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<p>Hubblecast Episode 14: Hubble finds first organic molecule on extrasolar planet</p> <p>FOR IMMEDIATE RELEASE 19:00 (CET)/01:00 PM EDT 19 March, 2008</p>	
<p>00:00 [Visual starts]</p> <p>[Narrator] 00:00 The NASA/ESA Hubble Space Telescope has made the first detection ever of an organic molecule in a planet orbiting another star. This breakthrough is an important step in eventually identifying signs of life on a planet outside the Solar System.</p> <p>00:17</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. In Episode 12 we reported on the discovery of hazes and a red sunset in the extrasolar planet HD 189733b. Now, an entirely new set of remarkable Hubble observations of the same planet have shown that its atmosphere also contains lots of methane.</p> <p>Now methane is one of the main constituents of natural gas. This is the first time that an organic molecule has been found on a planet outside of our own Solar System.</p>	<p>Artist's impression of methane bearing exoplanet.</p> <p>Image explosion</p> <p>Hubblecast Logo + web site</p> <p>Presented by ESA and NASA</p> <p>TITLE Slide: Episode 14: Hubble finds first organic molecule on extrasolar planet</p> <p>Nametag</p> <p>Virtual studio: Dr J on camera</p> <p>Images of exoplanets</p>

<p>01:23 [Narrator] HD 189733b is located 63 light-years away in the constellation of Vulpecula, the Little Fox. This planet is so massive and so hot it is considered to be an unlikely host for life. It is a “hot Jupiter”-type extrasolar planet and is so close to its parent star that it only takes just over two days to complete an orbit. The discovery comes after extensive observations made in May 2007 with Hubble’s Near Infrared Camera and Multi-Object Spectrometer. It also confirms the existence of water molecules in the planet’s atmosphere, a discovery made originally by NASA’s Spitzer Space Telescope in 2007.</p> <p>02:10 [Dr. J] Under the right circumstances methane can play a key role in prebiotic chemistry – the chemical reactions that are necessary to form life as we know it.</p> <p>On Earth, methane, which consists of hydrogen and carbon, can be produced by lots of different things. From manmade sources, such as wasteland fields or as a by-product of energy generation, to natural sources such as termites, the oceans wetland environments, as well as livestock.</p> <p>BUT the temperature in the atmosphere of this gaseous planet is a scorching 900 degrees Celsius, and so it’s absolutely impossible for life as we know it can exist there. In other words, it’s pretty unlikely that there are cows on this planet. Instead, the methane is probably produced by some complex chemical process in an atmosphere that we don’t yet fully understand.</p> <p>03:06 [Narrator] The new measurements are an important step towards our ultimate goal of determining the conditions, such as temperature, pressure, winds, clouds, and the chemistry on planets where life could exist.</p> <p>03:20 [Dr. J] It’s lucky alignment between the Earth, the extrasolar planet and its parent star that makes this work possible. When the planet moves in front of the star as from Earth, then some small fraction of the light from the star has to pass through the atmosphere of the planet before being captured by Hubble.</p> <p>Now in this way, the chemicals in the atmosphere of the planet can stamp their unique fingerprints onto the light. And astronomers can then see this fingerprints in the spectrum of the star.</p>		<p>Zooming to HD 189733</p> <p>Dr. J in a landscape.</p> <p>Close-up on extrasolar planet</p> <p>Imaginary extrasolar planets</p> <p>Planet transiting the parent star</p>
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03:50

[Narrator]

By studying the thousands upon thousands of 'fingerprints' in the stellar spectrum left by different chemicals in the planet's atmosphere, Hubble astronomers can work out its composition. The discovery of methane was a surprise to many. Astronomers are also intrigued by the amount of methane detected in the planet's atmosphere, much larger than any theoretical predictions.

04:12

[Dr. J]

The ultimate goal of studies like these is to identify prebiotic molecules in the atmospheres of planets in the "habitable zones" around other stars, that is in the zone where temperatures are just right so the water can be liquid and doesn't freeze or evaporate away. Who knows what else we will find?

This is Dr. J signing off for the Hubblecast.

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

04:42

[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.

05:03

END

Artist's impression of the extrasolar planet

Virtual studio: Dr J on camera

Cow and bad green cloud of bad smell