

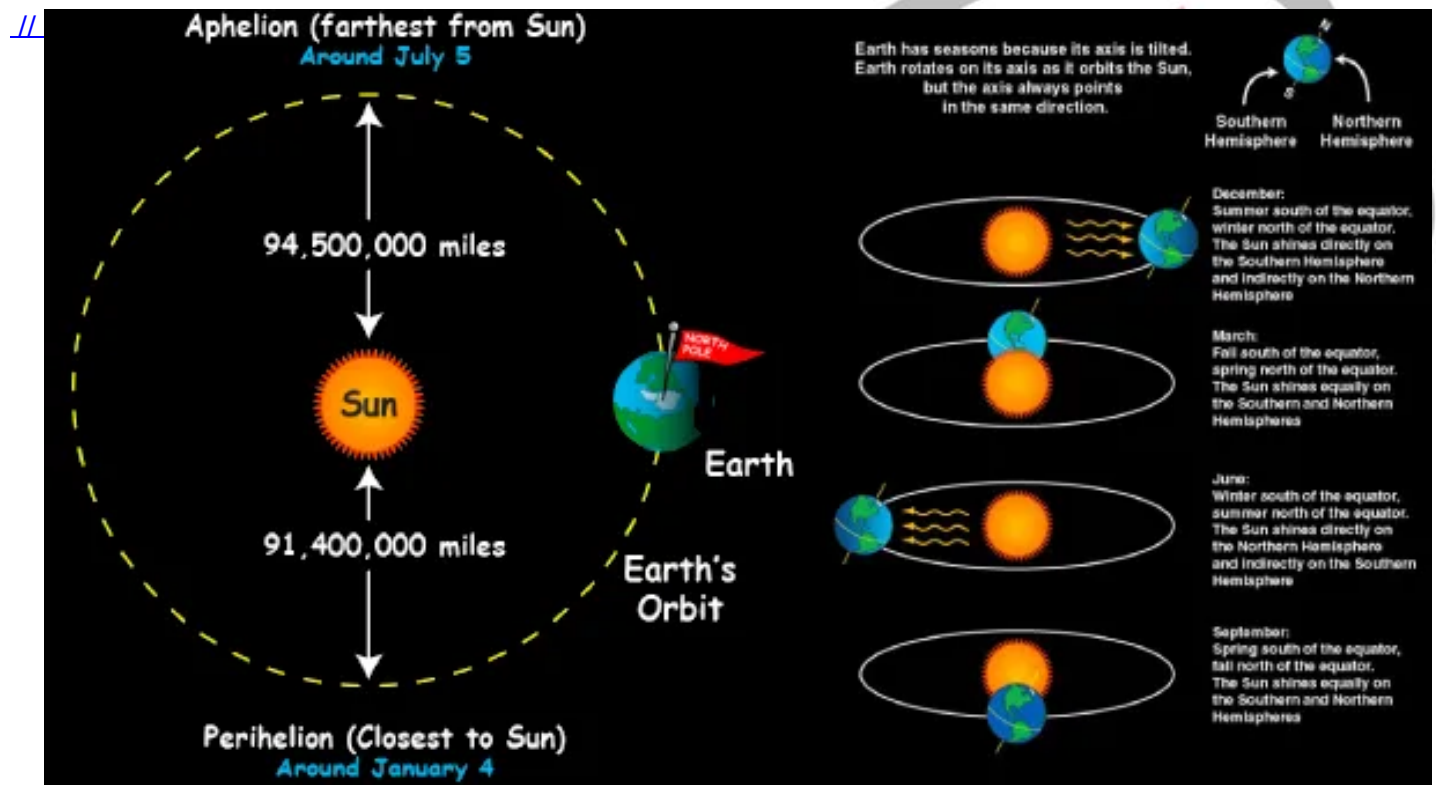


Aphelion

[Source: IE](#)

Why in News?

Recently, on **5th July 2024**, Earth reached the **farthest point in its elliptical orbit** around the sun called **aphelion**. Earth moves around the sun in elliptical orbit and thus its distance from the sun fluctuates slightly throughout the year.



What is Aphelion?

