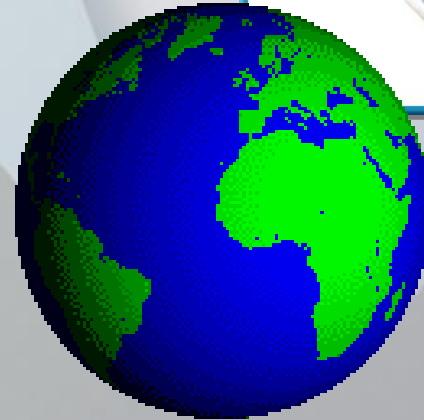
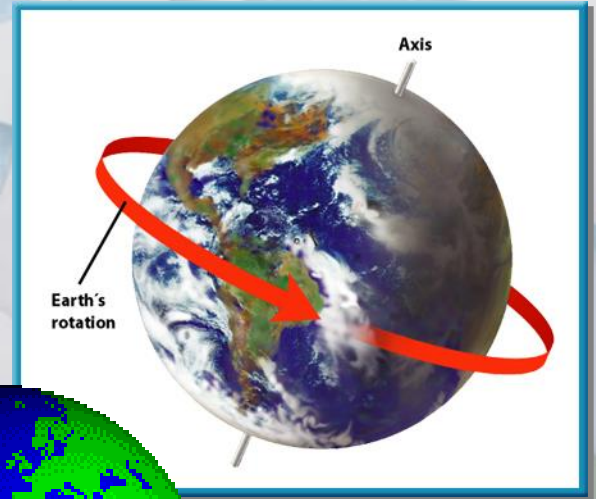




**Why do we  
have  
seasons?**

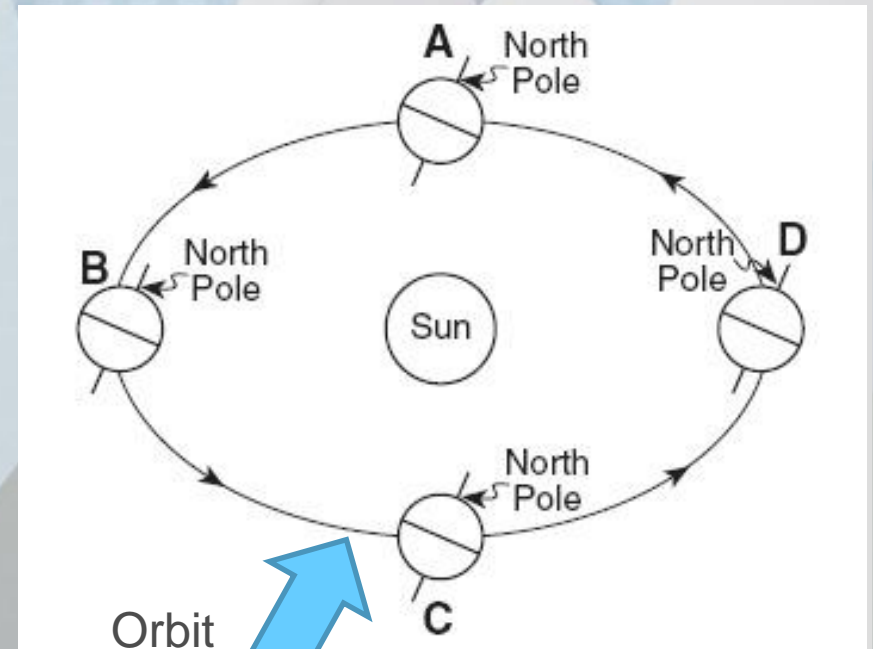
# Earth's rotation

- The Earth rotates on its axis (imaginary vertical line around which Earth spins) every 23 hours & 56 minutes.
- One day on Earth is one rotation of the Earth.
- One Day on Earth is when our side of the Earth faces the sun.
- Night on Earth is when the side of Earth we are on faces away from the sun.



