Parker solar probe

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In news- Recently NASA's Parker solar probe became the first spacecraft to fly through the outer atmosphere of the Sun.

Key updates—

- It **flew through the Sun's upper atmosphere 'Corona'** and sampled magnetic fields and particles there.
- The data beamed back by the probe released by Nasa showed that the **probe came as close as 1.3 crore kilometres to the surface of the Sun.**
- The **spacecraft used its Wide-field Imager for Parker Solar Probe (WISPR)** to capture unique structures known as coronal streamers as they passed through the atmosphere of the Sun.
- At one point, as the spacecraft dipped to just beneath 1.5 crore kilometres from the Sun's surface, it **transited a feature in the corona called a pseudo streamer.**
- **Pseudo Streamers are massive structures that rise above the Sun's surface** and can be seen from Earth during solar eclipses.
- Passing through the pseudo streamer was like flying into the eye of a storm.

About the Parker probe-

- It is the first-ever mission to "touch" the Sun.
- The spacecraft, about the size of a small car, travels directly through the Sun's atmosphere.
- It was launched aboard a **Delta IV-Heavy rocket from Cape Canaveral, on Aug. 12, 2018.**
- The Probe **uses Venus' gravity** during seven flybys over nearly seven years to gradually bring its orbit closer to the Sun.
- It is **part of NASA's Living With a Star program** to

explore aspects of the Sun-Earth system that directly affect life and society.

- The spacecraft and instruments are protected from the Sun’s heat by a 4.5-inch-thick carbon-composite shield, which needs to withstand temperatures outside the spacecraft that reach nearly 2,500 F.
- The **primary science goals for the mission** are to trace how energy and heat move through the solar corona and to explore what accelerates the solar wind as well as solar energetic particles.
- It carries four instrument suites designed to study magnetic fields, plasma and energetic particles, and image the solar wind.

- In April 2021, Parker crossed what is termed the **Alfvén critical boundary (**Alfvén is the outer edge of the corona).
- It is the point where solar material that is normally bound to the Sun by gravity and magnetic forces breaks free to stream out across space.