- **About:** Aphelion refers to the point in Earth's orbit when it is farthest from the Sun, occurring around 3 to 6th July each year (According to NCERT, Aphelion is on 4th July).
 - The Earth's perihelion and aphelion **dates are not fixed** due to **variations in its orbit eccentricity**.

| <u>Event</u> | <u>Year</u> | <u>Date/Time</u> | <u>Distance(in AU)</u> |
|--------------|-------------|------------------|------------------------|
| Aphelion | 2015 | Jul 6/1940 UT | 1.0166 |
| Perihelion | 2016 | Jan 2/22:49 UT | 0.9833 |
| Aphelion | 2016 | Jul 4/16:24 UT | 1.0168 |
| Perihelion | 2017 | Jan 4/14:18 UT | 0.9833 |
| Aphelion | 2017 | Jul 3/20:11 UT | 1.0167 |
| Perihelion | 2018 | Jan 3/5:35 UT | 0.9832 |
| Aphelion | 2018 | Jul 6/16:47 UT | 1.0167 |
| Perihelion | 2019 | Jan 3/5:20 UT | 0.9833 |
| Aphelion | 2019 | Jul 4/22:11 UT | 1.0168 |
| Perihelion | 2020 | Jan 5/7:48UT | 0.9832 |
| Aphelion | 2020 | Jul 4/11:35 UT | 1.0167 |

- At this juncture, the distance between Earth and the Sun extends to approximately **152.5 million kilometres**.
- **Perihelion: At Perihelion, Earth is closest to the Sun, occurring around January 3 annually, with a distance of approximately 147.5 million kilometres.**

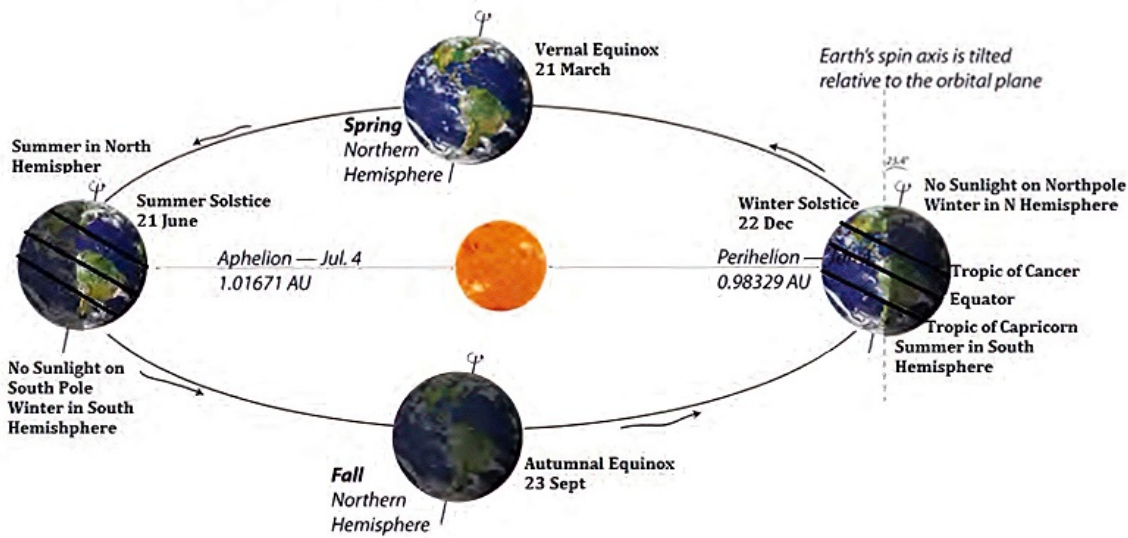
▪ Significance of Aphelion:

- **Variation in Solar Radiation:** During early July, Earth's aphelion slightly reduces the sunlight reaching India, but this has a **minor impact on temperatures**.
 - **Seasonal changes**, due to Earth's tilt, are much more important. The **difference in solar radiation** caused by Earth's elliptical orbit is only about **3%**, showing that seasonal factors are the main influence on India's temperatures, even at aphelion.
- **Stability of the Orbit: The aphelion is a natural consequence of Earth's elliptical orbit, which is a result of the gravitational interactions between the planets. Maintaining this slightly elliptical orbit is crucial for the long-term stability of the Earth's climate and habitability.**

