

New ALMA Site Museum Preserves Valuable Local Culture

Gonzalo Argandoña, Felix Mirabel (ESO)

The construction of ALMA close to the village of San Pedro de Atacama is making contributions to other sciences besides astronomy.

More than 10 000 years ago, human beings arrived at the Atacama Desert for the very first time. For generations, they managed to survive in this harsh environment, giving birth to a myriad of unique cultures and traditions, whose origins and evolution are still subject to intense research by anthropologists, historians, archaeologists, geneticists and linguists.

Thanks to the environmental studies that have been an essential part of ALMA construction since the beginning of the works, including archaeological surveys of the area, scientists now have fresh knowledge of the old history of Chajnantor and nearby areas. Part of this significant comprehension is expressed in the new ALMA site museum, which was inaugurated in July 2006 at 3 200 m altitude, close to the Operations Support Facility (OSF). The museum is a realistic reconstruction of one of the twenty old *estancias* that have been discovered in the area, between 2 800 and 4 000 metres altitude, by the Chilean archaeologist and ALMA consultant, Ana María Barón.

The corrals and dormitories made of stone may seem basic at first glance, but they are the material expression of an old, vanishing way of life, in which Andean shepherds used to stay in an *estancia* as long as they had enough water and vegetation for their cattle. When the moment came, complete families moved to a different *estancia*, with more water and food for their animals.

In recent decades, those families have tended to move closer to the lower and more benign lands of the *Salar de Atacama*, leaving behind the ancient high *estancias* due to the growing scarcity of rain. In fact, the *Estancia Barrios* – where the ALMA site museum is now placed – was finally abandoned in the '60s by the family of Pedro Cruz, who spent part of his infancy on the high-land *estancias* that now are silent witnesses of the progress of ALMA construction. Pedro Cruz



Photo: J. Alvarar, El Mercurio

was one of the main guests at the inauguration event of the site museum, in a very symbolic ceremony that was hosted by Massimo Tarengi, ALMA director, and ALMA executives in Chile.

The Intendenta Marcela Hernando, representative of the President of Chile in Region II, celebrated the integration of different cultures in the same land, under one of the clearest skies of the world. The major of San Pedro de Atacama, Sandra Berna, expressed her gratitude to ALMA for its contribution to the understanding and protection of Atacama cultural heritage.

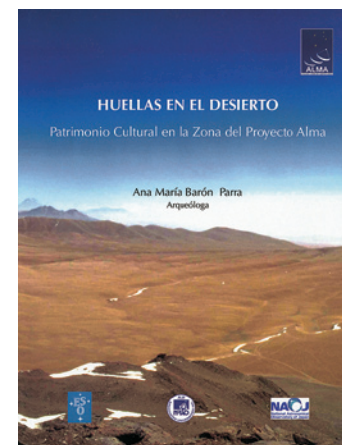
In the future, when ALMA is completed, the site museum will be open to the public, as part of a special visits programme that will also include an ALMA Information Centre at the OSF and a viewpoint at Chajnantor for those who are fit enough for an altitude of 5 000 metres.

Young students from local schools of San Pedro de Atacama and Toconao also attended the event. They symbolically received the first copies of the book "Footprints in the Desert" (*Huellas en el Desierto*), which presents the main findings of the archaeological surveys in the ALMA area. This publication, written by Ana María Barón and edited by ESO, was donated to all schools in Chile's Region II, to expand the new knowledge of the Atacama Desert and its culture to

Pedro Cruz (left) explains to Felix Mirabel, ESO Representative in Chile, his early years at *Estancia Barrios*, one of the twenty old *estancias* located at an altitude between 2 800 and 4 000 metres that were abandoned in the last decades. *Barrio* was rebuilt and transformed into a site museum. At the back, Marcela Hernando, Intendenta of Chile's Region II, and Sandra Berna, major of San Pedro de Atacama.

younger generations. It is available electronically at the Spanish website <http://www.eso.cl>, and an English edition is now under production.

Cover of the new book "Footprints in the Desert" (*Huellas en el Desierto*), which presents the latest findings on the old history of the Llano de Chajnantor and nearby areas, which was donated to all schools in Chile's Region II.



At the end of the ceremony, Pedro Cruz and other members of the local communities spontaneously performed their own rituals for the inauguration of the site museum. They paid their respects to the high mountains and to the *Pachamama* (Mother Earth), in an old tradition that was joined by ALMA executives and Chilean authorities, asking for prosperity and harmony for all the people living now in this arid and ancient ground.

Photo: C. Romero



Massimo Tarengi, ALMA director, performing the local ritual of 'payment' to *Pachamama* (Mother Earth), at the inauguration ceremony of the new site museum.

ESO-Chile Fund for Astronomy: 10 Years of Productive Scientific Collaboration

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In a ceremony in Santiago in June 2006, ESO and the Chilean Ministry of Foreign Affairs celebrated the 10th Anniversary of the Supplementary Agreement. This agreement granted to Chilean astronomers up to 10% of the total observing time on ESO telescopes and established an annual fund for the development of astronomy, managed by the 'ESO-Chile Joint Committee'.

The celebration event was hosted by ESO Director General, Dr. Catherine Cesarsky, and the Director of Special Policy for the Chilean Ministry of Foreign Affairs, Ambassador Luis Winter. "ESO's commitment is, and always will be, to promote astronomy and scientific knowledge in the country hosting our observatories", said Dr. Cesarsky. "We hope Chile and Europe will continue with great achieve-



At the ceremony to celebrate the 10th Anniversary of the ESO-Chile Joint Committee: (from left to right) Felix Mirabel (ESO Representative and Head of the Science Office in Chile), Dr. Catherine Cesarsky (ESO Director General), Dr. Leonardo Bronfman (Director of Astronomy Department, Universidad de Chile; representative of the Chilean scientific community within the ESO-Chile Joint Committee), and, speaking, Ambassador Luis Winter (Director of Special Policy, Ministry of Foreign Affairs of Chile).

ments in this fascinating joint adventure, the exploration of the Universe."

