

# Saturn's atmosphere shares strange feature with Earth, say scientists

February 10 2006

---



A feature of the Earth's atmosphere which has long puzzled scientists is replicated in the atmosphere of Saturn, according to new research.

Saturn, like Earth, produces electron beams which not only accelerate towards its auroral region but also away from it, say scientists this week in *Nature*. These 'anti-planetward' electrons puzzle scientists because they do not produce auroral light and do not fit into the current understanding of how auroras, which are usually found around a planet's poles, are created.

Auroras are an effect of light emitted from the upper atmosphere. The aurora on Earth, sometimes known as the Northern Lights, is a bright

and colourful glow sometimes seen in the night sky in parts of the northern hemisphere. Auroras are usually generated when atmospheric atoms become excited by the electrons that are accelerating towards the planet.

The fact that there are also anti-planetward auroral electrons on Saturn just as on Earth, suggests that such electrons are a universal feature of all auroras. It was previously unclear whether anti-planetward electrons were a unique feature of the aurora on Earth. Auroras similar to the one on Earth are found on most planets in our Solar System.

Professor Michele Dougherty, of the Space and Atmospheric Physics group at Imperial College London and one of the authors of the research, said: "Auroras are still very mysterious and we don't fully understand what the connection is between the auroras and the electrons accelerating away from the Earth. The fact that we have now observed the same thing happening on Saturn means that we are even more curious about why this is taking place."

Scientists discovered anti-planetward electrons on Saturn using measurements taken by the Magnetospheric Imaging Instrument on the Cassini spacecraft. Magnetic field data from the magnetometer onboard Cassini was used to analyse the electron beams and Professor Dougherty is Principal Investigator for the magnetometer.

Source: Imperial College London

Citation: Saturn's atmosphere shares strange feature with Earth, say scientists (2006, February 10) retrieved 26 April 2024 from <https://phys.org/news/2006-02-saturn-atmosphere-strange-feature-earth.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.