

# ESO Calendar 2023

European Southern Observatory



## Cover

ESO's 60th anniversary image: the Cone Nebula as seen by the VLT



The Cone Nebula is part of the star-forming region NGC 2264, about 2500 light-years away. Its pillar-like appearance is a perfect example of the shapes that can develop in giant clouds of cold molecular gas and dust, where new stars are created. This dramatic new view of the nebula was captured with the FOCal Reducer and low dispersion Spectrograph (FORs2) instrument on ESO's Very Large Telescope (VLT) and released on the occasion of ESO's 60th anniversary.

Credit: ESO



## January

First image of the Milky Way's central black hole



This is the first image of Sgr A\*, the supermassive black hole at the centre of our galaxy. It's the first direct visual evidence of the presence of this black hole. It was captured by the Event Horizon Telescope (EHT), an array which linked together eight existing radio observatories across the planet to form a single "Earth-sized" virtual telescope. Two telescopes in which ESO is a partner, the Atacama Millimeter/submillimeter Array (ALMA) and the Atacama Pathfinder Experiment (APEX), are part of the EHT.

Credit: EHT Collaboration



## February

Yepun full dome



This bold fish-eye (full dome) image perfectly captures the fourth Unit Telescope of ESO's Very Large Telescope (VLT).

Lasers from this telescope, which is also known as Yepun, are used by astronomers as part of the VLT's state-of-the-art adaptive optics system. These lasers create an artificial "guide star", which the system uses to compensate for the blurring effects of Earth's atmosphere. This allows astronomers to study the Universe in much greater detail.

Credit: ESO/A. Ghizzi Panizza



## March

Star-forming gas clouds in NGC 6822



This image is a composite of older observations made with the Wide Field Imager attached to the 2.2-metre MPG/ESO telescope at ESO's La Silla Observatory and new data collected by the Atacama Large Millimeter/submillimeter Array (ALMA). The observations by ALMA reveal the structure of star-forming gas clouds in unprecedented resolution.

Credit: ESO, ALMA (ESO/NAOJ/NRAO)/A. Schrubba, VLA (NRAO)/Y. Bagetakos/Little THINGS



## April

The ESO Supernova Planetarium & Visitor Centre



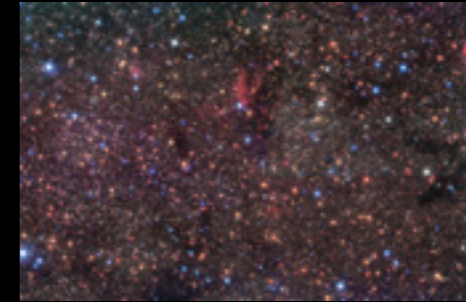
The ESO Supernova Planetarium & Visitor Centre, located in Garching, Germany, is seen here surrounded by lovely green grass and trees on a beautiful spring day.

Credit: ESO/M. Kornmesser



## May

Peering through the dust



This image shows an infrared view of Sagittarius B1, a region close to the centre of the Milky Way. The centre of our galaxy is an exotic environment, densely populated with stars, but our view is obscured by clouds of dust and gas, which block the visible light from the stars.

With infrared instruments, however, it is possible to peer through these clouds. In this image, taken with the infrared HAWK-I instrument on ESO's VLT, we get to take a closer look at this region, unveiling a myriad of stars.

Credit: ESO/Noguerras-Lara et al.



## June

The ELT's construction site on Cerro Armazones



This photograph provides a bird's eye view of the construction site of ESO's Extremely Large Telescope (ELT), as it looked in early 2022. The telescope, being built on Cerro Armazones in the Chilean Atacama Desert, is planned to start operating later this decade.

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



## July

The Butterfly Galaxies



Around 60 million light-years away, in the constellation Virgo, the two galaxies NGC4567 and NGC4568, nicknamed the Butterfly Galaxies because of their wing-like structure, are beginning to collide and merge into each other.

They are seen here in this image captured by the FOCal Reducer and low dispersion Spectrograph 2 (FORs2) instrument, which is mounted on ESO's Very Large Telescope (VLT) at the Paranal Observatory in the Chilean Andes.

