European Extremely Large Telescope site chosen

April 26 2010

This night-time panorama shows Cerro Armazones in the Chilean desert, near ESO's Paranal Observatory, site of the Very Large Telescope. Cerro Armazones was chosen as the site for the planned European Extremely Large Telescope, which, with its 42-meter diameter mirror, will be the world's biggest eye on the sky. Credit: ESO/S. Brunier

On April 26, 2010, the ESO Council selected Cerro Armazones as the baseline site for the planned 42-meter European Extremely Large Telescope (E-ELT). Cerro Armazones is a mountain at an altitude of 3060 meters in the central part of Chile's Atacama Desert, some 130 kilometers south of the town of Antofagasta and about 20 kilometers from Cerro Paranal, home of ESO's Very Large Telescope.

"This is an important milestone that allows us to finalise the baseline design of this very ambitious project, which will vastly advance astronomical knowledge," says Tim de Zeeuw, ESO's Director General. "I thank the site selection team for the tremendous work they have done over the past few years."

ESO's next step is to build a European extremely large optical/infrared telescope (E-ELT) with a primary mirror 42 metres in diameter. The E-ELT will be "the world's biggest eye on the sky" — the only such telescope in the world. ESO is drawing up detailed construction plans together with the community. The E-ELT will address many of the most pressing unsolved questions in astronomy, and may, eventually, revolutionise our perception of the Universe, much as Galileo's telescope did 400 years ago. The final go-ahead for construction is expected at the end of 2010, with the start of operations planned for 2018.

The decision on the E-ELT site was taken by the ESO Council, which is the governing body of the Organisation composed of representatives of ESO's fourteen Member States, and is based on an extensive comparative meteorological investigation, which lasted several years. The majority of the data collected during the site selection campaigns will be made public in the course of the year 2010.

Various factors needed to be considered in the site selection process. Obviously the "astronomical quality" of the atmosphere, for instance, the number of clear nights, the amount of water vapour, and the "stability" of the atmosphere (also known as seeing) played a crucial role. But other parameters had to be taken into account as well, such as the costs of construction and operations, and the operational and scientific synergy with other major facilities (VLT/VLTI, VISTA, VST, ALMA and SKA etc).

In March 2010, the ESO Council was provided with a preliminary report with the main conclusions from the E-ELT Site Selection Advisory Committee. These conclusions confirmed that all the sites examined in the final shortlist (Armazones, Ventarrones, Tolonchar and Vizcachas in Chile, and La Palma in Spain) have very good conditions for astronomical observing, each one with its particular strengths. The technical report concluded that Cerro Armazones, near Paranal, stands

out as the clearly preferred site, because it has the best balance of sky quality for all the factors considered and can be operated in an integrated fashion with ESO's Paranal Observatory. Cerro Armazones and Paranal share the same ideal conditions for astronomical observations. In particular, over 320 nights are clear per year.

Taking into account the very clear recommendation of the Site Selection Advisory Committee and all other relevant aspects, especially the scientific quality of the site, Council has now endorsed the choice of Cerro Armazones as the E-ELT baseline site.

"Adding the transformational scientific capabilities of the E-ELT to the already tremendously powerful integrated VLT observatory guarantees the long-term future of the Paranal as the most advanced optical/infrared observatory in the world and further strengthens ESO's position as the world-leading organisation for ground-based astronomy," says de Zeeuw.

In anticipation of the choice of Cerro Armazones as the future site of the E-ELT and to facilitate and support the project, the Chilean Government has agreed to donate to ESO a substantial tract of land contiguous to ESO's Paranal property and containing Armazones in order to ensure the continued protection of the site against all adverse influences, in particular light pollution and mining activities.

Provided by ESO