ESO: Research Facilities in Santiago

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With the start of operations on Paranal, a major increase of the ESO staff with duty station in Chile has taken place: as of today, the number of ESO scientists (staff, postdocs, paid associates and PhD students) has doubled with respect to 1998, leading as well to a larger number of visiting scientists and students on short-term training. The research facilities offered by ESO to its staff in Chile had to be adapted to this growth and the scientific life had to be boosted accordingly.

The ESO/Chile research facilities are located in Vitacura, Santiago, close to the United Nations building. The ESO ground lays along the river Mapocho, facing to the North the beautiful Manquehue volcano and to the East the Andes chain covered with snow in winter time. Together with research facilities, the buildings host the ESO administrative support in Chile, related to activities such as the official representation of ESO in Chile, the personnel, financial, purchase, customs, ... procedures which contribute to making the work of ESO observatories in Chile a reality.

In this paper I shall restrict to a presentation of the research facilities, where substantial changes have occurred over the past 3 years and where even more will happen in the future!

1. The People

The scientists working at ESO/Chile share their time between the site of their functional duties (Paranal, La Silla) and the site of their research activities (Vitacura). This is why the ESO/Vitacura offices must provide high-level support for research work, both in terms of scientific life and in terms of hard- and soft-tools (offices, computers, library ...).

As of January 2002, the ESO/Chile astronomical staff will comprise on a permanent basis: about 35 staff, 15 fellows (postdocs), around 5 paid associates (at the level of either staff or fellow) and 10 PhD students/co-operants. In addition, 2 scientists of the EROS2 experiment on La Silla are hosted at ESO/Santiago. And we have of course a number of temporary visitors: astronomers on the ESO/Chile Visiting Scientist programme, or students on short-term training, or visiting astronomers in between two observing runs at ESO observatories. The number of temporary visitors at a given time is highly variable and has reached up recently the figure of 12 (peaks in January/February – the Chilean summer – and May/June – training period for students in European universities).

The Office for Science at ESO/Chile has the tasks, among others, of providing/maintaining the facilities required for research activities and of creating the scientific environment which will allow ESO/Chile staff to produce top-level research results.

In addition to the support received from the administrative staff on various matters, the Office for Science has a supporting team comprising:

– one librarian who takes care of the three ESO/Chile libraries (Santiago/La Silla/Paranal),

– one secretary,

– one system administrator and one assistant dealing with the maintenance of computers and peripherals. Yet, the pressure is very high on computing facilities, especially with the ever-growing demand on networking, laptops, handling of large data volume (i.e. preparation for VST datasets).

The hiring of ESO/Chile fellows and the allocation of ESO/Chile studentship for PhD students are performed through the Fellows and Students Selection Committee (FSSC). This committee is made of 6 staff nominated by the Directors of the ESO observatories (3 for La Silla and 3 for Paranal), in addition to the Head of the Office for Science at ESO/Chile. One fellow will join the FSSC soon. With the start of operations on Paranal (8 fellows perform their duties on Paranal) and the rapid turn-over of fellows (some of them moving to ESO staff positions, others leaving), the work of the FSSC has been intensive and interesting. Similarly, the number of PhD students has more than doubled since 1998, and we encourage students from ESO member states in particular to take the opportunity of preparing their PhD at ESO/Chile under the joint supervision of an astronomer in the university where they register and an ESO/Chile astronomer.

On a temporary basis we also host visitors (ESO/Chile Visiting Scientists programme) and students on short-term training (programmes described below). More and more often, visiting astronomers travelling to Chile for an observing run on Paranal or La Silla stop by at ESO/Vitacura to deliver a colloquium or to work with a collaborator.

2. Temporary Visitors

2.1. Senior Visiting Scientists programme

Similarly to ESO/Garching, ESO/Chile runs a Visiting Scientist programme. The goal of this programme is to stimulate the scientific life, to bring in-house new ideas and to ease collaborative work. It also aims at strengthening links between the astronomical communities in ESO member states and ESO staff and offers the opportunity to exchange more closely with Chilean colleagues from the universities (Antofagasta, Concepción, La Serena, Santiago ...)

There are roughly three categories of visiting scientists:

– renown senior astronomers who can share their expertise with the group here in Santiago, through a series of lectures,

– direct collaborators of ESO/Chile scientists

– co-supervisors of the PhD students

Twice a year, ESO/Chile scientists are invited to suggest names for visiting scientists. Then, the Visiting Scientists Committee (VSC) reviews the applications, selects the visitors and decides on the terms of their visit. The VSC comprises 3 staff members, 2 fellows and the Head of the Office for Science at ESO/Chile.

As a mean, there are two visitors at any time, although the distribution shows peaks around October–January and March–July.

Early February 2001, a survey was made of the opinion of the 33 visiting scientists who had spend some time (two weeks at least) at ESO/Santiago on this programme since 01.11.98. A large proportion (85%) of the visiting scientists replied:

– showing a high degree of satisfaction regarding the practical organisation of their stay in Chile,

– acknowledging their interactions with ESO/Chile astronomers (particularly with fellows and students)

– appreciating the general scientific atmosphere at ESO/Santiago

Advancement/finalisation of a joint research work with ESO/Chile scientists occurred in 70% of the cases, while new collaborations started in 50% of the cases. Another benefit of this programme is to provide the opportunity of interacting with the Chilean astronomical community at large: 50% of ESO visiting scientists met and discussed with Chilean colleagues.

