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| **ESOcast Episode 3:**<br>**Astronomers receive first ALMA antenna at Chajnantor.** | | |
| **00:00**<br>**[Visual starts]**<br><br>**[Narrator]**<br>The Atacama Desert in northern Chile.<br>This desert, with its high mountains, plateaux, and active volcanoes, is probably the driest place on Earth.<br><br>This inhospitable terrain is where ESO, together with international partners, is building the world's largest astronomical project. The first of 66 state-of-the-art antennas has just been handed over to the project. | | Desert images<br><br>Mountains and cacti<br><br>ALMA antenna |
| **00:31**<br>**ESOcast intro**<br><br>This is the ESOcast! Cutting-edge science and life behind the scenes of ESO, the European Southern Observatory. Exploring the far reaches of the Universe with our host Dr. J, a.k.a. Dr. Joe Liske. | | ESOcast intro |
| **00:42**<br>**[Dr. J]**<br>Hello and welcome to the ESOcast. In today's episode, we're going to travel to the site of ALMA, the Atacama Large Millimeter/submillimeter Array. This amazing new telescope is being built right now, in the Chilean Andes at an altitude of 5000 m - high enough to be literally breathtaking! | | Dr. J in virtual studio wearing a big red expedition down jacket<br><br>Slate:<br>HOST: Dr. J<br>EPISODE 3: The ALMA observatory gets its first 'eye'<br><br>Background screen: Desert images<br>Workers at Chajnantor. |
| **01:07**<br>**[Narrator]**<br>ALMA will initially comprise 66 high-precision antennas, with the option to expand in the future. There will be an array of fifty 12-metre antennas, acting together as a single giant telescope, and a compact array composed of 7-metre and 12-metre diameter antennas. | | ALMA animations, old and new |

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| The first 12-metre diameter antenna, built by Mitsubishi Electric Corporation for the National Astronomical Observatory of Japan, one of the ALMA partners, has just been handed over to the observatory.<br><br>It will shortly be joined by North American and European antennas. | | Japanese antennas |
| **01:42**<br>**[Dr J]**<br>Each new antenna must meet very strict requirements. The surface of each dish must be accurate to the thickness of a human hair, and the pointing must be precise enough to pick out a golf ball at a distance of 15 km.<br><br>This antenna handover is a major milestone. The observatory team can now proceed to integrate the rest of the components, including the sensitive receivers that will collect the faint signals from space. | | Screens:<br>Antennas at the OSF |
| **02:06**<br>**[Narrator]**<br>The antennas are tested at the Operations Support Facility, at an altitude of 2900 m, before being moved to the plateau of Chajnantor at 5000 m. The Operations Support Facility will also be the centre of the observatory's scientific activities. | | OSF footage |
| **02:26**<br>**[Dr J.]**<br>The ALMA site was chosen because its extreme dryness and altitude offer excellent conditions for observing the submillimetre radio waves for which ALMA was designed.<br><br>What's more, the wide plateau at Chajnantor provides plenty of space for the array of antennas. The individual dishes will be spread out and linked together over distances of more than 16 kilometres. | | Screens:<br>Chajnantor footage,<br>general views |
| **02:49**<br>**[Narrator]**<br>The ALMA antennas must withstand the harsh conditions at Chajnantor, with strong winds, cold temperatures and a thin atmosphere with half as much oxygen as at sea level. This forbidding environment also poses challenges for the workers building ALMA. | | Chajnantor construction footage<br>Workers at Chajnantor. |
| **03:06**<br>**[Dr J.]**<br>Although each of the antennas weighs about 100 tons, they can be moved individually to different positions in order to reconfigure the ALMA telescope. Now this will be carried out by two custom-designed transporters. Each of these giant vehicles is 10 metres wide, 20 metres long and has 28 wheels! | | Screens: ALMA transporters, moving |

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| Now that's what I call a monster truck! | | Cut to full screen. |
| **03:32**<br>**[Dr J.]**<br>With ALMA, astronomers will observe the cool Universe – the molecular gas and the tiny dust grains that constitute the building blocks of planetary systems, stars, galaxies and even of life itself. ALMA will provide us with new and much needed insight into the formation of stars and planets, and it will reveal distant galaxies in the early Universe, which we see as they were over ten billion years ago.<br><br>I'm Dr. J signing off for the ESOcast. Join me again next time for another adventure in the far reaches of the Universe.<br><br>And now I really need some oxygen! | | Screens: Celestial images from APEX (RCW 120, Galactic Centre), ALMA Simulations<br><br>3D animations<br><br>Dr. J. with desert images in the background<br><br>Dr J. exits right wearing an oxygen mask |
| **04:11**<br>**[Outro]** | | Text slate:<br>ESOcast is produced by ESO, the European Southern Observatory.<br><br>*ESO, the European Southern Observatory, is the pre-eminent intergovernmental science and technology organisation in astronomy designing, constructing and operating the world's most advanced ground-based telescopes.*<br><br>The ALMA project is a partnership between the scientific communities of East Asia, Europe and North America with Chile. |

**04:24**
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