On behalf of the government of Chile, Ambassador Luis Winter outlined the historical importance of the Supplementary Agreement, ratified by the Chilean Congress in 1996. "Such is the magnitude of the ESO-Chile Joint Committee that, only

in 2005, this annual fund represented eight per cent of all financing sources for Chilean astronomy, including those from government and from universities", Ambassador Winter said. The appointed Chilean astronomer for the ESO-Chile Joint Committee, Dr. Leonardo Bronfman, also took part in the ceremony, along with ambassadors in Chile of ESO mem-

The ESO-Chile Fund has supported the improvement of astronomy teaching at schools for children and young people. In the picture, CADIAS, the Astronomy Teaching Support Centre, funded by the annual fund.

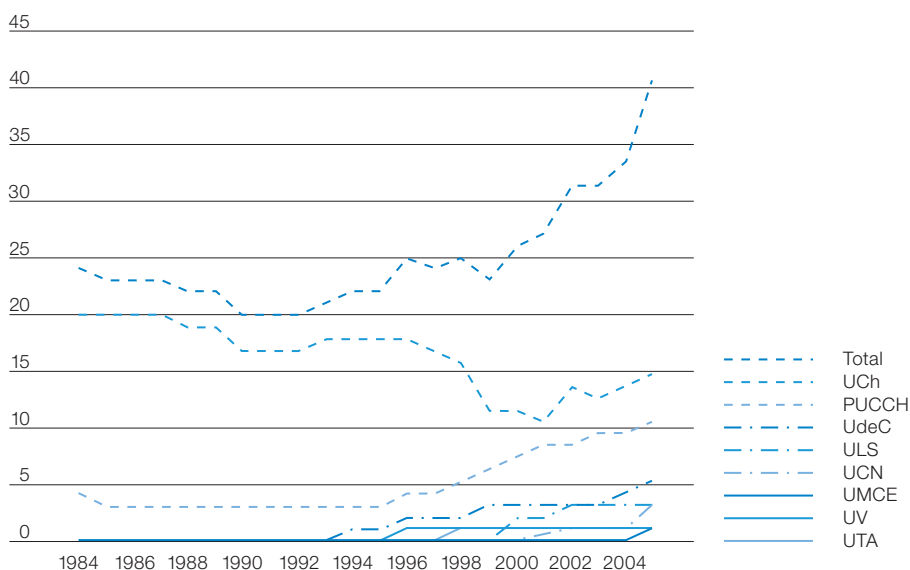


ber states, and representatives of the Chilean government and the scientific community.

History and impact of the ESO-Chile fund

The formal relations between ESO and its host country, the Republic of Chile, were first established through the Convention of 1963, which allowed the successful construction and operation of the La Silla Observatory. Decades later, during the years of VLT construction, an Interpretative and Supplementary Agreement to the Convention was signed and was ratified by the Chilean Congress on September 1996. The new agreement guaranteed to Chilean astronomers privileged access to the state-of-the-art telescopes installed at La Silla, Paranal and Chajnantor for deserving research

Evolution of the number of astronomy positions at the major Chilean universities.



projects. To make the most of this vast scientific wealth, an annual fund was established for the development of astronomy and related sciences in the country.

A decade after the launch of this initiative, ESO edited a special book, based on the reports of the beneficiaries of the annual fund, to review the impact of the numerous projects financed so far. The book, entitled “10 Years Exploring the Universe”, was launched in the same celebration event at ESO Vitacura. The publication presents a global view of recent developments of astronomy in Chile.

Since the beginning, the ESO-Chile fund has granted over 2.5 million euros to finance new positions of post-doc and astronomy professors at major Chilean universities, development of research infrastructures, organisation of scientific

The book “10 Years Exploring the Universe” presents a global view of recent developments of astronomy in Chile thanks to the ESO-Chile Annual Fund.



congresses, workshops for science teachers and astronomy outreach programmes for the public.

In addition to the 400 000 euros given annually by ESO to the ESO-Chile Joint Committee, around 550 000 euros are granted every year to finance regional collaboration programmes, fellowships for students in Chilean universities, and the development of radio astronomy through the ALMA-Chile Committee. In total, apart from the 10 % of the observing time at all ESO telescopes, ESO contributes 950 000 euros annually for the promotion of astronomy and scientific culture in Chile.

As a consequence of these funds and other positive stimulating factors in Chile in recent years, there has been a rapid development in the size and scientific impact of the national astronomical community. According to a study by the Chilean Academy of Sciences in 2005, the number of astronomers has doubled over the last 20 years and there has been an eightfold increase in the number of scientific publications. The same study stated that astronomy could be the first scientific discipline in Chile with the standards of a developed country, with additional benefits in terms of technological improvement and growth of human resources.

The book “10 Years Exploring the Universe” can be downloaded in PDF format from <http://www.eso.cl> (Spanish version) and <http://www.eso.org/outreach/press-rel/pr-2006/pr-21-06.html> (English version). The report by the Chilean Academy of Sciences, “Analysis and Projections of 2005 Chilean Sciences – Chapter: Astronomy” is available at http://www.sochias.cl/extras/astro2005_final.pdf.