2.2. Students on short-term training

A lively research atmosphere also benefits from the presence of young students. This is why visits of students on short-term training has been encouraged. This type of training is funded mostly on the DGDF and it is therefore the direct responsibility of each

staff to select the student and monitor the advancement of the training. The number of students on short-term training has notably increased: in 2001, we have received 13 undergraduate students (12 from Europe and 1 from Chile).

3. The Hard and Soft Tools

3.1. Office space

With the rapid increase of the number of ESO/Chile scientists, available office space has quickly turned short and office sharing has become the rule up to saturation. The critical needs for more office space will be met soon by the reshaping of the old Astro Workshop, located on the ESO grounds to the North-East of the main building, and vacant for many years.

Starting in the middle of 2000, exchanges took place with the architect to design the arrangement of this large volume, without changing its global architecture, and to make the best use of it:

– the use of the underground level has been made possible by removing the earth on two sides of the building, arranging a terrace and a hanging-garden, opening two series of windows as well as an inner communication with the ground-floor,

– the volume on the ground-floor now comprises a mezzanine, for about half its surface, while three light-wells have been opened in the roof to shed light over the stairs and unite the three levels.

The building (Fig. 1) offers a cafeteria, two meeting rooms and can host up to 40 work-positions. It is at the stage of final installation and we expect to start moving in early October 2001.

Figure 1: The former Astro Workshop reshaped into offices for scientists.

3.2. Libraries

The library at ESO/Santiago is a full-scale astronomical research library, offering all the bibliographic facilities needed to prepare scientific publications. A smaller library more oriented towards the needs of actual astronomical observations is located at La Silla and a similar one is under installation at Paranal. All existing bibliographic information in the three ESO libraries in Chile as well as that in Garching can be easily accessed and searched in various ways using the online catalogue. This catalogue contains descriptions of all journals, books, observatory publications and multimedia documentation. Direct links to the main journals are available from within the catalogue. The ESO libraries, hence including ESO/Chile, subscribe to electronic versions of these journals.

From public terminals placed in the libraries, users may thus not only access the catalogue but also download articles, print tables of contents, and make searches. The public terminals offer access to the main astronomical databases.

The web page for the ESO Research Facilities in Santiago (see hereafter) presents the latest information about ESO/Chile libraries.

3.3. Secretarial office

The secretary of the Office for Science is in charge of the practical aspects related to its activities:

– for the FSSC (fellows and students hiring),

– for the Visiting Scientist programme,

– for ESO/Chile staff/fellows/students research travels and research needs,

– for the organisation of ESO colloquia and JAS,

– for the organisation of the Topical Meetings,

– for the organisation by ESO/Chile of International Workshop and for the preparation of the related Proceedings.

In addition, the secretary provides support in administrative tasks to be coordinated with ESO/Garching, such as the budget preparation for example.

3.4. Computing facilities, communications, software

Computing facilities is another area which has required a lot of attention and effort over the past 3 years, and where a major step forward has been made.

Regarding desk-top facilities, most of the old equipment (x-term stations) which was in place in 1998 has been removed. All work-positions are equipped with Unix Sun machines or Linux PC, the later being now preferred by most users. Moreover, ESO/Chile staff and fellows who share their time between research in Santiago and duties at ESO observatories can use a laptop in order to ease their work across the two sites.

Servers and common equipment have been replaced or upgraded. Common disk-storage capacity has been largely extended by the installation of 3 RAIDs providing today a total of 400 Gb, in addition to the storage capacity available for each desktop computer (about 20 Gb). More peripherals, printers, scanners, DLTs ... have been installed and will also equip the new building.

A powerful Sun machine , with RAID and DLT/DAT was acquired in 1999 to be dedicated to the reduction of large datasets (WFI): its evolution/replacement is under examination, to match future needs for the reduction of VST datasets.

3.5. Communication

Communication and network is the area in which a major effort had to be made because of a really poor situation (very slow access and frequent failures). Great improvements are on the way and the situation should very soon come to normal/excellent, raising ESO/Santiago to the current standards of ESO/Garching in terms of communication performances. In the same spirit, the multi-point video-conferencing system has been improved, allowing better communications among the four sites and savings on travel time/money.

3.6. Software

One of the ESO/Santiago servers hosts a mirror-site of the Scisoft package which is developed and maintained by ESO and ECF in Garching. In this way, regular and automatic updates are performed on the host-server, making available at any time to ESO/Chile astronomers the latest versions of the software tools they need for their research. Floating licenses for Fortran and IDL have been installed locally. Moreover, the ESO/Garching IDL license server can be accessed by ESO/Santiago users, optimising the use of these tools. Discussion and co-ordination with ESO/Garching and ECF have been instrumental in establishing these systematic links.