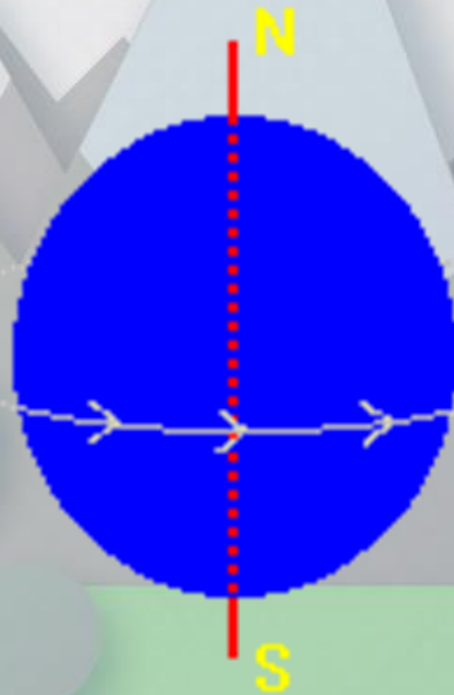
# Earth's revolution

- It takes the Earth **365.25** days (or rotations) to travel or revolve around the Sun once.
- This is called a **year**.



# Motion Terminology

- Rotation – to spin on an axis



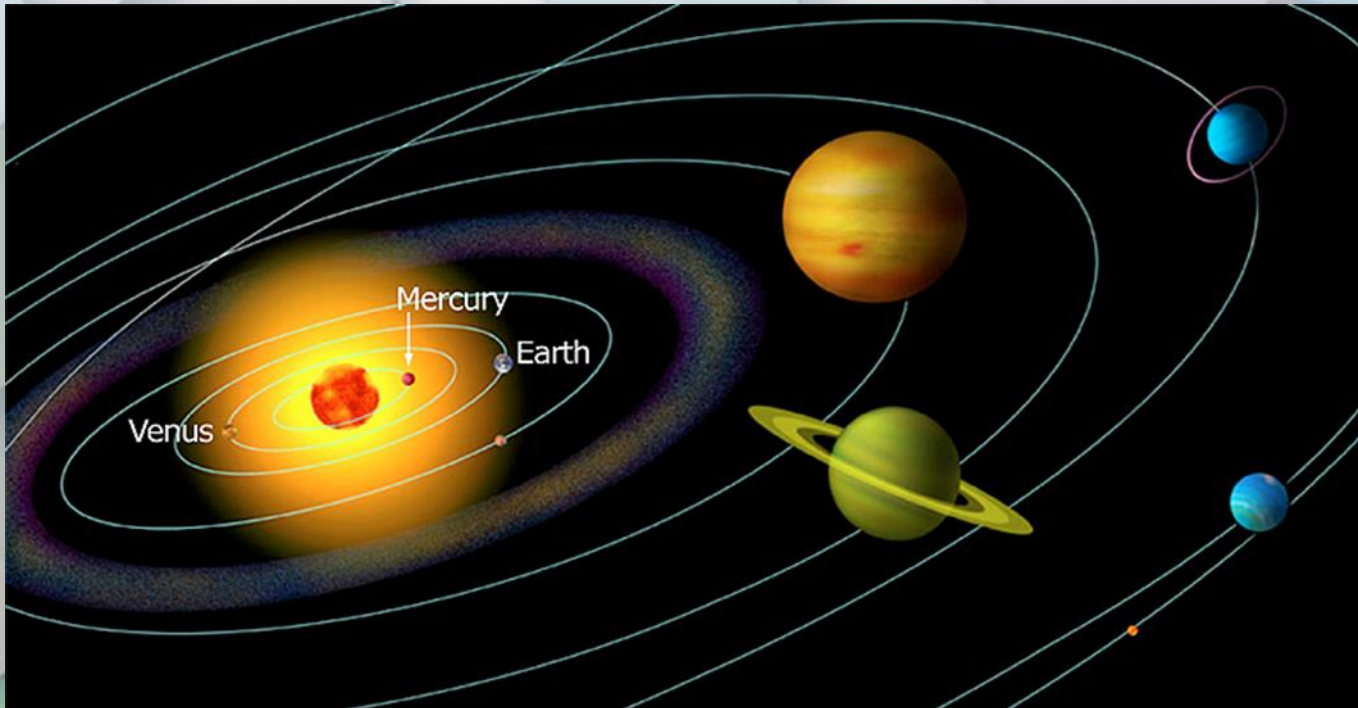
# Motion Terminology

- **Revolution** – the motion of a body around another body



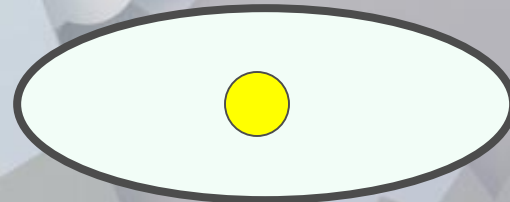
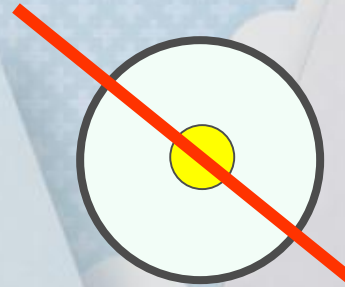
