ESOcast Episode 42: Looking Up Special 50th anniversary episode #2		
00:00 **[Visuals start]**		**Images:** **[Intro]**
00:19 **[Dr J]** Hello and welcome to this special episode of the ESOcast. Leading up to ESO's 50th anniversary in October 2012 we will showcase eight special features portraying ESO's first 50 years of exploring the southern sky.		
00:46 **[Narrator]** 1. 167,000 years ago, a star exploded in a small galaxy orbiting the Milky Way.		Animation of supernova explosion
00:56 2. At the time of the distant explosion, *Homo sapiens* just started to roam the African savannah. But no one could have noticed the cosmic fireworks, as the blast of light had only just embarked on its long journey towards Earth.		Light speed animation, supernova light traveling from LMC to Earth, with year counter and scenes from human history as small inserts of stills *Homo sapiens*
01:15 3. By the time light from the supernova had completed 98 percent of its journey, Greek philosophers had just started to think about the nature of the cosmos.		Greek philosphers
01:27 4. Just before the light reached Earth, Galileo Galilei trained his first primitive telescopes on the heavens.		Images of Galileo, similar to what we used in 'Eyes'
01:38 5. And on 24 February 1987, when photons from the		Year counter continues; supernova light reaches Earth; view of SN1987A lighting up in the LMC

explosion finally rained down on our planet, astronomers were ready to observe the supernova in great detail.		
01:52 6. Supernova 1987A flared up in the southern sky – unobservable from Europe or the United States. But by this time, ESO had built its first big telescopes in Chile, providing astronomers with a front-row seat to this cosmic spectacle.		Dr J in front of ESO's 3.6-m telescope, first in close up, then zoom-out to reveal big telescope(s) Overlay: SN1987A observations; astronomers studying monitors etc.
02:11 8. The telescope is of course the central tool that allows us to unravel the secrets of the Universe.		Dr J at a smallish La Silla telescope (interior), pref. with long, closed tube
02:19 9. Telescopes collect far more light than the unaided human eye, so they reveal fainter stars and let us peer deeper into space.		Animated graphic to compare light-gathering power of telescope vs. eye
02:30 10. Like magnifying glasses, they also show finer detail.		Animated graphic to reveal increase of spatial resolution obtained by telescope
02:36 11. And, when equipped with sensitive cameras and spectrographs, they provide us with a wealth of information about planets, stars and galaxies.		Hightech-looking footage of science instruments and results (including images, spectra)
02:52 12. Dr J ESO's first telescopes at La Silla were a mixed bunch.		Dr J walking among small telescopes at La Silla
02:56 13. Dr J They ranged from small national instruments to large astrographs and wide-field cameras.		Dr J outside dome of Danish (or other small) telescope at La Silla; stills of GPO astrograph and ESO Schmidt telescope
03:13 14. Dr J The 2.2-metre telescope – now almost 30 years old – is still producing some of the most dramatic views of the cosmos. [PAUSE]		Dr J at 2.2-m MPG/ESO-telescope http://www.eso.org/public/videos/LaSillaTimelapseESOMPG/ Awe-inspiring slideshow of 2.2-m images of nebulas and galaxies : http://www.eso.org/public/images/archive/search/?adv=&facility=15
04:01 15a. Dr J		Dr J, pointing at 3.6-m from a distance, then fast-

At the highest point of Cerro La Silla lies the biggest achievement of ESO's early years - the 3.6-metre telescope.		zooming in on telescope.
04:09 15b. Dr J Aged 35, it now leads a second life as a planet hunter.		Inside view of 3.6-m (Dr J not in view)
04:16 16. Dr J Also, Swedish astronomers built a shiny dish fifteen metres across to study microwaves from cool cosmic clouds.		Dr J's face reflected upside down in dish of SEST; then zoom-out to reveal him standing in front of dish
04:26 17. Dr J Together, these telescopes have helped to unveil the Universe in which we live.		Pan across La Silla observatory; crossfade into night scene Alternative: LS TL: http://www.eso.org/public/videos/LaSillaTimelapseGeneralview/
04:45 18. Earth is just one of eight planets in the Solar System.		Zoom out from Chile to reveal Earth as a planet
04:55 19. From tiny Mercury to giant Jupiter, these rocky spheres and gaseous balls are the leftovers from the formation of the Sun.		Journey across the Solar System, with views of Mercury, Mars, Saturn and Jupiter; then focus on Sun
05:09 20. The Sun, in turn, is a middle-of-the-road star in the Milky Way galaxy. One pinprick of light amidst hundreds of billions of similar stars — as well as bloated red giants, imploded white dwarfs, and rapidly spinning neutron stars.		Sun as a fiery sphere; quick zoom out, so it becomes just one of countless stars;
05:30 21. The spiral arms of the Milky Way are sprinkled with glowing nebulae, spawning bright clusters of newborn stars, while old globular clusters slowly swarm about the galaxy.		Further zoom out. Spiral arms appear, with nebulae, star clusters
05:47 22. And the Milky Way is just one of countless galaxies in a vast Universe, which has been expanding ever since the Big Bang, almost fourteen billion years ago.		Fly-out of Milky Way galaxy, revealing its structure; zoom out to reveal Deep Field-like view of Universe

06:05 23. Dr J Over the past fifty years, ESO has helped to uncover our place in the Universe.		Dr J in control room of big LS ESO telescope, or outside with the domes in the background, intimate voice
06:10 24. Dr J And by looking up, we have also discovered our own origins. We are part of the big cosmic story. Without stars, we wouldn't be here.		Dr J in control room of big LS ESO telescope, or outside with the domes in the background, intimate voice
06:24 25. The Universe started out with hydrogen and helium, the two lightest elements. But stars are nuclear ovens, turning light elements into heavier ones. And supernovae like 1987A seed the Universe with the products of this stellar alchemy.		Animation of nuclear processes in stellar cores (?); exploding star, creating expanding supernova remnant
06:47 26. When the Solar System formed, some 4.6 billion years ago, it contained trace amounts of these heavier elements. Metals and silicates, but also carbon and oxygen.		Animation of formation of solar system
07:00 27. Dr J The carbon in our muscles, the iron in our blood, and the calcium in our bones, were all forged in an earlier generation of stars.		Dr J talking into camera, close up
07:10 27+28_28. Dr J You and I are literally made in heaven.		Some subtle effect to reveal our connection to the cosmos
07:14 29. But answers always lead to new questions. The more we learn, the deeper the mysteries become.		Time-lapse movie of majestically rotating night sky with Milky Way
07:23 30. What is the origin and ultimate fate of galaxies? Are there other solar systems out there, and could there be life on alien worlds? And what lurks in the dark heart of our Milky Way galaxy?		Images of LMC/SMC, planetary nebulae, extrasolar planets (artist impressions), and an (optical) zoom-in on the dark dust clouds in the Milky Way center
08:00 31. Dr J Astronomers were clearly in need of more powerful		Dr J in a nice La Silla location

telescopes. And ESO provided them with revolutionary new tools.		
08:16 Dr J This is Dr J, signing off from this special episode of the ESOcast. Join me again next time for another cosmic adventure.		
08:25		**[Outro]**

09:28
End