



Astronomy as a framework of cooperation between the European Union, Latin American and the Caribbean

by Xavier Barcons*

Besides being the leading organisation for ground-based astronomy in Europe, ESO, the European Organisation for Astronomical Research in the Southern Hemisphere, is also a prime example of scientific cooperation with the Host State of its observatories, Chile. The basis of such cooperation was laid down less than one year after ESO was founded, when in November 1963 the Organisation and the Chilean Government signed the agreement under which ESO's first observatory would be built on La Silla, a mountain peak northeast of the city of La Serena. The agreement was updated and expanded in 1995, when the construction of another observatory, Cerro Paranal, was under way to host the Very Large Telescope (VLT), currently the most productive astronomical facility on the ground.

Looking in retrospect, an essential role of the 1995 agreement was to recognise the potential of Chile to benefit from the presence of ESO in the country for the development of its scientific community, transitioning from being the privileged platform for observational astronomy that it continues to be, to becoming a partner of European astronomy, and indeed of worldwide astronomy through similar agreements with other international observatories.

The achievements of Chilean astronomy in these past two decades are nothing short of impressive. Guaranteed access to world-class facilities in Chilean territory has stimulated the growth in size and quality of Chilean research groups, leading to many exciting discoveries, and attracting renowned scientists (both Chilean and foreign nationals) from abroad who have further contributed to the development of those groups. Cooperation agreements with the international observatories have provided funds for the development of astronomy promoting professional astronomy as well as educational and outreach activities addressed to a wider public. In parallel, the Chilean Government has committed increased resources to consolidate the national scientific community as part of a strategy to enhance the international standing of the country in science and technology. Numbers speak for themselves: since the turn of the century the number of professional astronomers at Chilean universities has undergone a seven-fold increase, and the number of university departments hosting active researchers in astronomy has increased from two, both located in the capital city of Santiago, to the current thirteen, of which eight are located outside of Santiago, mostly in the North of the country where the international observatories operate. Astronomy, together with seismology and oceanography, is one of the outstanding



examples of Chile benefitting its condition of “natural laboratory”, in which exceptional natural conditions promote the existence of scientific communities linked to them.

ESO is at the lead of building some of the largest astronomical facilities on Chilean land. This started decades ago in La Silla where we still operate two middle-size but extremely productive optical telescopes and host a number of smaller dedicated projects. The VLT system in Paranal and the Atacama Large Millimetre/submillimeter Array (ALMA) – a partnership between ESO, North American and East Asian institutions are both unique facilities in the world. The next ESO project, the ELT, will dwarf all previous optical telescopes with its almost 40-metre diameter primary mirror. The investments provided by ESO member states to erect this unique set of astronomical observatories are in excess of 3 BEUR. Projects in existence or under development from other international agencies most likely equal or even exceed this figure.

Whereas Chile has developed in these past decades a scientific community that is now on a par with those of countries in Europe and North America with a much longer tradition in astronomy, the strategic focus now includes also the engineering specialties applicable to world-class astronomical facilities. This is not only because of the opportunities of involvement in the construction of advanced facilities such as telescopes and instruments systems, but also because some of the required technologies are also applicable to other fields of activity of great relevance for Chile, such as the mining industry or the exploitation of agricultural resources, to name just two. In that respect, ESO is willing to continue the close collaboration with Chile in the era of the construction of the ELT, which is bound to become the largest telescope in the world when it enters operation by the middle of the next decade.

After more than fifty years of successful partnership between ESO and Chile, it is good to reflect on the reasons of this success. These include of course the unique natural conditions for astronomical observations of the desert of Atacama: low cloudiness, extreme dryness, low atmospheric turbulence, and virtually no artificial sources of light pollution. However, other important reasons come into play: the political and legal support that Chile offers to ESO; a state policy favoring investments in astronomy in the country and the preservation of the natural conditions; a good level of infrastructures; well-qualified professionals for scientific, technical, engineering, or administrative work at the observatories; and, particularly for Europe, a strong commercial, cultural, industrial, and diplomatic presence. All those factors stimulate ESO to look forward to another half-century of cooperation with Chile - at least!



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