



Key words: Exoplanets, VLT, La Silla, ESO telescopes.

<p>ESOCast Episode 218: The Stranger Exoplanets</p>	
<p>00:00 [Visual starts] [Narrator] 1. Until now, astronomers have found about 4000 confirmed planets outside our Solar System. Of these, Earth-like exoplanets often make headlines...</p>	<p>00:00</p>
<p>00:18 [Narrator] 2. ...such as Proxima b, the closest rocky planet to our Solar System. This Earth-like exoplanet was found with the HARPS instrument on ESO's 3.6-metre telescope at La Silla Observatory.</p>	
<p>00:35 [Narrator] 3. But ESO telescopes have helped find plenty of other exciting worlds, some so exotic you would not dare to compare them with Earth.</p> <p>Meet... The Stranger Exoplanets...</p>	
<p>00:51 Special Intro <i>The Stranger Exoplanets</i></p>	
<p>01:02 [Narrator] 4. Let's start with WASP-19b or, as we like to call it, the inferno world with titanium skies.</p>	

<p>01:13 [Narrator] 5. This hot, Jupiter-sized planet has an atmosphere with a rather strange chemical composition. It was the first exoplanet where astronomers detected titanium oxide, thanks to ESO's Very Large Telescope and its FORS2 instrument.</p>	
<p>01:32 [Narrator] 6. This element acts as a heat absorber in the atmosphere of an inferno world. It can prevent heat from entering or escaping through the atmosphere, leading to a thermal inversion. So, on WASP-19b, the temperature could be higher in the upper atmosphere and lower further down – unlike what we see on our Solar System planets.</p>	
<p>02:00 [Narrator] 7. We move on from this upside-down world, to present you... the lonely planet.</p>	
<p>02:08 [Narrator] 8. A few years ago, ESO telescopes and their instruments helped identify an object that could be a planet without any ties to a star. A free-floating world that, rather than move around a star, roams rogue through space.</p>	
<p>02:25 [Narrator] 9. It could be that these planets have formed like other worlds around a parent star. But then have been kicked out of their home system! So, our lonely planet may well be an orphaned world.</p>	
<p>02:42 [Narrator] 10. Our next strange exoplanet is not orphaned at all: in fact, it hung on to its parent star through thick and thin!</p>	

<p>02:54 [Narrator] 11. The evaporating exoplanet is the first giant planet ever found to be orbiting a white dwarf, the remnant of a Sun-like star. Astronomers think that this exoplanet survived the transition of its parent solar-type star to a red giant and then to a white dwarf.</p>	
<p>03:15 [Narrator] 12. But that's not all that is strange about this planet.</p> <p>Observations with ESO's X-shooter on the VLT have hinted that this giant exoplanet is evaporating.</p> <p>It orbits the hot white dwarf at close range and the extreme ultraviolet radiation from the star strips away, part of the planet's atmosphere, forming a disc around the white dwarf.</p>	
<p>03:42 [Narrator] 13. Our final alien world is even stranger: WASP-76b, an ultra-hot giant exoplanet with a twist.</p>	
<p>03:53 [Narrator] 14. This planet orbits very close to its parent star, receiving thousands of times more radiation from it than the Earth does from the Sun.</p>	
<p>04:05 [Narrator] 15. It is also tidally locked, meaning it has a day side that always faces the star, and a much cooler, night side.</p>	
<p>04:16 [Narrator] 16. The temperature difference on the planet is extreme. On the day side it is above 2400</p>	

<p>degrees Celsius and everything, including metals, is vapourised. This is where things get really weird.</p>	
<p>04:31 [Narrator] 17. Using the ESPRESSO instrument on the VLT- astronomers found that iron vapour from the ultra-hot day side is carried to the cooler nightside. There, it condenses into iron droplets.</p>	
<p>04:47 [Narrator] 18. In other words, this extreme exoplanet has a day side where metals evaporate and a nightside where... it rains iron!</p>	
<p>04:59 [Narrator] 19. Will we find even stranger worlds? Well, nobody knows. But astronomers keep on hunting for exoplanets. Stay tuned for future discoveries with ESO telescopes!</p>	
<p>05:19 [Outro]</p>	<p><i>Produced by ESO, the European Southern Observatory. Reaching new heights in Astronomy.</i></p>