ALMA Winter School in Prague

The purpose of this two-day Winter School, which took place at the Astronomical Institute of the Academy of Sciences in Prague, was to prepare the European astronomical community for ALMA Early Science operations in Cycle 1, which is expected to start in January 2013.

The first day was devoted to theoretical issues related to ALMA. At the beginning the ALMA project was presented with particular focus on the role of the Czech ARC node. During the day we had lectures about radio interferometry, molecular spectroscopy, CASA and the AOT (ALMA Observing Tool). The AOT is the tool used for the preparation and submission of proposals for ALMA. We finished the day with practical exercises using the AOT.

The second day was mainly devoted to practical exercises with the CASA package. To learn the CASA package we used science verification data for the M100 spiral galaxy. Also examples of proposals were presented and the submission process was explained. In addition a lecture on solar research with ALMA was given.

Around 20 people from Croatia, the Czech Republic, the Netherlands, Poland and the United Kingdom participated in our ALMA Winter School. Invited speakers at the School were Dirk Petry and Andy Biggs, both from ESO.

Acknowledgements

We would like to express many thanks to Paola Andreani, Dirk Petry and Andy Biggs (from the ALMA Regional Centre in Garching) for their help with our ALMA Winter School.

References

Karlický, M. et al. 2011, Solar Phys., 268, 165

Volunteer Outreach Activities at ESO Chile

The ESO-Chile Outreach Volunteer Team[1 *]

[1] ESO

ESO staff in Chile are often asked to disseminate astronomical knowledge to schools and to the general public. A significant number of volunteers are now involved in these activities and the most recent projects in low-income schools and neighbourhoods are described and possible perspectives discussed.

* Daniela Barria, Amelia Bayo, Jean-Philippe. Berger, Mauricio Carrasco, John Carter, Florian Gourgeot, Matias Jones, Guillermo Manjarrez, Sergio Martin, Suzanna Randall, Myriam Rodrigues, Valentina Rodriguez, Ruben Sanchez-Jansen, Fernando Selman, Jonathan Smoker, Linda Schmidtobreick, Joachim Vanderbeke, Maja Vuckovic, Jeff Wagg

Introduction

The Chilean public has been aware of Chile's extraordinary dark-sky treasures for a long time. Discoveries and upcoming new telescope projects are often reported in the press and interest in the achievements of astronomers and engineers is steadily growing. But astronomy is more than scientific publications and their accompanying press releases: it is a wonderful educational tool at each stage in life. It can often offer uncharted paths to the discovery of essential concepts in physics and mathematics, but also more generally to the development of scientific reasoning based on observation and experimentation.

ESO staff in Chile are often approached to spread astronomical knowledge to schools and the general public. In recent years some of these initiatives have grown and have involved a significant number of volunteers. We report on the most recent developments in low-income schools and neighbourhoods in order to "democratise the sky", and also discuss various aspects of these activities.

Estrellas en las Escuelas

The study of astronomy and the Universe is part of any school programme and appears at different stages in a pupil's career. Several national and local initiatives in Chile have been set up to support both pupils and teachers in the development of teaching activities in science. One of the most renowned programmes, called *Enseñanza de las Ciencias Basada en la Indagación* (ECBI), is the result of the joint efforts of the Chilean Academy of Science, the Department of Medicine of the Universidad de Chile and the Ministry of Education (with financial support from the European Union). Its primary goal is to reinforce children's capability to establish scientific reasoning based on experiments. The ECBI programme, when funding permits, already helps active elementary school teachers in the teaching of science. Since astronomy is not always a priority, volunteers from ESO have been approached to develop pedagogical activities with teachers and pupils, under the supervision of the ECBI executive director (P. Reyes) and with the collaboration of the

Figure 1. Photographs of schoolchildren and parents participating in the *Viaje a las Estrellas* activities: queuing to look through the telescope (upper left); learning about the planets (upper right); making models of the planets (lower left); telescope viewing of the night sky (lower right).

Municipalidad de Lo Prado (represented by S. Huiaquiñir and A. Herrera).

The *Estrellas en las Escuelas* activities all began with a series of lectures for 12 teachers from different schools. The lectures were designed to include practical activities in the classroom and concluded with a visit to the Universidad Metropolitana de Ciencias de la Educatión (UMCE) telescope, thanks to the help of Prof. L. Barrera. Following some excellent contacts with some school directors, two *Noche de las Estrellas* (observing nights) were organised in two schools — Escuela Poeta Pablo Neruda and Escuela Poeta Vicente Huidobro. The ESO team, with the support of the Office for Science and ePOD, presented several stands, including a magic performance, rocket and satellite building, an inflatable planetarium, Solar System paintings, Moon–Earth exploration and telescope observations (see Figure 1). Students from the Pontificia Universidad de Chile and representatives of the amateur group *Telescoperos* joined us and brought telescopes and a planetarium. These events attracted not only pupils and their parents from the two schools, but also from neighbouring schools which was one of the main goals of the directors. It was particularly moving to see people of all ages lining up in front of the telescopes to discover the Moon, Jupiter and Venus. All parties concluded that these events should be expanded to more schools and the representatives of the municipal council assured us they would provide financial support to develop them as a pedagogical tool.

