Spring Equinox

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March 19-20 recently marked the Spring/Vernal equinox, the first day of spring in the Northern Hemisphere.

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[Ref- CNN]

About Spring Equinox:

- The Equinoxes are astronomical events marking the two times of the year when the Sun is exactly above the equator.
- During these times, **day and night are approximately equal** in duration, hence the term "equinox" (Latin for "equal night").
- On Earth, the equinoxes occur around **March and September**, known as the **vernal and autumnal equinoxes** respectively in the Northern Hemisphere.
 - It is the opposite in case of the Southern Hemisphere.
- Spring Equinox is also known as the vernal equinox, it occurs around March 20th or 21st in the Northern Hemisphere and marks the beginning of spring.
- This is when the Sun crosses the **celestial equator moving northward**, bringing **longer days and warmer temperatures** to the Northern Hemisphere.
- It occurs when a **planet's subsolar point intersects its Equator**, resulting in nearly equal durations of daytime and nighttime.
- Autumn (Fall) Equinox: It happens around September 22nd or 23rd in the Northern Hemisphere, signaling the start of autumn.
 - During this time, the **Sun crosses the celestial equator moving southward**, leading to **shorter days and cooler temperatures** in the Northern Hemisphere.

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Impact of Equinoxes:

- During equinoxes, **solar declination is 0°**, with the subsolar point directly over the Equator, causing the Sun's rays to strike **Earth's surface perpendicular to the Equator**.
- Before and after equinoxes, the subsolar point migrates north or south.
- It reaches the **Tropic of Cancer** around June 21 (June/summer solstice) and the Tropic of Capricorn around December 21 (December/<u>Winter solstice</u>).
- Although equinoxes theoretically indicate 12 hours of day and night, **atmospheric refraction causes deviations**, with day length slightly exceeding night length.
- Equatorial regions experience minimal equinoctial variation due to constant sunlight, while midlatitudes witness increased seasonal variation and disparity in day-night lengths.
 - The **30° latitude** experiences around 8 minutes longer days.
- In polar regions, equinoxes signal transitions from "**midnight sun**" to "**polar night**," with daylight extending about 12 hours and 16 minutes.
 - This leads to significant disruptions in satellite communications known as "Sun outages."