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<p>Video Podcast Episode 9: Extreme star cluster bursts into life!</p> <p>FOR IMMEDIATE RELEASE 18:00 (CET)/12:00 PM EST 02 October, 2007</p>		
<p>00:00 [Visual starts]</p> <p>[Narrator] 00:00 The NASA/ESA Hubble Space Telescope has captured a spectacular image of NGC 3603, a giant nebula hosting one of the most prominent massive young clusters in the Milky Way. This is a splendid location for continuing our detailed studies of stellar birth in star forming regions.</p> <p>00:19</p> <p>00:35 [Woman] This is the Hubblecast!</p> <p>News and Images from the NASA/ESA Hubble Space Telescope.</p> <p>Travelling through time and space with our host Doctor J a.k.a. Dr. Joe Liske.</p> <p>00:48 [Dr. J] Welcome to the Hubblecast! Today we are going to travel to the heart of a massive cluster of young stars that lies deep inside a vast nebula of gas and dust. The nebula is called NGC 3603 is located about 20,000 light-years from Earth in the Carina spiral arm of our own Milky Way galaxy.</p> <p>Now it turns out that the nebula is actually the nursery of the star cluster. It is thought that the nebula contains hundreds of</p>		<p>Image of NGC 3603</p> <p>Image explosion</p> <p>Hubblecast Logo + web site</p> <p>Presented by ESA and NASA</p> <p>TITLE Slide: Episode 9: Extreme star cluster bursts into life!</p> <p>Nametag</p> <p>Virtual studio: Dr J on camera</p> <p>NGC 3603 in bg.</p> <p>Graphic of Milky Way zooming in towards Carina arm</p>

thousands of solar masses worth of gas, and only about one million years ago, some of that gas collapsed in on itself and formed probably all of the stars in the cluster at more or less the same time in a massive burst of star formation.

Today we see the result as a glittering collection of stars surrounded by a dense cloud of hydrogen gas.

In this new detailed image from Hubble we can see thousands of young blue stars sparkling against their maternal nebula. But this is not as tranquil a place as you might think. Some of the action is still going on. The strong ultraviolet radiation and the winds from these newborn stars are shaping and sculpting the surrounding gas, carving out a huge cavity into the nebula.

02:06

[Narrator]

A team of astronomers was able to use the Hubble Space Telescope to peer into the heart of a star forming region which was first observed in 1834 by Sir John Herschel, the son of world-renowned astronomer Sir William Herschel. They were able to make detailed observations of stars whose masses differ but whose ages are similar. Because of this fact astronomers were able to study a wide range of stars at different points in their respective life cycles and make comparisons with other similar star clusters.

[music]...

02:58

[Dr. J]

The new Hubble image is full of interesting objects for astronomers to study.

Here at the top right of the image we see a handful of Bok Globules. These objects were first observed in the 1940s by astronomer Bart Bok. They are some of the coldest objects in the Universe and they are dense clouds of gas and dust (of around ten to fifty solar masses) and they are collapsing to form new stars.

Around the cluster near the densest part of the nebula we see these huge pillars of gas pointing away from cluster's core. These were shaped by the massive young cluster's stars and eventually they will be dispersed into interstellar space.

One of the most interesting objects in the image is this seemingly innocuous bright star. The star designated Sher 25 and it is actually a blue supergiant nearing the very end of its life.

Close ups of the Hubble image: cavity, stars

Image zoom

Virtual studio: Dr J on camera

Dr. J turns back to image, plays futuristic weather man, grabs top right and pulls to centre, left hand push zooms in Bok Globules.

Another left hand push zooms out. Grabs lower right, pulls to centre, left hand push zooms on lower pillar.

Left hand push zooms out. Grabs left of centre, pulls to centre, right hand push zooms on Sher 25.

04:09

[Narrator]

Astronomers think that in the not too distant future Star 25 will explode as a tremendous event like supernova 1987A which has been observed by Hubble on many occasions. In doing so it will seed space with the heavy elements necessary for planet formation. Perhaps it will even trigger a new wave of star formation in a nearby nebula.

For now though astronomers using the Hubble are interested in the stars within the massive young cluster at the heart of NGC 3603. Several stars at the cluster's core have caused astronomers to be deceived. The huge stars in the innermost regions of the cluster appeared to be far more massive than our current theoretical limits dictate. Nothing escapes the sharp eye of Hubble though as it was able to show that these stars are in fact the light from several stars blended together. They appear as one star but are actually composed of two or even three components. This agrees well with previous observations of these apparently 'heavyweight' objects as composed of several stars of around 80 to 120 solar masses each.

05:17

[Dr. J]

The new Hubble image is full of amazing detail. Not only are we seeing a whole cluster of stars just one million years after its birth. But there is also one star that is about to go supernova in a gigantic explosion that will be seen across large parts of the Galaxy. In NGC 3603 we are literally seeing the birth and death of stars right before our very own eyes.

So, this apparently picturesque stellar nursery is in fact the site of some pretty extreme astronomy!

This is Dr. J signing off for the Hubblecast.

Once again nature has surprised us beyond our wildest imagination ...

05:56

[Outro]

Hubblecast is produced by ESA/Hubble at the European Southern Observatory in Germany. The Hubble mission is a project of international cooperation between NASA and the European Space Agency.

06:12

END

Zoom on SN 1987a

Supernova explosion animation

General zoom/pan of cluster core.

Animation of binary stars.

Virtual studio: Dr J on camera