4. Scientific Activities

The scientific life at ESO/Santiago takes place through a number of activities:

4.1. ESO/Santiago and Santiago-based activities

– ESO colloquia and lunch talks: since mid-1998, there has been a mean of 1.3 colloquium per week. Scheduled colloquia, together with the list of past colloquia, can be found on the ESO/Chile science web page: (http://www.sc.eso.org/santiago/science),

– the monthly Joint Astrophysical Seminar (JAS), organised jointly by the 3 astronomy groups in Santiago (ESO, PUC, UChile). The idea is to give the 3 communities an occasion for meeting. Renown astronomers are selected for the JAS and its location rotates among the 3 institutions, either at ESO/Vitacura or on the PUC/campus in San Joaquim or at Cerro Calan observatory.

– research working groups have been set up (or already existed) at ESO/Chile, about the Solar System, about the physics of galaxies, about stellar physics. They are at the origin of several joint observational projects among ESO/Chile scientists and sometimes, like in Paranal, even linked to an observatory project.

– Vinos-Verbos-Vitacura is an informal meeting which takes place each Friday afternoon and allows a rapid exchange of information among the scientists present in Vitacura.

4.2. Scientific activities directed to the wider astronomical community within Chile

A series of Topical Meetings was started in 1999, with the goal of boosting exchanges between ESO astronomers and the astronomical community at large in Chile. There are astronomy groups in several Chilean universities (Antofagasta, Concepción, La Serena, Santiago), some isolated astronomers (Tarapaca, Valparaíso) and astronomers working in the other international facilities currently hosted by Chile (CTIO/AURA, Gemini, Las Campanas, SOAR). The Topical Meetings are organised at ESO/Vitacura. Some recently held and some planned Topical Meetings are indicated below:

– "New Facilities for Astronomy in Chile", December 2000

– "Astrophysical Niches for High Resolution Spectroscopy", October 2001

– "Brown Dwarfs and Planets", October 2001

– "A Week for Interferometry", January 2002

In a similar spirit, ESO/Chile promoted the organisation of a meeting of all postdocs in Chile which was held on June 6–8 2001 in the Andes, close to Santiago.

4.3. International scientific meetings

Since 1990, the three international observatories, ESO-CTIO-LCO, organise jointly every two years an international Workshop. In 2000, it was ESO's turn to take the lead in the organisation: the Workshop "Stars, Gas, Dust in Galaxies: Exploring the Links" was held in La Serena in March 2000 (ASP Conf. Series, vol #221). For the 2002 version, organisation and funding of the Workshop have been opened to new institutions and it is now named IAOC, the Workshop of International Astronomical Observatories in Chile, in order to acknowledge and welcome the installation in Chile of Gemini and, in the future, of ALMA. The organisation of the 2002 Workshop is led by CTIO: it will take place on March 11–15 in La Serena on the topic of "Galactic Star Formation".

More international meetings are organised in Chile. In some cases ESO is the principal organiser: "Magnetic Fields across the HR Diagram", Santiago, January 2001 (to appear in the ASP Conf. Series, vol #248). In other cases, ESO only provides some funding support: "Gravitational Lensing", San Pedro de Atacama, July 2000, organised by PUC-Princeton, or "Extragalactic Star Clusters", Pucon, March 2001, organised by the University of Concepción.

4.4. Exchanges with the Chilean community

The relationship and the scientific exchanges with the Chilean community have developed very well. Several colleagues from Chilean universities have been invited to spend some months at ESO/Santiago under our Visiting Scientist programme. Many of them also gave colloquia at ESO/Vitacura. More and more opportunities occur to build up scientific links (Topical Meetings, Workshop). In 2001, three ESO/Chile fellows will start spending their third year of fellowship hosted by a Chilean university. An increasing number of common observational projects are submitted to ESO observatories and one can expect that even more collaborative efforts will show up in the future.

4.5. Training internal to ESO

Following a strong demand from ESO administrative staff, a series of popular lectures about astronomy has been organised jointly by the Public Relations and Human Resources Offices, in collaboration with the Office for Science. The various talks that have been delivered so far by ESO/Chile scientists have received great success and the contributions will be CD-recorded.

6. How to Learn More About Research Facilities/Activities at ESO/Santiago?

At the end of 1998, the Office for Science in Santiago opened a web site to display information about the ESO/Chile staff, fellows, students, about the Visiting Scientists programme, about research activities (ESO colloquia, JAS, Topical Meetings, international Workshop, etc.), about computing facilities and libraries … The Office for Science also made a list of all astronomers working in Chile (available on the web page) and a list of all ESO/Chile postdocs since 1977, together with their current position. The web site can be accessed at: http://www.sc.eso.org/santiago/science, or from the Garching ESO web page under Science Activities/Research facilities in Santiago.

In conclusion, one could state that the conditions are now fulfilled for ESO/Santiago to be a lively place where scientists can achieve outstanding research, develop strong links with ESO/Garching staff, with the astronomical communities in ESO member states, with Chilean colleagues and with astronomers from all over the world. Next time you travel to Chile, you are most welcome to stop by at ESO/Vitacura and share some time with us!