



SATURN'S RING: SCIENCE & TECHNOLOGY

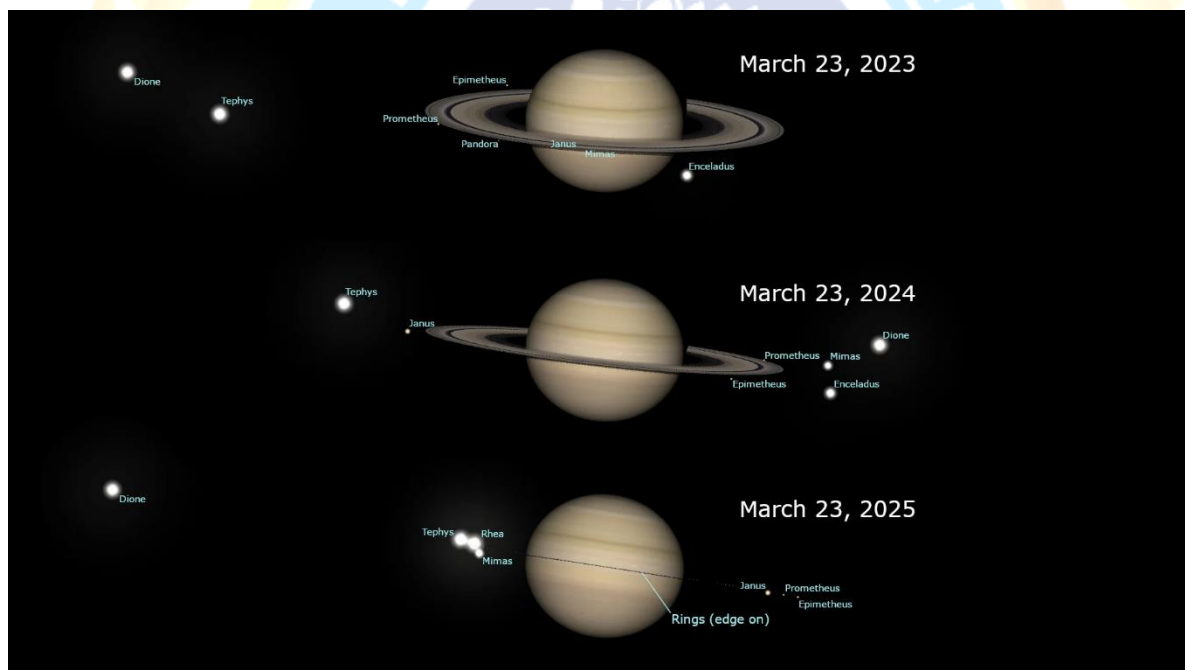
NEWS: Saturn's rings set to 'disappear' briefly in March 2025

WHAT'S IN THE NEWS?

In 2025, Saturn's rings will briefly disappear from view due to its alignment with Earth. This happens due to the change in orientation of the rings around Saturn as it orbits the Sun

Saturn and Its Rings

- **Optical Illusion of Disappearance:** Saturn's rings appear to "disappear" from Earth every 13-15 years due to Saturn's tilt (26.73 degrees) and orbit around the Sun (29.4 Earth years). This next occurs in March 2025.
- **Ring Structure & Gradual Loss:** Saturn's rings, composed of ice and rock, are thin (tens of meters thick), losing material through "ring rain" (water equivalent to an Olympic pool every half hour), which may result in their complete disappearance in ~300 million years.
- **Comparative Ring Systems:** Saturn's rings are expansive, unlike faint ringlets around other gas giants. Divided into seven main sections, they stretch nearly five times Earth's diameter.



Planet Saturn - Characteristics

- **Position & Size:** Sixth planet from the Sun, second-largest in the Solar System, with a diameter of ~116,464 km.
- **Composition:** Has a rocky core, surrounded by metallic hydrogen, liquid hydrogen and helium, and an outer gaseous layer.
- **Storm Systems:** Known for intense storms like the Great White Spot, occurring roughly every Saturnian year (~29 Earth years).



- **Shape:** Oblate shape due to rapid rotation; flattened poles, bulging equator.
- **Mass:** Mass is about 95 times that of Earth.
- **Orbit:** Orbits the Sun at an average of 9.59 AU (1,434 million km), with an orbital period of ~29.45 Earth years.

Saturn's Moons

- **146 Moons Identified:** 63 officially named, including Titan, the largest, notable for its dense atmosphere and liquid hydrocarbon lakes.

Saturn Exploration Missions

1. **Pioneer 11 (1979):** First spacecraft to fly by Saturn; discovered F ring and a new moon.
2. **Voyager 1 & 2 (1980, 1981):** Captured detailed images, revealed complex ring structure; Voyager 1 focused on Titan, while Voyager 2 continued to Uranus and Neptune.
3. **Cassini-Huygens (2004-2017):** Orbiter and Titan lander; discovered seven new moons, studied Saturn and rings extensively. Huygens probe landed on Titan, the farthest landing from Earth.

Future Mission

- **Dragonfly (Planned for 2028, Arrival by 2034):** A rotorcraft lander for Titan, aims to explore Titan's chemistry and search for signs of life.

Source: https://www.business-standard.com/world-news/saturn-s-rings-set-to-disappear-for-briefly-in-march-2025-explained-124090900442_1.html