

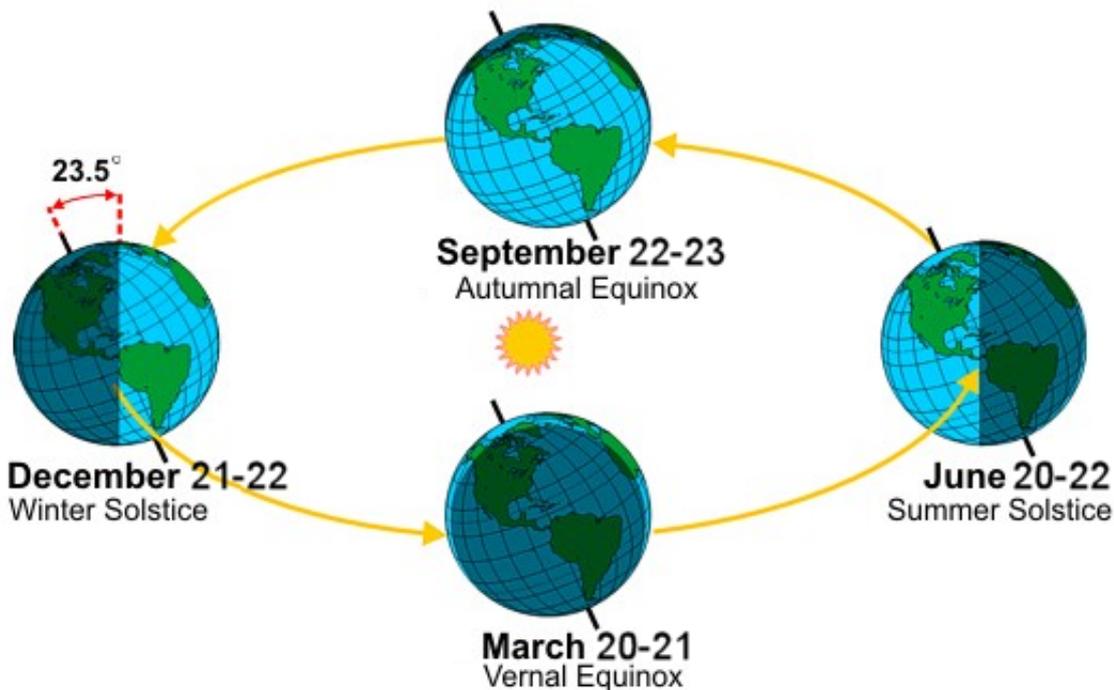


Autumnal Equinox in Northern Hemisphere

Why in News

On **22nd September 2020**, the day and night was almost equal in most locations marking the **start of autumn in the Northern Hemisphere** which lasts until the **winter solstice (December 21 or 22)**.

- Similarly, the **Vernal equinox** falls around **March 21**, marking the start of spring in the **Northern Hemisphere**.
- In the **Southern Hemisphere** the seasons are **reversed (Christmas** is celebrated in **Australia and New Zealand** in the summer season).



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Key Points

▪ About:

- The word equinox is derived from two **Latin words - aequus (equal) and nox (night)**.
- There are only two times of the year when the Earth's axis is tilted neither toward nor away from the sun, resulting in a **nearly equal amount of daylight and darkness** at all latitudes. These events are referred to as Equinoxes.
- The equinoxes happen in **March (about March 21)** and **September (about September 23)**. These are the days when the Sun is exactly above the Equator, which makes day and night of equal length.
- It can be noted that the most places on Earth receive more than 12 hours of daylight on equinoxes. This is because of the **atmospheric refraction of sunlight** and **how the**

length of the day is defined.

- The equinoxes are prime time for Northern Lights – geomagnetic activities are twice more likely to take place in the spring and fall time, than in the summer or winter.
- **Varying Dates:** While the September equinox usually occurs on September 22 or 23, it can very rarely fall on September 21 or September 24.
 - This is because of the difference between how the Gregorian calendar defines a year (365 days) and the time it actually takes for **Earth to complete its orbit around the Sun (about 365 and 1/4 days)**.
 - This means that each equinox occurs about 6 hours later than the previous year's Equinox. This eventually moves the date by a day.
- **Signals Changing of Seasons:** The equinoxes along with solstices signals the changing of the seasons.
 - The seasons on Earth change because the planet is slightly tilted on its axis as it travels around the Sun. Earth's rotational axis makes an angle of **23.5° with the normal** and angle of **66.5° with the orbital plane**.
 - If Earth were not tilted, the Sun would always appear to be directly above the Equator, the amount of light a given location receives would be fixed, and there would be no seasons. There also would be no need to mark equinoxes or solstices.
- **Solstices:** The **two solstices happen in June (20 or 21) and December (21 or 22)**. These are the days when the Sun's path in the sky is the **farthest north or south from the Equator**.
 - In the **Northern Hemisphere**, the **June solstice** marks the start of summer, this is when the North Pole is tilted closest to the Sun, and the Sun's rays are directly overhead at the **Tropic of Cancer**.
 - In the **Northern Hemisphere**, the **December solstice** marks the start of winter, this is when the South Pole is tilted closest to the Sun, and the Sun's rays are directly overhead at the **Tropic of Capricorn**.