Credit: ESO



## August

Full Moon turns red



This ominous picture shows our Moon undergoing a total lunar eclipse. During a lunar eclipse, Earth is positioned directly between the Sun and the Moon, blocking some of the Sun's light. This casts a shadow across the Moon's surface. The red colour is caused by the Sun's rays interacting with Earth's atmosphere.

This photo was taken during the eclipse's totality, by two ESO colleagues at Paranal Observatory using an amateur telescope nicknamed "UT5" as a nod to its much larger siblings, the four 8-metre Unit Telescopes of ESO's Very Large Telescope (VLT).

Credit: F. Aedo, F. Durán/ESO



## September

La Silla Observatory



Located on the outskirts of the Chilean Atacama Desert, 600 kilometres north of Santiago and at an altitude of 2400 metres, this seemingly tiny village in the middle of a desert is in fact ESO's first observatory, La Silla Observatory.

The many astronomical facilities hosted at La Silla include ESO's 3.6-metre telescope and ESO's New Technology Telescope (NTT), as well as several national telescopes, such as ExTrA and the Danish 1.54-metre telescope.

Credit: ENEL



## October

Wispy dark clouds



The dark clouds in this image almost resemble something supernatural, like the wispy trails of ghosts in the sky. Known as Barnard 92 (right) and Barnard 93 (left), the clouds are dark nebulae: they look pitch black because the dense gas and dust they contain block out the background light, creating these hazy ghostlike features. The image was taken with OmegaCAM on the VLT Survey Telescope at ESO's Paranal Observatory and is part of the VST Photometric H $\alpha$  Survey of the Southern Galactic Plane and Bulge (VPHAS+).

Credit: ESO/VPHAS+ team  
Acknowledgement: Cambridge Astronomical Survey Unit



## November

ALMA in winter



This is the site of the Atacama Large Millimeter/submillimeter Array (ALMA), amongst the snow-capped peaks of the Chajnantor plateau. In this picture one of the 66 antennas is visible together with a facility building and an antenna transporter.

ALMA is the world's largest ground-based facility for observations in the millimetre/submillimetre regime, sitting at an altitude of 5000 metres in northern Chile.

Credit: ESO/S. Otarola



## December

Purple haze



This picture features DG121, an HII region — a cloud of ionised hydrogen — located in the constellation Puppis. HII regions tend to have irregular structures and lack sharp boundaries, giving them their hazy, yet photogenic, appearance. The brightest star in the DG121 region, seen near the centre in this picture, is HD 60068.

This spectacular image was taken with the FOCal Reducer and low dispersion Spectrograph 2 (FORs2) instrument on ESO's Very Large Telescope (VLT) in the Chilean Atacama Desert.

