



Key words: Total solar eclipse 2019, La Silla observatory

<p>ESOCast Episode 209: Outreach and Science During the Total Solar Eclipse at La Silla</p>	
<p>00:00 [Narrator] [Visual starts] 1. On 2 July 2019, a total solar eclipse occurred over ESO's La Silla Observatory in the Chilean Atacama Desert.</p> <p>ESO invited nearly 25 scientists, communicators and educators to observe and document this rare occasion from La Silla.</p>	<p>00:00</p>
<p>00:26 ESOCast intro</p>	<p>00:00 ESOCast intro</p>
<p>00:33 [Narrator] 2. Total solar eclipses are rare phenomena and only occur, on average, once per 360 years in a specific location.</p> <p>Historically, total solar eclipses have only been observed twice from large professional observatories: in 1961 over L'Observatoire de Haute-Provence in France and in 1991 over Mauna Kea on the island of Hawai'i.</p> <p>These events have a great impact on the people fortunate enough to experience them and also allow for special science experiments to take place.</p> <p>For this reason, ESO let nearly 25 scientists, communicators and educators observe and document the eclipse from La Silla, supported by the ESO Communication Department and</p>	

<p>benefitting from La Silla's clear skies, infrastructure and resources.</p>	
<p>01:40 [Narrator] 3. Along with cameras and telescopes from 700 members of the public, and more than 60 journalists, five different groups conducted outreach, education and science experiments on the day. They were assigned a place on the flanks of the La Silla mountain just below the Visitor Centre as well as on a platform next to the New Technology Telescope or NTT for short.</p> <p>Naturally, expectations were high....</p>	
<p>02:10 Statement Miguel Perez Ayucar (ESA CesaR): 4. <i>Our experiment features seven cameras and five telescopes and we are trying to cover several aspects of solar science, solar education and outreach ...</i> <i>With our experiments, we will try to study and understand better the inner part of the corona, the atmosphere of the Sun and its chromosphere.</i></p>	
<p>02:30 Statement Alain Klotz (TAROT): 5. <i>This telescope will observe the Sun during the eclipse in order to measure the position of stars around the Sun for measuring the effect of general relativity.</i></p> <p><i>This eclipse is very practical for me because we repeat exactly the same experiment that one century ago by Eddington for the demonstration of general relativity.</i></p>	
<p>02:56 Statement Padma Yanamandra-Fisher (Space Science Institute): 6. <i>My experiment is going to measure the linear polarisation of the solar corona. The corona changes with each eclipse and that is</i></p>	

<p><i>what we're trying to study; how it changes. I think we can probably determine how the corona is changing with the activity of the Sun. The Sun is going into a minimum state and then the activity will increase in a few years. We can actually see how the corona changes with that.</i></p>	
<p>03:20 [Narrator] 7. The NTT — one of the two 4-metre class telescopes at La Silla, was also pointed daringly near the Sun during the eclipse.</p>	
<p>03:33 Statement Frédéric Baudin (L'Institut d'Astrophysique Spatiale): 8. <i>Its is very exciting to observe the eclipse from here, from La Silla because we can use a very powerful telescope, a 3.5-metre diameter telescope, which allows to look for very fine features in the solar corona. Thanks to the NTT, the powerful telescope, we may discover new spectroscopic lines in the solar corona and then get new information about the Sun. You have to be very careful when you use such a large telescope aiming at the Sun. We trust the people from here, from La Silla, to operate and to move quickly the telescope when the Sun will again reappear.</i></p>	
<p>04:11 [Narrator] 9. And then the great moment came: The moment of totality</p>	
<p>04:36 [Narrator] 10. Two webcasts and a Google hangout were done and included a special 4-hour long webcast following the progression of the entire eclipse</p> <p>All the way down to the sunset, even including a green flash!</p>	

<p>05:00 [Narrator] 11. The experiments conducted during the total solar eclipse enabled some great and rare results.</p> <p>Stars around the eclipsed Sun were observed to show the deflection of starlight due to the Sun's monumental gravitational field and thereby confirm the general theory of relativity.</p>	
<p>05:23 [Narrator] 12. The first-ever measurements of the Earth's ionosphere were done to try to record changes caused by the Moon's shadow transit to reveal ionospheric irregularities during the eclipse.</p>	
<p>05:36 [Narrator] 13. Polarisation measurements produced a map of the polarisation of the corona. There is less polarisation at the Sun's poles and the most at the solar equator.</p>	
<p>05:49 [Narrator] 14. Interesting features were found in spectra taken of the Sun from the elements iron, calcium, helium and hydrogen.</p>	
<p>06:00 [Narrator] 15. Observing and documenting the total solar eclipse over the La Silla Observatory was a breathtaking experience for all involved.</p> <p>The contributions and findings of the 25 scientists, communicators and educators will help to deepen our understanding of these rare phenomena.</p> <p>And the NTT survived without going up in flames ...</p>	

06:28
[Outro]

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