ESO Calendar 2019

European Southern Observatory

Cover
Rendering of the Extremely Large Telescope

This artist's impression displays the Extremely Large Telescope (ELT) in all its grandeur. Sitting atop Cerro Armazones, 3046 m up in the Chilean Atacama Desert, the ELT's mirror will be 39 metres in diameter: "the world's biggest eye on the sky." Lasers shine high into Earth's atmosphere, creating artificial stars. This is essential for the adaptive optics system which will correct for atmospheric turbulence, ensuring remarkably sharp images.

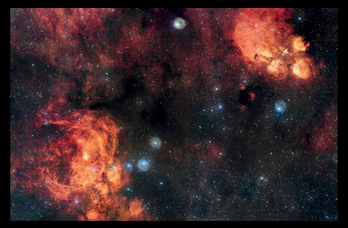
Credit: ESO/L. Calçada

January
The Small Magellanic Cloud

One of our closest neighbours, the Small Magellanic Cloud (SMC), is a dwarf irregular galaxy 200 000 light-years away. In the southern hemisphere, the SMC can be seen with the naked eye. The bright globular star cluster, 47 Tucanae, appears to the right and is much closer to the Earth than the SMC, lying only about 17 000 light-years away. This image was taken with the Visible and Infrared Survey Telescope for Astronomy (VISTA) at ESO's Paranal Observatory.

Credit: ESO/VISTA VMC

February
The Cat's Paw and the Lobster Nebulae



This spectacular image from the VLT Survey Telescope (VST) shows the Cat's Paw (upper right) and the Lobster (lower left) Nebulae. These vivid displays are sites of active star formation: photons from hot young stars excite surrounding hydrogen gas, causing it to glow red. Patches of dark dust clouds obscure parts of the picture, preventing the light from ever reaching us. With around two billion pixels, this is one of the largest images ever released by ESO. Note that the circular features around the bright stars in the image are not real, but are due to reflections within the optics of the telescope and the camera.

Credit: ESO

March
APEX and snowy Chajnantor

The slumbering Atacama Pathfinder Experiment (APEX) telescope sits beneath reddened skies in the snow covered Chajnantor landscape. Snow blankets not only the ground, but also the many peaks that encircle the Chilean plateau, which also hosts the Atacama Large Millimeter/submillimeter Array (ALMA).

Credit: Carlos A. Durán/ESO

April
VISTA's cosmic view

The Visible and Infrared Survey Telescope for Astronomy (VISTA) is located at ESO's Paranal Observatory in Chile. The extreme altitude and arid climate make for cloudless skies and excellent viewing conditions. VISTA observes at infrared wavelengths, using an extremely sensitive three-tonne camera. The telescope detects light from very distant sources in the Universe, producing both stunning images and ground-breaking scientific results. VISTA is dwarfed by the sheer majesty of the Universe, as demonstrated by the kaleidoscopic Milky Way arching across this panorama.

Credit: ESO/P. Horálek

May
A sky full of galaxies

This image contains a plethora of astronomical treats. A subtle grouping of 1000 yellowish galaxies cluster together near the centre of the frame. Combined with large quantities of hot gas and dark matter, the galaxy cluster weighs more than 100 billion times the mass of the Sun. At the outskirts of the Large Magellanic Cloud, these galaxies are observed amongst many other clusters of hundreds of thousands of giant stars. Observations were taken by the 67-million-pixel Wide Field Imager on the MPG/ESO 2.2-metre telescope at ESO's La Silla Observatory. The data to create this image were selected from the ESO archive for the Hidden Treasures competition.

Credit: ESO
Acknowledgement: Flickr user hdahle70

June
ALMA's dramatic surroundings

ALMA is a revolutionary astronomical telescope, comprising an array of 66 giant antennas observing at millimetre and submillimetre wavelengths. It is situated on the breathtaking Chajnantor Plateau, at an altitude of 5000 metres in the Chilean Andes. Chajnantor means "place of departure" in the Kunza language of the Atacameño people who lived there and named this plateau.

Credit: Y. Beletsky/ESO

July
Star cluster RCW 38

New observations with ESO's Very Large Telescope show the star cluster RCW 38 in all its glory. This image was taken during testing of the HAWK-I camera with the GRAAL adaptive optics system. It shows the cluster and its surrounding clouds of brightly glowing gas in exquisite detail, with dark tendrils of dust threading through the bright core of this young gathering of stars.