Viaje a las Estrellas

A group of enthusiastic Vitacura fellows, students, and staff have been bringing the world of astronomy to social housing communities in Renca in a programme named *Viaje a las Estrellas* (literally, an effort to democratise the sky). These activities have been coordinated by Fundación Gestión Vivienda, a private non-profit corporation dedicated to social housing project development. Their projects include not only the building of housing, neighborhood clubs and libraries, but also provide community coordination to promote responsibility for the improvement of the social and cultural life. Our group of volunteers has performed several demonstrations using the stars and the Universe as the main subjects (see the upper image on the Astronomical News section page, p. 38). These activities range from telescope viewing of the planets and the Moon to magic shows, ALMA antenna model building, pavement art, rocket launching, etc. The volunteers for this project were basically the same as for the *Estrellas en las Escuelas* project, and this allowed us to get a better feeling for which activities are appropriate for which age groups. In particular, the age range of the children targeted in this programme is quite large, from approximately 4 to 15 years, together with many interested parents. This activity was supported by one of the community organisations, Biblioteca Mujer de Esfuerzo.

The programmes are complementary: *Estrellas en las Escuelas* targets the pupils and teachers (with the teachers providing a huge capacity to pass on information to others) in an academic environment, while *Viaje a las Estrellas* focuses on the families, bringing science to the communities as another route to the education of children.

Challenges and perspectives

The different activities have been a tremendous success and the ESO-Chile volunteers will no doubt be called upon once again in 2012. Preparations for these activities have also been a very nice way to get to know our colleagues in a different context. The focus will now be to develop our palette of activities and to adapt them to the different audiences we encounter. ESO has already agreed to fund the purchase of one telescope, which will be more than welcome. Working together with higher authorities, whether local (schools, associations) or national (the education ministry) has proved to be a powerful way to make sure we meet the needs of the different communities. The challenge is now to keep up the momentum while continuing with our own research and operational tasks and to encourage new volunteers to get involved in order to assure the longevity of the effort.

The team

The ESO-Chile outreach volunteer team consists of all those listed above and is growing fast. In addition, we have been accompanied during these activities by colleagues from other institutes in Chile and abroad: D. Carrasco, C. Infante, C. Sifón at Pontificia Universidad Católica de Chile; C. Tappert at Universidad de Valparaiso; R. Zepeda, a member of the *Telescoperos* group that provided the telescopes; Prof. L. Barrera at Universidad Metropolitana de Ciencias de la Educación; N. Huelamo (Centro de Astrobiologica [CAB], Madrid); and A. Galenne (Observatoire de Meudon, Paris).

Acknowledgements

We warmly thank the ESO-Chile Office for Science (in particular the great support from Michael West, Paulina Jiron and Veronica Hormazabal), ePOD-Chile (particularly Valentina Rodriguez), Gonzalo Argandoña, Philippe Gitton, the ECBI team led by P. Reyes, the Municipalidad de Lo Prado and Fundación Gestión Vivienda.

Inspiring Young Brazilian Astronomers at the La Silla Observatory

Jorge Meléndez[1]

[1] Astronomy Department, Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Universidade de São Paulo, Brazil

Eight astronomy students from the University of São Paulo in Brazil had the invaluable experience of visiting the La Silla Observatory from 27–30 April 2012. This visit proved an excellent opportunity to develop stronger links between the new generation of Brazilian astronomers and ESO.

The group of astronomy graduate students was led by the author as part of the activities for the graduate course in Observational Astrophysics at the Universidade de São Paulo (USP). I started teaching this course in March 2012 at the Astronomy Department of the Institute of Astronomy, Geophysics and Atmospheric Sciences (IAG) at USP, and thought it would be important for the students to visit a world-class facility such as La Silla. Since I had been allocated time in late April 2012 for my ESO Large Programme for a search for planets around solar twin stars, I asked the Director of the Paranal and La Silla Observatories, Andreas Kaufer, if the IAG/USP students could join my observing run and get to know the telescopes at La Silla. I was delighted when this exceptional visit was approved.

We were warmly welcomed at La Silla. All the staff and most of the astronomers observing there were very helpful with all aspects of our trip. We visited the ESO 3.6-metre, the 3.58-metre New Technology Telescope (NTT) and MPG/ESO 2.2-metre telescopes and were given detailed explanations of the telescopes and their related instrumentation. Getting close to the HARPS spectrograph, the very precise instrument for planet hunting that was being employed for the Large Programme, was one of the highlights of the trip. The observations for my Large Programme were being undertaken by Luca Casagrande, a team member of the collaboration. He explained to the students how the observations are performed. Thanks to the HARPS pipeline that reduces the spectra in a few seconds, the students could discover for themselves the most promising candidates for hosting planets around our sample of solar twins.

The students enjoyed all aspects of our visit, experiencing for themselves the life of observational astronomers. During the first half of the visit the weather was not very friendly, but during the second half the skies cleared. Although it was a privilege to observe with large telescopes,