# Motion Terminology

- **Orbit** – the path that is followed around another body in space



# Why do we have seasons?

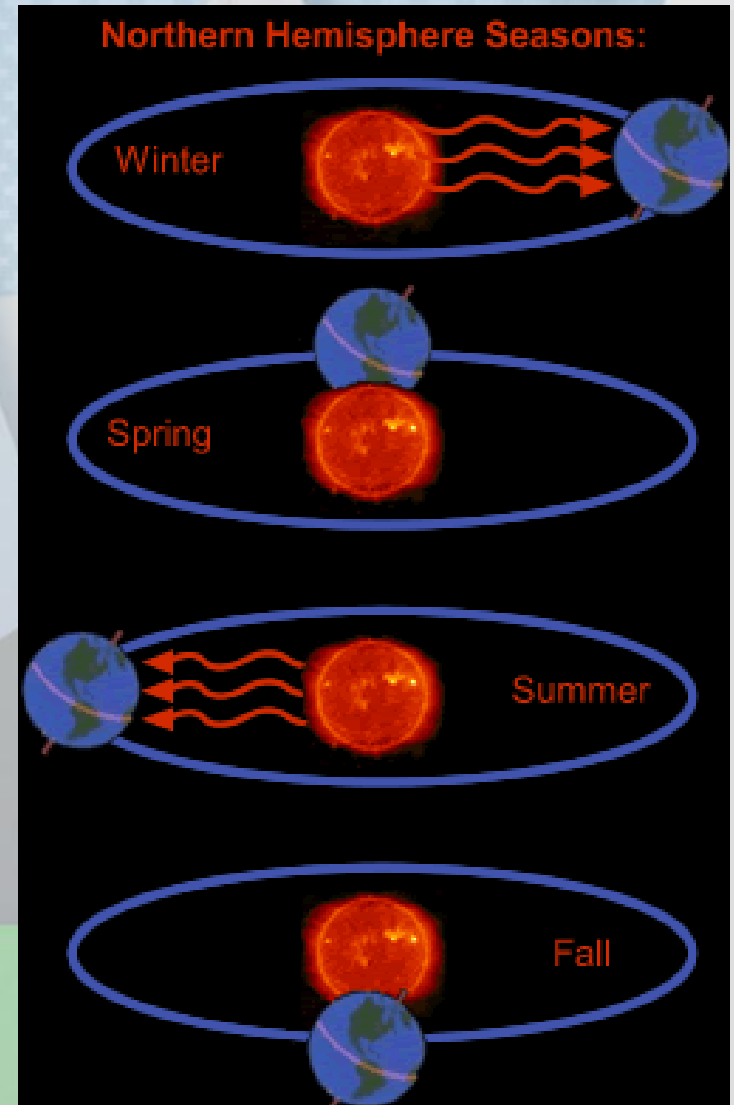
- The Earth's orbit around the sun is NOT a perfect circle. It is an **ellipse**.
- Seasons **ARE NOT** caused by how **close** the Earth is to the sun.
- In fact, the Earth is **closest** to the sun around January 3 and **farthest** away from the sun around July 4.