Credit: ESO/K. Muzic

August
Sunset over Paranal

As the Sun slips below a false horizon of cloud hovering above the Pacific Ocean, the sky glows a vivid orange. The exceptionally arid climate produces both a dusty and rocky landscape, as well as some of the most spectacularly clear skies anywhere on Earth. This image was taken from Cerro Armazones, where the Extremely Large Telescope (ELT) is currently being constructed. The Paranal site, home to the Very Large Telescope (VLT), is just visible above the clouds. The VLT Survey Telescope (VST) is also on the leftmost hill, whilst the Visible and Infrared Survey Telescope for Astronomy (VISTA) sits on the adjacent peak to the right.

Credit: ESO/S. Lowery

September
The Tarantula Nebula in the Large Magellanic Cloud

This gigantic star-forming region in the Milky Way's neighbour galaxy, the Large Magellanic Cloud, is the birthplace of an astonishing number of massive stars, some of which are as large as 300 solar masses.

Credit: ESO

October
Trapped by the VLT's lasers

ESO's Very Large Telescope (VLT) at Paranal Observatory, Chile, is the world's most advanced optical instrument. The VLT uses state-of-the-art technology to provide the sharpest possible images, including adaptive optics with the laser guide stars shown in this image. The VLT uses these lasers to measure the turbulence in the Earth's atmosphere and responds by changing the shape of a mirror to counteract the negative effects of this turbulence.

Credit: ESO/G. Hüdepohl (atacamaphoto.com)

November
Star formation region Lupus 3

A dark cloud of cosmic dust snakes across this spectacular wide-field image, illuminated by the brilliant light of new stars. This dense cloud is a star-forming region called Lupus 3, where dazzlingly hot stars are born from collapsing masses of gas and dust. This image, created from images taken using the VLT Survey Telescope and the MPG/ESO 2.2-metre telescope, is the most detailed image taken so far of this region.

Credit: ESO/R. Colombari

December
Star trails above La Silla

This unusual image shows three of the telescopes at ESO's La Silla Observatory in Chile — the MPG/ESO 2.2-metre telescope on the left, ESO's 3.6-metre telescope sitting in the distance behind it, and the Danish 1.54-metre telescope on the right, apparently looming over its companions in the foreground. Of course, this is a highly distorted view of the telescopes! This photograph was taken by ESO Photo Ambassador Petr Horálek to emphasise not the telescopes themselves but the stunning features of the night sky above the observatory site, which is one of the best in the world. This is a long-exposure shot intended to capture the apparent motion of the stars as they slowly circle overhead in the sky.

Credit: P. Horálek/ESO

ESO
European Southern Observatory

ESO is the foremost intergovernmental astronomy organisation in Europe and the world's most productive ground-based astronomical observatory by far. It has 16 Member States: Austria, Belgium, the Czech Republic, Denmark, France, Finland, Germany, Ireland, Italy, the Netherlands, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom, along with the host state of Chile and with Australia as a strategic partner. ESO carries out an ambitious programme focused on the design, construction and operation of powerful ground-based observing facilities enabling astronomers to make important scientific discoveries. ESO also plays a leading role in promoting and organising cooperation in astronomical research. ESO operates three unique world-class observing sites in Chile: La Silla, Paranal and Chajnantor. At Paranal, ESO operates the Very Large Telescope and its world-leading Very Large Telescope Interferometer as well as two survey telescopes, VISTA working in the infrared and the visible-light VLT Survey Telescope. ESO is also a major partner in two facilities on Chajnantor, APEX and ALMA, the largest astronomical project in existence. And on Cerro Armazones, close to Paranal, ESO is building the 39-metre Extremely Large Telescope, the ELT, which will become "the world's biggest eye on the sky".

Moon phases are indicated in Universal Time.

Produced by the ESO education and
Public Outreach Department.