Credit: ESO



## ESO

European Southern Observatory



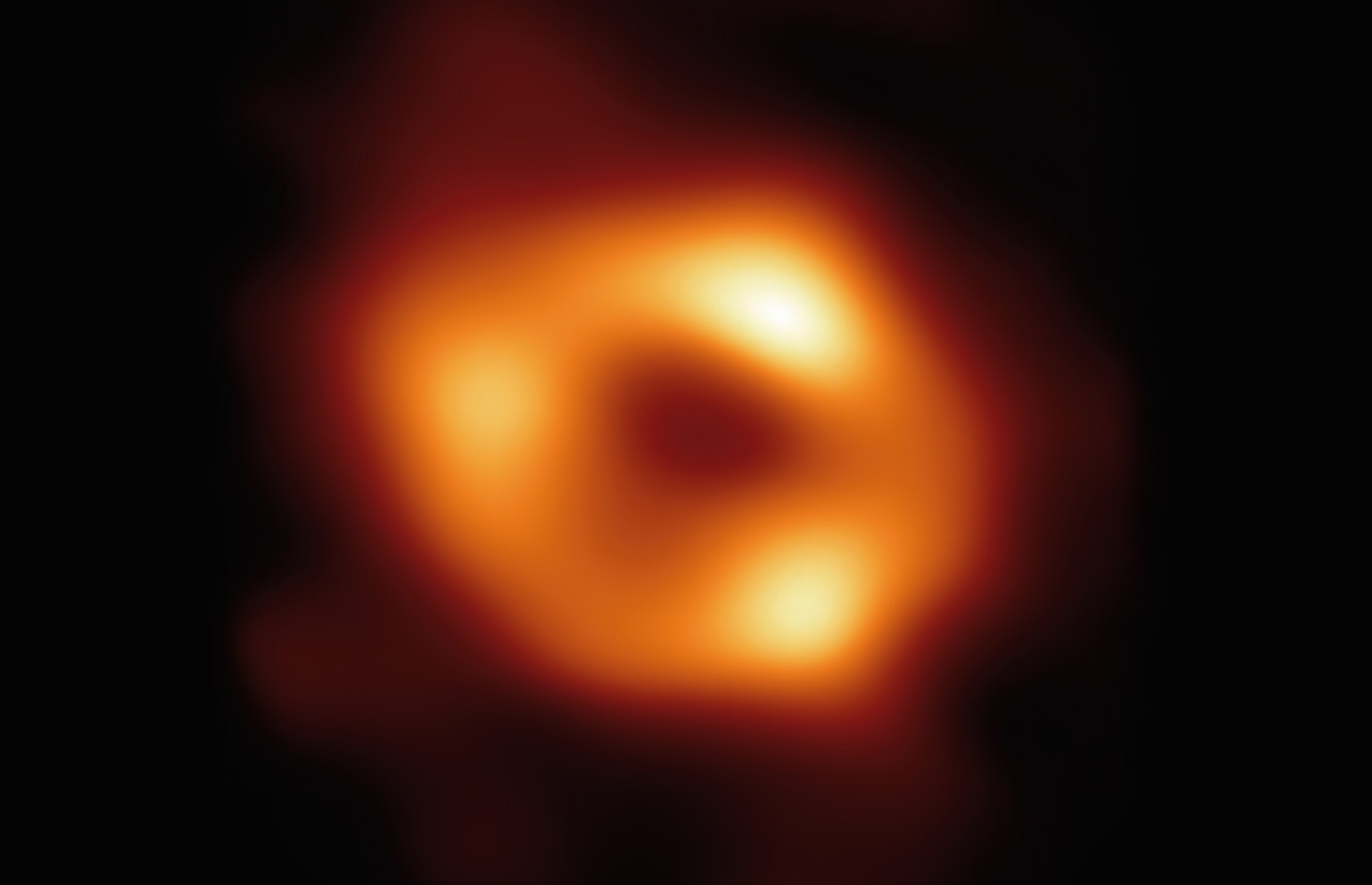
The European Southern Observatory (ESO) enables scientists worldwide to discover the secrets of the Universe for the benefit of all. We design, build and operate world-class observatories on the ground — which astronomers use to tackle exciting questions and spread the fascination of astronomy — and promote international collaboration in astronomy. An intergovernmental organisation supported by 16 Member States and two partner countries, ESO has headquarters in Germany and operates three observing sites in Chile.

Moon phases are indicated in Universal Time.

Produced by the ESO Department of Communication.

# 2023





First image of the Milky Way's central black hole

# January 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday							
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February 2023

Yepun fulldome

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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Star-forming gas clouds in NGC 6822

March 2023

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April 2023

The ESO Supernova Planetarium & Visitor Centre

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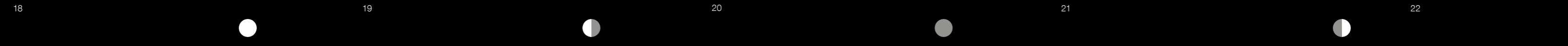




Peering through the dust

# May 2023

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The ELT's construction site on Cerro Armazones