**Ellipse**

# Why do we have seasons?

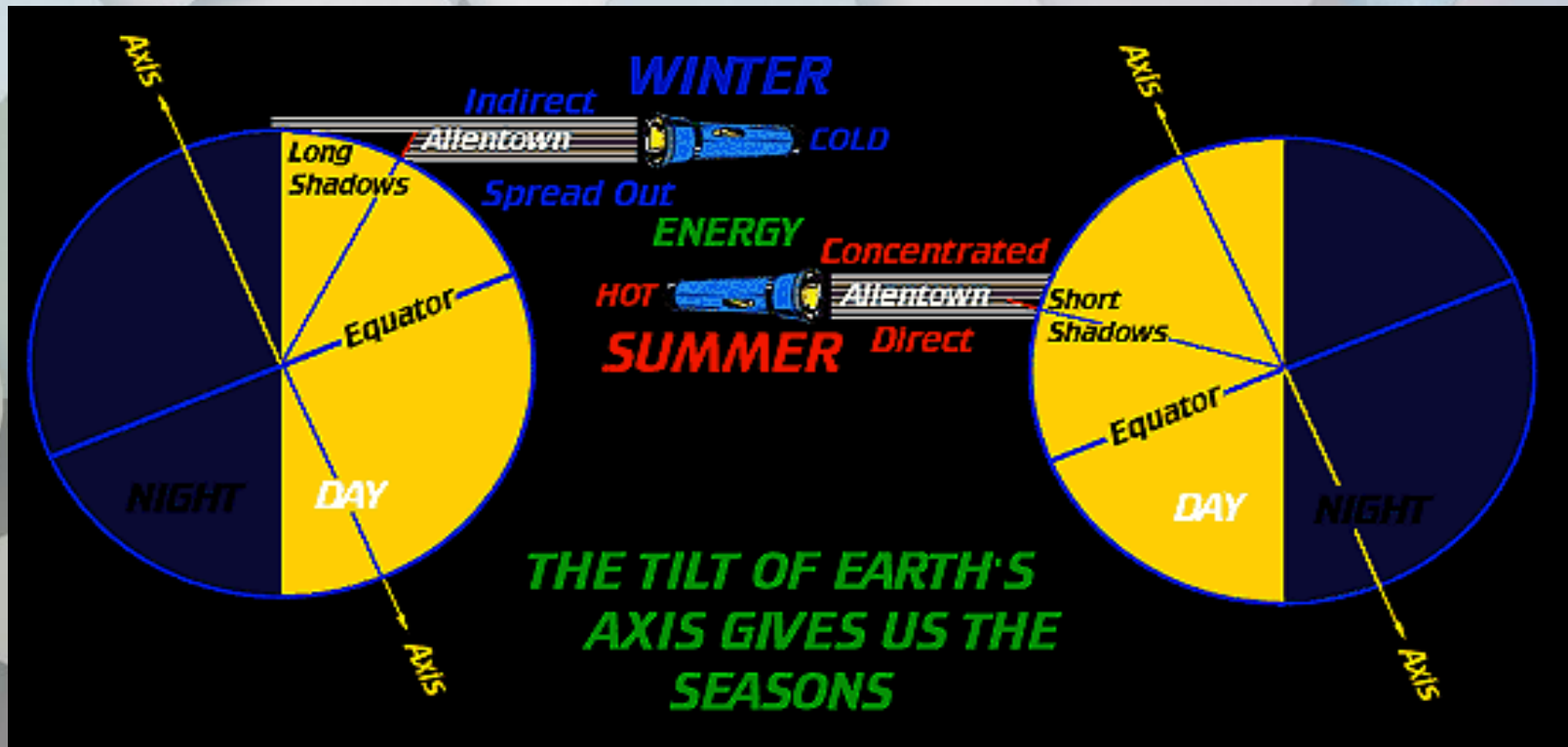
- Seasons are the result of the tilt of the Earth's axis.
- Earth's axis is tilted 23.5°.
- This tilting is why we have SEASONS like fall, winter, spring, summer.
- The number of daylight hours is greater for the hemisphere, or half of Earth, that is tilted toward the Sun.
- [Seasons Interactive](#)





