## Parker solar probe

December 20, 2021

<u>In news-</u> 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.