

Key Facts about Parker Solar Probe

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Parker Solar Probe Latest News

Parker Solar Probe: Mission to 'Touch' the Sun

Why in the News?

- On **March 22, 2025**, NASA's **Parker Solar Probe** approached the **Sun more closely**, reaching **6 million km** from its surface.
- The **probe, launched in 2018**, has set the record for being the **closest spacecraft to the Sun** and will continue making **24 close approaches** to study solar activity.

About the Parker Solar Probe

- **Launched by NASA on August 12, 2018**, from **Cape Canaveral, Florida**.
- Designed to **study the Sun's corona, solar wind, and magnetic field** to understand **space weather and its effects on Earth**.

- Moves in a **highly elliptical orbit**, using **Venus’ gravity assist** to spiral gradually closer to the **Sun**.
- **Speed**: The fastest human-made object, reaching **692,000 km/hr**.
- **Closest approach**: It will come as close as **3.83 million miles (6.16 million km)** from the **Sun’s surface**, about **7 times closer than any previous spacecraft**.

Key Features of Parker Solar Probe

Feature	Details
Heat Shield	A 4.5-inch-thick (11.43 cm) carbon-composite shield , capable of withstanding temperatures of 1,377°C (2,500°F) .
Scientific Instruments	- FIELDS: Measures electric & magnetic fields in the corona. - ISoIS (Integrated Science Investigation of the Sun): Observes energetic solar particles responsible for solar storms. - SWEAP (Solar Wind Electrons, Alphas & Protons): Records solar wind properties. - WISPR (Wide-Field Imager for Solar Probe): Captures high-resolution images of the corona.
Faraday Cup	An external instrument made of molybdenum alloy that directly measures solar wind ions & electrons in extreme heat.
Mission Duration	Designed to complete 24 orbits around the Sun , with a mission extending into the 2030s .

Scientific Breakthroughs from Parker Solar Probe

- **Discovery of “Magnetic Switchbacks”**: The probe found **sudden reversals in the solar wind’s magnetic field**, which might help **explain how the solar wind accelerates**.
- **Detection of Dust-Free Zones**: Contrary to earlier beliefs, the probe found **dust-free pockets near the Sun**, altering our understanding of **solar system dust distribution**.
- **First ‘Touch’ of the Sun (2021)**: In **April 2021**, the probe **entered the Sun’s corona**, crossing the **Alfvén surface**—a boundary beyond which **solar wind escapes into space**.

Comparison: Parker Solar Probe vs. Aditya-L1 (India’s Solar Mission)

Feature	Parker Solar Probe	Aditya-L1 (ISRO)
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Launched by	NASA (2018)	ISRO (2023)
Mission type	In-situ study (flies into the corona)	Remote observation (placed at Lagrange Point L1)
Closest approach	6.1 million km from the Sun	1.5 million km from Earth
Main objective	Study coronal heating, solar wind, and magnetic fields	Study solar flares, CMEs, and magnetic storms
Scientific payloads	4 major instruments	7 instruments including coronagraph

Parker Solar Probe FAQs

Q1. What is the Parker Solar Probe?

Ans. The Parker Solar Probe is a NASA spacecraft launched in 2018 to study the Sun's outer atmosphere (corona) and solar wind. It is the closest spacecraft to the Sun.

Q2. Why is the Parker Solar Probe significant?

Ans. It helps scientists understand solar activity, space weather, and its impact on Earth, satellites, and astronauts.

Q3. What is the mission objective of the Parker Solar Probe?

Ans. The mission aims to study the Sun's corona, solar wind acceleration, and magnetic fields to improve space weather predictions.

Q4. How close will the Parker Solar Probe go to the Sun?

Ans. The probe will travel within 6.16 million km of the Sun's surface, enduring extreme temperatures up to 1,377°C.

Q5. How does the Parker Solar Probe survive extreme heat?

Ans. It has a 4.5-inch-thick carbon-composite heat shield that protects it from the Sun's intense heat and radiation.

Source: [TH](#)

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