
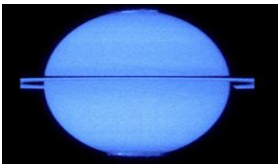
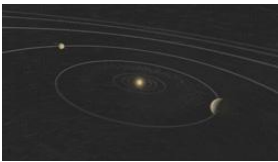





<p><b>Hubblecast Episode 33: Saturn's stunning double show</b>  <b>EMBARGOED UNTIL 16:00 (CET)/10:00 am EST 11 Feb, 2010</b></p>	
<p><b>00:00</b>  <b>[Visual starts]</b></p> <p><b>00:01</b>  <b>[Narrator]</b>      Researchers using the NASA/ESA Hubble Space Telescope recently took advantage of a rare opportunity to record Saturn when its rings are edge-on, resulting in a unique movie featuring both of the giant planet's poles. Saturn is only in this position every 15 years or so and this favourable orientation has allowed a sustained study of the two beautiful and dynamic aurorae, Saturn's own northern and southern lights.</p> <p><b>00:45</b>  <b>[Woman]</b>      This is the Hubblecast! News and images from the NASA/ESA Hubble Space Telescope.</p> <p><b>00:57</b>  <b>[Dr. J]</b>      Hello and welcome to the Hubblecast. It takes Saturn nearly 30 years to orbit our Sun, so chances to image both poles are rare. Hubble has been snapping pictures of Saturn's aurora since 1990, but 2009 brought the unique opportunity for Hubble</p>	    <p>Standard Hubblecast Sequence</p>  

to image Saturn with its rings edge-on and both poles in view, allowing for spectacular shots of its active aurorae. As Saturn was approaching its equinox, both poles were equally illuminated by the Sun's ray

**01:30**

**[Narrator]**

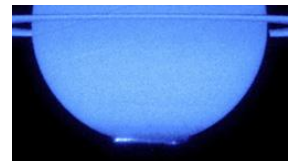
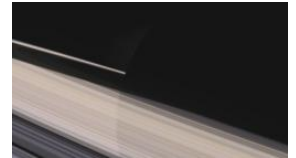
An enormous and grand ringed planet, Saturn is certainly one of the most intriguing bodies orbiting the Sun. Hubble has now taken a fresh look at the fluttering aurorae that light up both of Saturn's poles. These recent observations go well beyond just a still image and have allowed researchers to monitor the behaviour of both Saturn's poles in the same shot over a sustained period of time. The movie they created from the data collected over several days during January and March 2009, has aided astronomers studying both Saturn's northern and southern aurorae. Given the rarity of such an event, this new footage will likely be the last and best equinox movie that Hubble captures of our planetary neighbour.

**02:17**

**[Dr. J]**

Despite its remoteness, the Sun is still Saturn's parent star and, as we all know, a parent's influence is far reaching. The Sun constantly emits particles that reach all the planets of the Solar System as the solar wind. When this electrically charged stream gets close to a planet with a magnetic field, like Saturn or the Earth, the field traps the particles, bouncing them back and forth between its two poles.

**02:46**



**[Narrator]**

A natural consequence of the shape of the planet's magnetic field, a series of invisible "traffic lanes" exist between the two poles along which the electrically charged particles are confined as they oscillate between the poles. The magnetic field is stronger at the poles and the particles tend to concentrate there, where they interact with atoms in the upper layers of the atmosphere, creating aurorae, the familiar glow that the inhabitants of the Earth's polar regions know as the northern and southern lights.

**03:21**

**[Dr. J]**

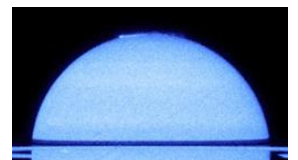
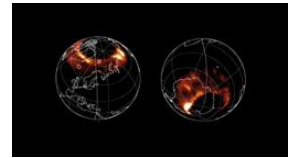
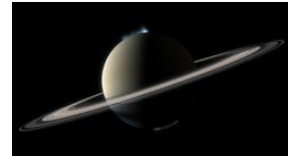
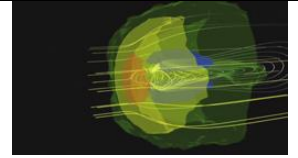
At first glance the light show of Saturn's aurorae appears symmetrically at the two poles. However, analysing the new data in greater detail, astronomers have discovered some subtle differences between the northern and southern aurorae, which reveal important information about Saturn's magnetic field.

**03:41**

**[Narrator]**

The northern auroral oval is slightly smaller and more intense than the southern one, implying that Saturn's magnetic field is not equally distributed across the planet; it is slightly uneven and stronger in the north than the south. As a result, the electrically charged particles in the north are accelerated to higher energies as they are fired toward the atmosphere than those in the south. This confirms a previous result obtained by the space probe Cassini, in orbit around the ringed planet since 2004.

**04:16**



**[Dr. J]**

These dramatic light shows observed by Hubble on Saturn are not only charming features, but they might teach us something about our own planet and its magnetic field. This is Dr.J signing off for the Hubblecast. Once again, nature has surprised us beyond our wildest imagination.

**END**



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.

Credits