2019

The Small Magellanic Cloud

January 2019

Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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The Cat's Paw and the Lobster Nebulae

February 2019

Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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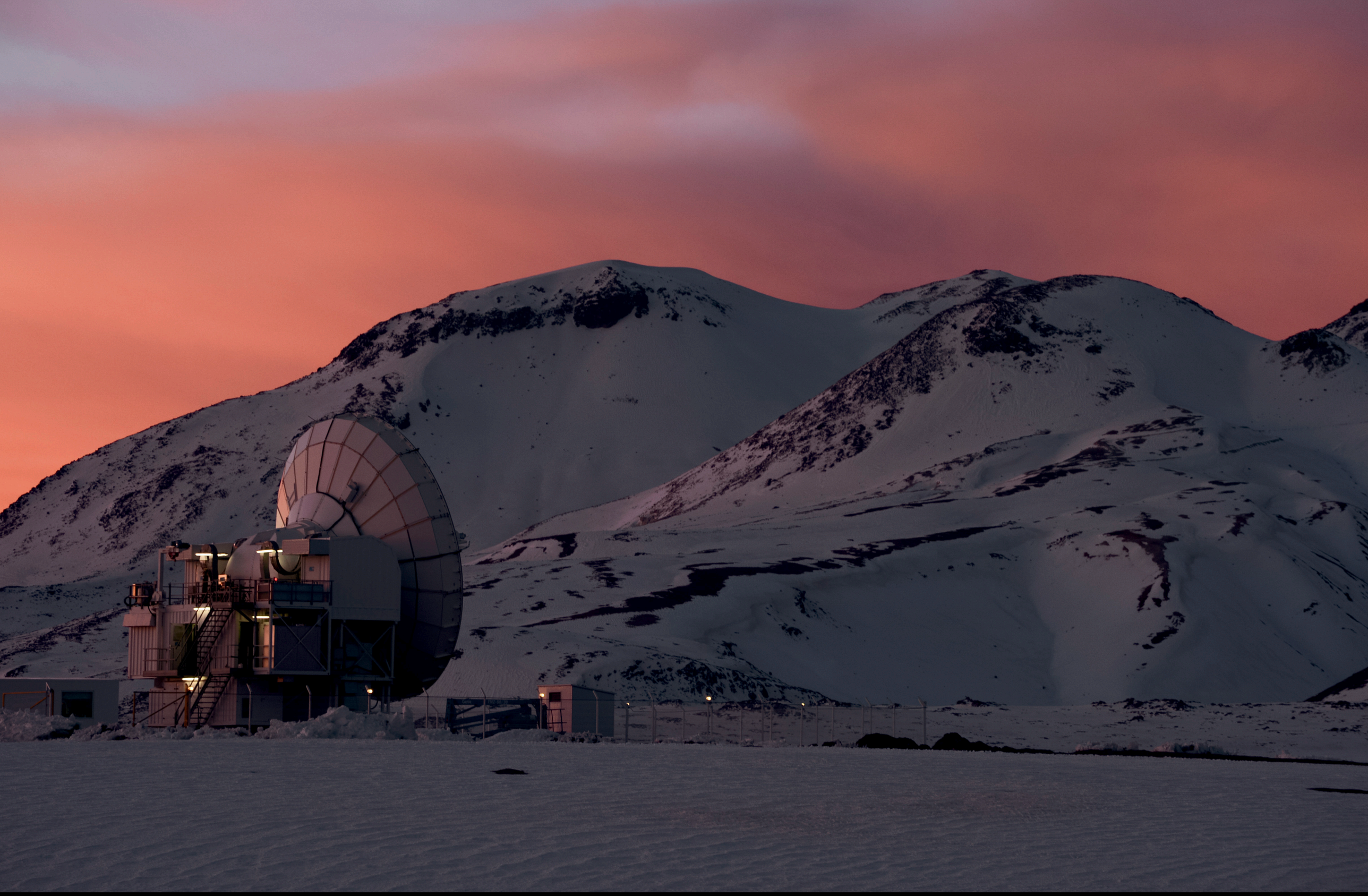

APEX and snowy Chajnantor

March 2019

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VISTA's cosmic view

April 2019

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
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A sky full of galaxies

May 2019

Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
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ALMA's dramatic surroundings

June 2019

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Star cluster RCW 38

July 2019

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Sunset over Paranal

August 2019

Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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The Tarantula Nebula in the Large Magellanic Cloud

September 2019

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Trapped by the VLT's lasers

October 2019

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Star formation region Lupus 3

November 2019

Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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Star trails above La Silla

December 2019

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
22	23	24	25	26	27	28
	52					
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Sunday	Monday	Tuesday				
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