor programmes, astronomers can enhance their research and connect with ESO's dynamic scientific ecosystem.

Acknowledgements

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References

Rejkuba M. et al. 2018, *The Messenger*, 173, 2

Links

- ¹ ESO Vitacura: <https://www.eso.org/sci/activities/santiago.html>
- ² Designated Visitor information: <https://www.eso.org/sci/facilities/paranal/sciops/designated-visitor-information.html>
- ³ Travel to Chile: <https://www.eso.org/public/chile/about-eso/travel/vitacura/>
- ⁴ Science visitors: <https://eso.org/sci/activities/santiago/personnel/visitors.html>

- ⁵ Scientific visitor programme: <https://www.eso.org/sci/activities/santiago/personnel/svp.html>
- ⁶ Early career visitor programme in Chile: <https://eso.org/sci/activities/santiago/personnel/ecsvp.html>
- ⁷ ESO scientific staff in Chile: <https://www.eso.org/sci/activities/santiago/personnel.html>
- ⁸ ESO studentships: <http://www.eso.org/sci/activities/fellowships-and-studentships/FeSt-overview/ESOstudentship.html>
- ⁹ ESO recruitment portal: <https://recruitment.eso.org/>
- ¹⁰ MEYS training programme: <https://www.eso.org/public/announcements/ann19017/>
- ¹¹ IRC/ESO studentship: <https://research.ie/funding/irc-eso-studentship-programme/>
- ¹² La Silla observing school: https://www.eso.org/sci/meetings/2024/lasilla_school2024.html



The Running Chicken Nebula comprises several clouds, all of which we can see in this vast image from the VLT Survey Telescope (VST), hosted at ESO's Paranal site. This 1.5-billion-pixel image spans an area in the sky of about 25 full Moons. The clouds, with their wispy pink plumes, are full of gas and dust, illuminated by the young and hot stars within them.

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