# June 2023

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The Butterfly Galaxies

# July 2023

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August 2023

Full Moon turns red

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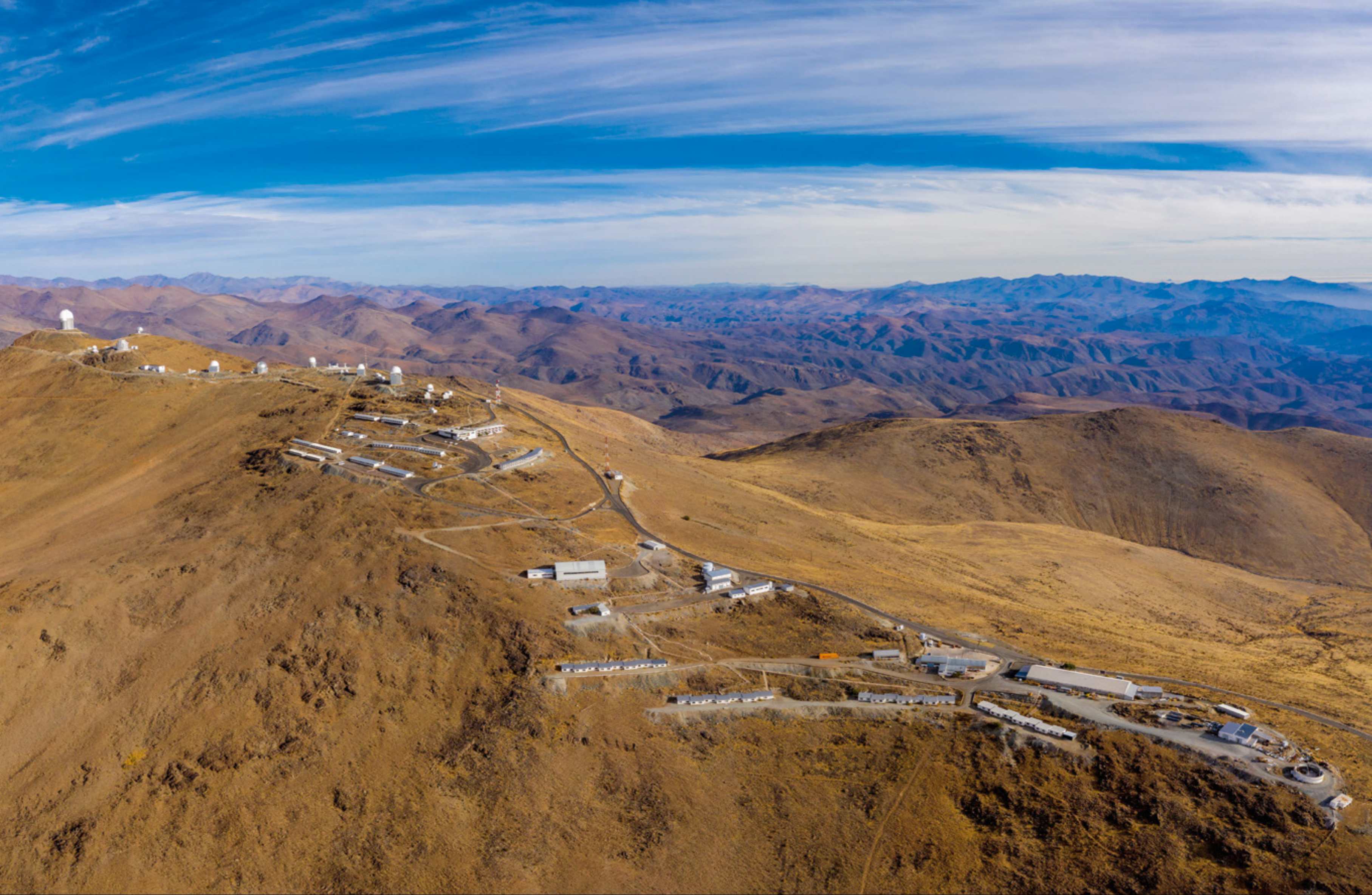
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# September 2023

La Silla Observatory

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Wispy dark clouds

# October 2023

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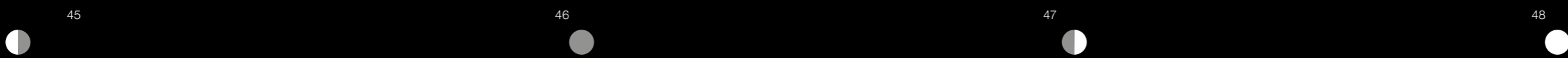




# November 2023

ALMA in winter

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December 2023

Purple haze

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