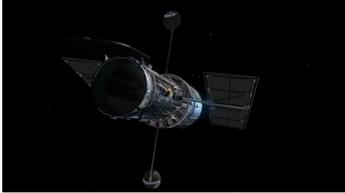




ESO, Karl-Schwarzschild-Str.2
D-85748 Garching bei München,
Germany
Telephone: +49 (0)89 3200 6855
Telefax: +49 (0)89 3200 6480
hubble@eso.org

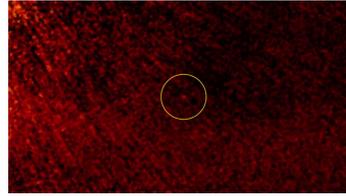
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Keywords: artist's impression, interview

Hubblecast Episode 104: Illustrating Hubble's discoveries	Visual notes
<p>00:00 [Narrator] 1. Hubble is best known for its stunning images along with its many incredible discoveries. But, sometimes the science does not come hand-in-hand with a breathtaking view of the Universe.</p> <p>Raise the curtain for the artists creating remarkable impressions of the cosmos.</p>	 
<p>00:24 2. Intro</p>	
<p>00:34 [Narrator] 3. Hubble is equipped with extremely sensitive cameras that capture light across different wavelengths: from the ultraviolet, to the optical, to the near infrared. This</p>	

enables the telescope to create the stunning and well known images.

However sometimes an astronomical discovery is no more than a tiny dot, and it takes delicate techniques and many observations to get useful information from it. Hubble's spectrographs deliver even less than dots: wiggly curves, showing the intensity of light at different wavelengths.

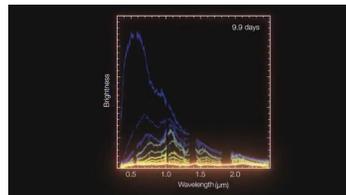


01:21

[Luis]

Hubble is a fantastic telescope, but it cannot observe everything. So it collects a lot of data in the form of spectrum, for example, something which is not exactly a "real" image, and that's why we need to step in to create these catchy illustrations and animations. And of course many other objects in the universe we can observe them, we know that they are there through a lot of mathematics and physics and all kinds of interesting conclusions that the astronomers can come up with from the data, but not exactly through amazing images.

So that's precisely how we step in, why we step in, so we can create some catchy and interesting images to precisely capture the imagination and the interest of the public.



02:05

[Narrator]

The artists working on illustrations of Hubble's discoveries have gained a great deal of experience over time. In addition, they are equipped with proper background knowledge, they ensure their illustrations and animations are as realistic as possible.



02:46

[Luis]

My personal background is in physics and astronomy, so I actually studied this. But Martin's background is in art. So we work as a team and we always interact when we create these kind of animations and illustrations — we complement each other with our skill sets.

Our team has been creating these kind of illustrations and animations for Hubble since 2000 — so it's been quite some years. I've been in this team for ten years, Martin a bit longer. So almost two decades of doing this work for Hubble.



03:20

[Narrator]

Not only do the artists working for ESA/Hubble come with years of experience, but they also collaborate with the scientists on site to make sure their art and Hubble's science are truthfully coupled together.



03:35

[Luis]

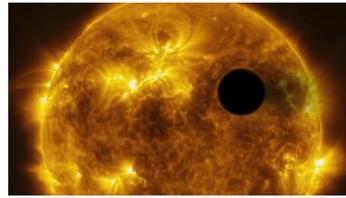
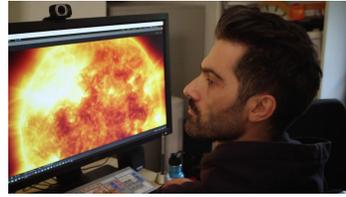
In the team we have astronomers and scientists that we work always together with. We talk to them, we discuss, we get drawings, we get input, and obviously they are the scientists that created the results we are trying to illustrate. So they usually get an early version of our animations and illustrations, they get their input — so it is a constant dialogue with the scientists, so we are not alone, definitely.



04:00

[Luis]

Frequently we have some very well-defined boundaries and conditions that we need to meet. If the star has a certain temperature that we know about, so the star has to be a certain colour. This is for sure. We cannot be ultra-creative and just create any colour in the star, in the very specific example. So if a planet is given a specific mass we know it's gonna be rocky, or if it's gonna be gaseous. So those conditions have to be met. Other than that we can have a bit of creativity but always within the physical realism, of course. We cannot go out of that.



04:36

[Narrator]

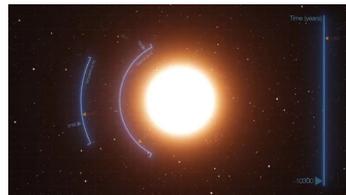
While the artists try to make the animations for Hubble as realistic as possible, astronomical phenomena and the timescales they occur over, do not always work in their favour. Galaxy collisions take millions of years, only to speed up at the very end, and stars evolve over billions of years, but end their life in seconds. This represents a true challenge for our artists!



05:09

[Luis]

Sometimes we are illustrating a few milliseconds — an explosion, and then maybe millions of years, as some other phenomenon. And we want to show it in the same animation and this sometimes can be complex. But of course those are more illustrative kind of animations.



05:32

[Narrator]

For many illustrations of astronomical discoveries we will most likely never be able to check how well they depict reality.

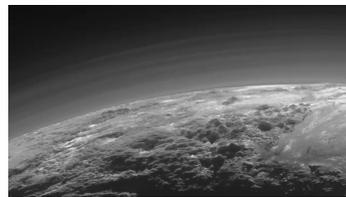
However, with the advancement of telescopes and technology, and as space probes are sent to bodies in the Solar System that have never been seen before, visual artists are sometimes provided a rare opportunity to check the accuracy of their work.



06:00

[Luis]

A nice example, was for example an illustration we made a few years ago of Pluto when we still didn't have very good images of Pluto. There were some science results — we knew that there was some methane, there was a thin atmosphere on Pluto — so we made some illustrations. And it was pretty interesting to compare them when New Horizons arrived at Pluto, a couple of years ago, and we could actually compare our own illustrations to the real images. And it was quite thrilling to see that they were very close to what we represented!



06:31

[Narrator]

Pluto's surface shows how accurately the artists at ESA/Hubble manage to illustrate reality.

As well as making the illustrations as accurate as possible, the artists have another goal: they want to thrill and intrigue, creating art that grabs the attention and interest of the viewer.



07:02

[Narrator]

With their work, Hubble's artists allow us to conceptualise and understand complex astronomical data, which might otherwise remain hidden in the



graphs and tables of practiced astronomers.



07:19

[Luis]

*We want to create catchy and interesting images
because the science is catchy and interesting!*



Ends 07:33