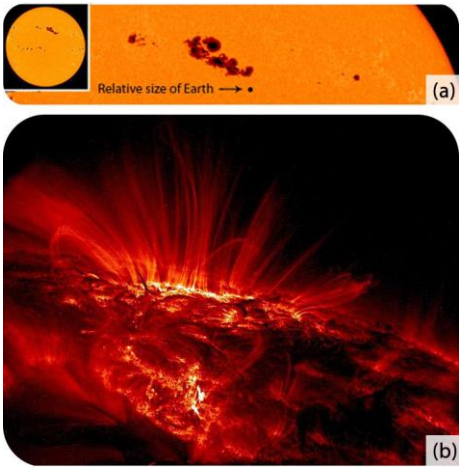
Surface Features of the Sun

Sunspots

- **Sunspot:** Cool, dark area on the Sun's surface that have lower temperatures than surrounding areas.
- Located where loops of the Sun's magnetic field break through the surface.
- Sunspots usually occur in pairs. They also appear in 11-year cycles.
- Smooth transfer of heat from lower layers of the Sun is disrupted. Sunspots are therefore cooler, darker, and marked by intense magnetic activity.
- When loop of Sun's magnetic field breaks through the surface, a sunspot is created where the loop comes out and where it goes back in again.

Study Tip

Remember the acronym SSS—Sunspots, Solar Flares, Solar Prominences—as the surface features of the sun.



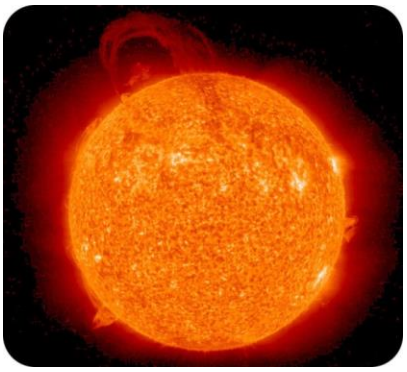
(a) Sunspots (b) A close-up of a sunspot taken in ultraviolet light

Solar Flares

- **Solar Flare:** A violent explosion on the Sun's surface.
- Loop of the sun's magnetic field snaps and breaks.
- Strong solar flares can turn into a coronal mass ejection. These release highly energetic particles that make up **solar wind**.
- Solar wind sends out large amounts of harmful radiation.

Solar Prominences

- **Solar Prominence:** Plasma loop flowing between sunspots.
- Plasma flows along a loop of the Sun's magnetic field from sunspot to sunspot. Forms a glowing arch that reaches thousands of kilometers into the Sun's atmosphere.
- Can last lengths of time ranging from a day to several months.
- Visible during a total solar eclipse.



Concept Check

- What are sunspots? Why do you see them in pairs?
- What are solar flares? How are they related to solar winds?
- What are solar prominences?