Note

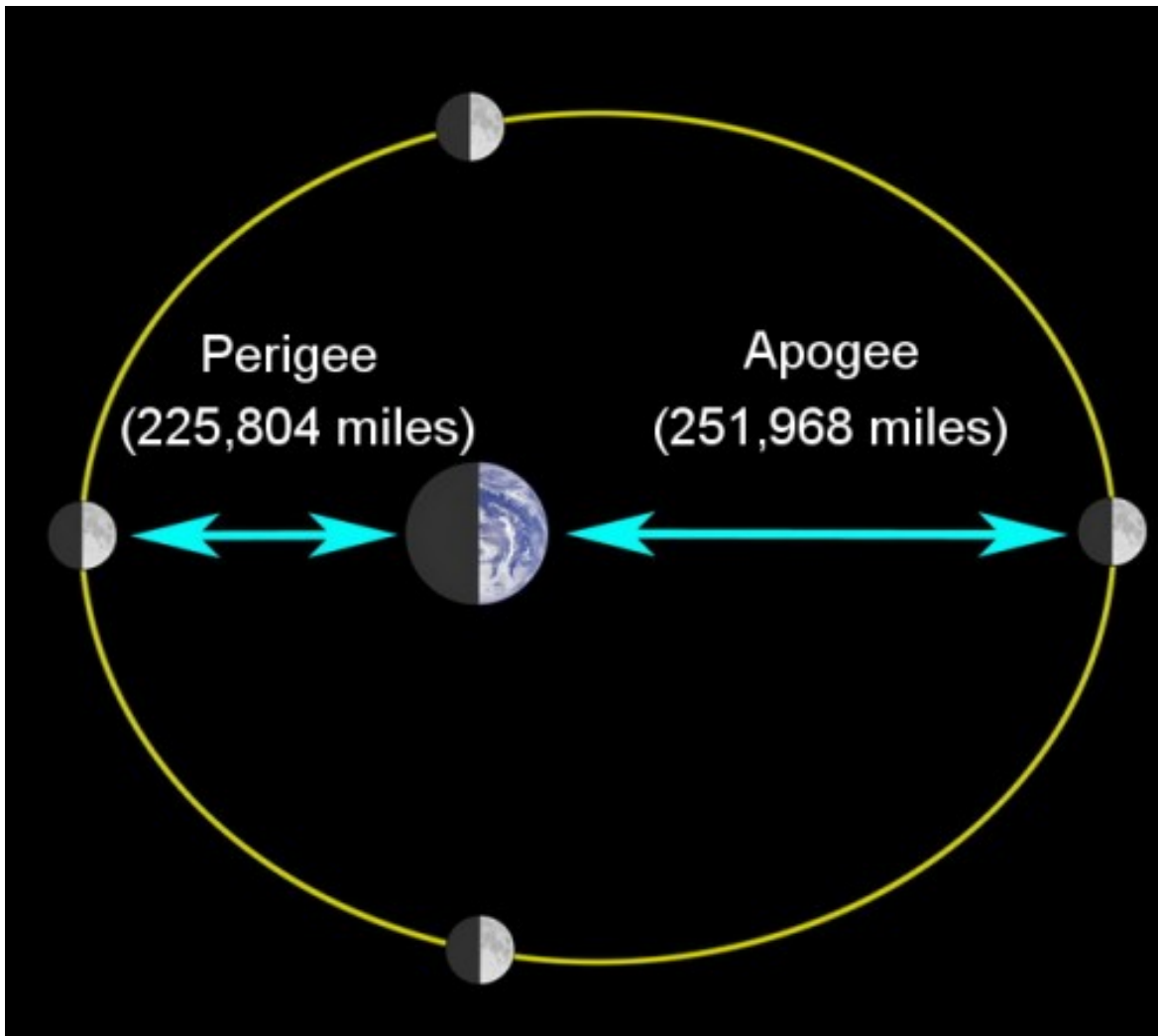
- The **Earth's seasons are primarily determined by the tilt of the Earth's axis**, not the distance from the Sun.
- The **Earth's tilt causes the uneven distribution of solar radiation**, leading to the four seasons: **spring, summer, fall (autumn), and winter**.

Earth's Orbit, Axial Tilt, and the Seasons



Perigee and Apogee

- **Perigee** is the point in the **moon's elliptical orbit** that is **closest to the Earth**. At perigee, the moon is at its **smallest apparent size** and its **gravitational pull on the Earth is strongest**.
- Apogee is the point in the moon's elliptical orbit that is **farthest from the Earth**. At apogee, the **moon is at its largest apparent size** and its **gravitational pull on the Earth is weakest**.



Read More: [Types of Orbit](#)

UPSC Civil Services, Previous Years Questions (PYQ)

Q. On 21st June, the Sun (2019)

- (a) does not set below the horizon at the Arctic Circle
- (b) does not set below the horizon at Antarctic Circle
- (c) shines vertically overhead at noon on the Equator
- (d) shines vertically overhead at the Tropic of Capricorn

Ans: (a)