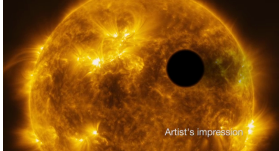

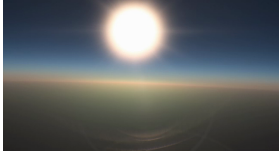
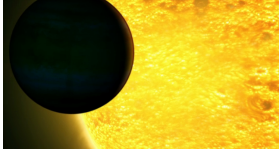
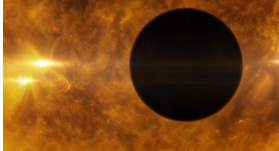



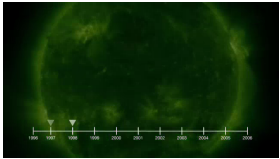

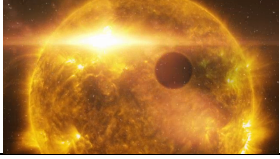


<p>Hubblecast episode 56: Dramatic change spotted on a faraway planet</p>		
<p>00:00 [Narrator] Astronomers using the NASA/ESA Hubble Space Telescope have seen dramatic changes in the atmosphere of a faraway planet.</p> <p>Just after a violent stellar flare bathed it in intense X-ray radiation, the scientists detected the planet's atmosphere furiously evaporating away.</p> <p>These violent events 63 light-years from Earth have given astronomers their first ever glimpse of the changing weather and climate on a planet outside our own Solar System.</p>		
		
<p>01:00 [Narrator] Planet HD 189733b has a blue sky, but that's where the similarities with Earth end. It's a huge gas giant similar to Jupiter, but it lies extremely close to its star, much closer than any planet in the Solar System lies to the Sun.</p> <p>This makes its climate exceptionally hot, with temperatures exceeding 1000°C.</p>		
<p>01:29 [Narrator] A team of scientists used Hubble to observe the planet in 2010 and again in 2011, as it was silhouetted against its parent star.</p> <p>While backlit in this way, a planet's atmosphere imprints its signature on the starlight, allowing astronomers to decode what is happening on scales that would be far too tiny to image directly.</p>		
<p>00:00 [Narrator] The first set of observations actually... didn't show much at all.</p> <p>The scientists had hoped to confirm what they had seen once before on another planet: the upper layers of the atmosphere gradually boiling off under the intense assault of the starlight.</p> <p>But Hubble's first observations of HD 189733b showed no trace of the atmosphere escaping.</p>		

<p>02:21 [Narrator] But if the first set of observations was pretty boring, the second set was anything but.</p> <p>Just before they began to observe with Hubble for the second time, the Swift satellite detected a huge flare coming from the surface of the star, giving off powerful radiation including atmosphere-frying X-rays.</p> <p>This was like a more violent version of the solar flares that disrupt communication satellites here on Earth.</p>		
<p>02:48 [Narrator] When the planet slid into view a few hours later, the changes were startling. Where they had seen a slumbering planet in 2010, they saw its atmosphere furiously boiling away in 2011.</p> <p>A plume of gas was evaporating off the planet, which was losing at least 1000 tonnes of gas from its atmosphere every second.</p>		
<p>03:12 [Narrator] The team believes that the spike in X-rays from the flare can probably explain the atmospheric evaporation spotted with Hubble. This type of radiation has enough energy to accelerate the particles in the atmosphere, which would drive them off the planet.</p> <p>There are other intriguing possibilities, though, which are all linked to the star's activity.</p>		
<p>03:36 [Narrator] For example it might be gradual seasonal variations in X-rays from the star, rather than the sudden effect of the flare, which drove the change between 2010 and 2011. This would be similar to the Sun's 11-year sunspot cycle.</p>		
<p>03:57 [Narrator] The team have fresh observations planned with Hubble and ESA's XMM-Newton X-ray space telescope to help nail down exactly what triggered the atmosphere's evaporation.</p>		
<p>04:10 [Narrator] But regardless of the cause, this is the first time ever scientists have observed a clear change in an exoplanet's atmosphere.</p>		
<p>05:18 [ENDS]</p>		