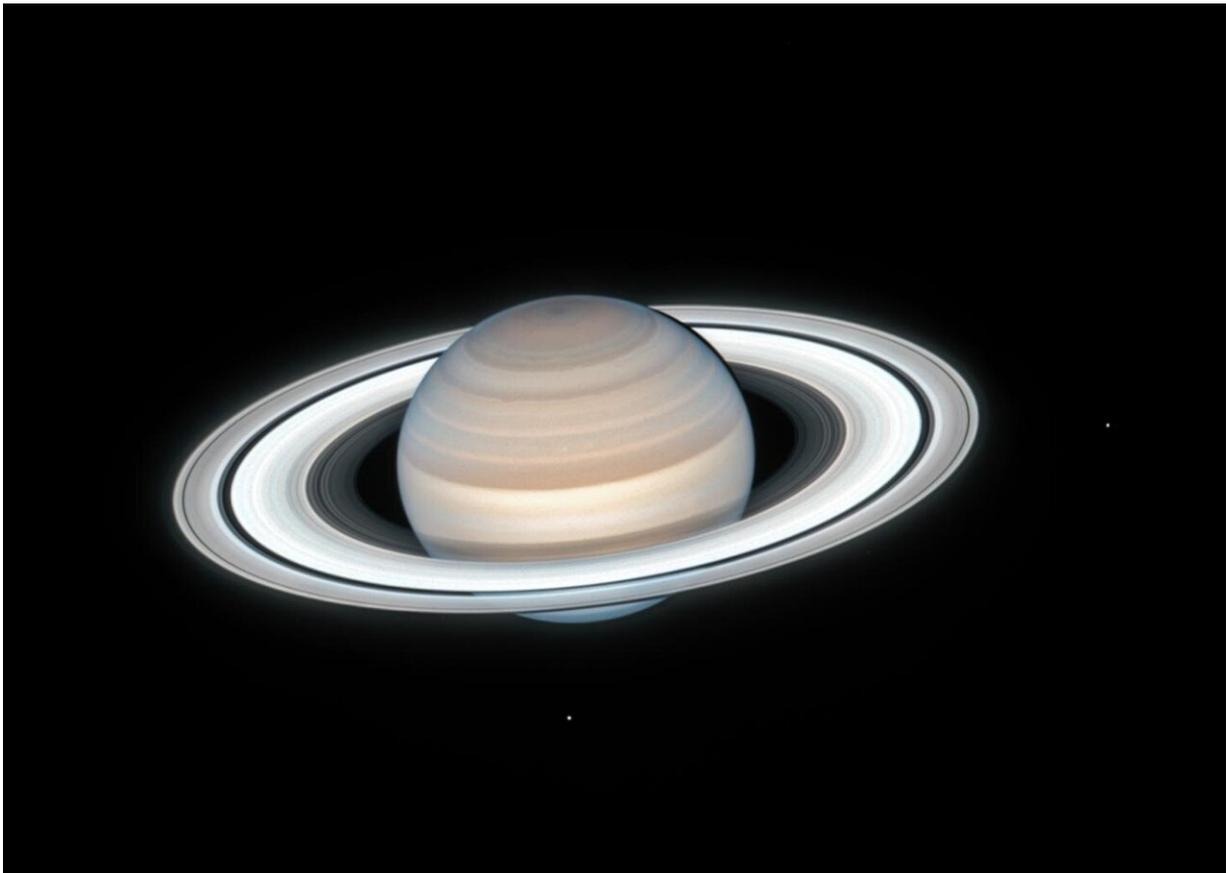


Hubble Space Telescope captures summertime on Saturn

July 23 2020



NASA's Hubble Space Telescope captured this image of Saturn on July 4, 2020. Two of Saturn's icy moons are clearly visible in this exposure: Mimas at right, and Enceladus at bottom. This image is taken as part of the Outer Planets Atmospheres Legacy (OPAL) project. OPAL is helping scientists understand the atmospheric dynamics and evolution of our solar system's gas giant planets. In Saturn's case, astronomers continue tracking shifting weather patterns and storms. Credit: NASA, ESA, A. Simon (Goddard Space Flight Center), M.H.

Wong (University of California, Berkeley), and the OPAL Team

Saturn is truly the lord of the rings in this latest snapshot from NASA's Hubble Space Telescope, taken on July 4, 2020, when the opulent giant world was 839 million miles from Earth. This new Saturn image was taken during summer in the planet's northern hemisphere.

Hubble found a number of small atmospheric storms. These are transient features that appear to come and go with each yearly Hubble observation. The banding in the northern hemisphere remains pronounced as seen in Hubble's 2019 observations, with several bands slightly changing color from year to year. The ringed planet's atmosphere is mostly hydrogen and helium with traces of ammonia, methane, water vapor, and hydrocarbons that give it a yellowish-brown color.

Hubble photographed a slight reddish haze over the northern hemisphere in this color composite. This may be due to heating from increased sunlight, which could either change the atmospheric circulation or perhaps remove ices from aerosols in the atmosphere. Another theory is that the increased sunlight in the summer months is changing the amounts of photochemical haze produced. "It's amazing that even over a few years, we're seeing [seasonal changes](#) on Saturn," said lead investigator Amy Simon of NASA's Goddard Space Flight Center in Greenbelt, Maryland. Conversely, the just-now-visible south pole has a blue hue, reflecting changes in Saturn's winter hemisphere.

Hubble's sharp view resolves the finely etched concentric ring structure. The rings are mostly made of pieces of ice, with sizes ranging from tiny grains to giant boulders. Just how and when the rings formed remains one of our solar system's biggest mysteries. Conventional wisdom is that they are as old as the planet, over 4 billion years. But because the rings

are so bright—like freshly fallen snow—a competing theory is that they may have formed during the age of the dinosaurs. Many astronomers agree that there is no satisfactory theory that explains how rings could have formed within just the past few hundred million years. "However, NASA's Cassini spacecraft measurements of tiny grains raining into Saturn's atmosphere suggest the rings can only last for 300 million more years, which is one of the arguments for a young age of the ring system," said team member Michael Wong of the University of California, Berkeley.

Two of Saturn's icy moons are clearly visible in this exposure: Mimas at right, and Enceladus at bottom.

This image is taken as part of the Outer Planets Atmospheres Legacy (OPAL) project. OPAL is helping scientists understand the atmospheric dynamics and evolution of our solar system's gas giant planets. In Saturn's case, astronomers continue tracking shifting weather patterns and storms.

Provided by NASA's Goddard Space Flight Center

Citation: Hubble Space Telescope captures summertime on Saturn (2020, July 23) retrieved 27 April 2024 from

<https://phys.org/news/2020-07-hubble-space-telescope-captures-summertime.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.