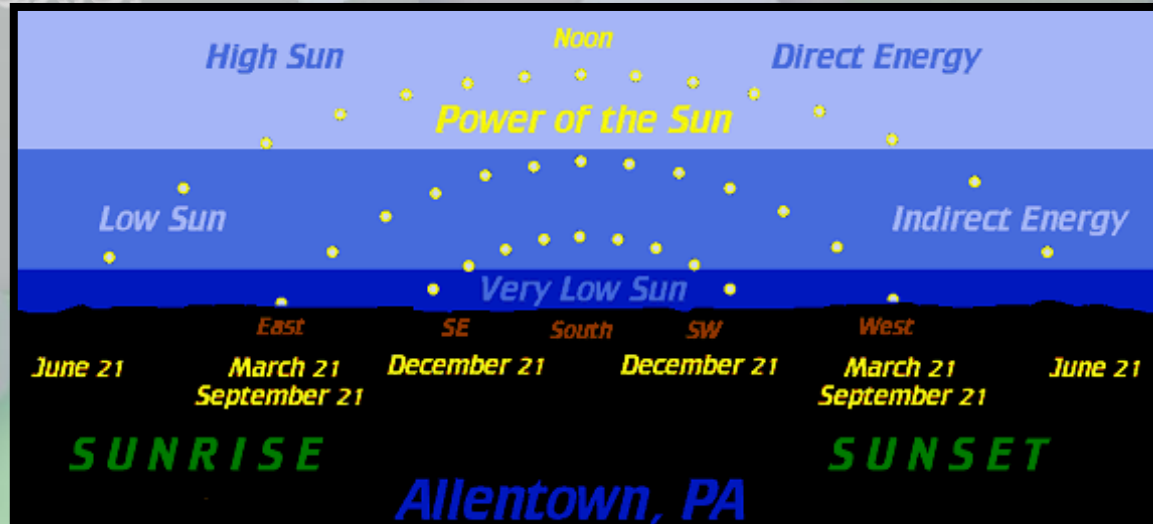
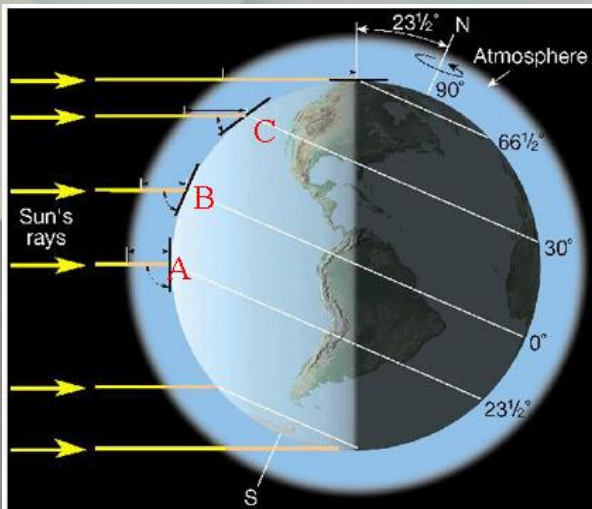
# Why do we have seasons?

- Summer is warmer than winter (in each hemisphere) because the Sun's rays hit the Earth at a more **direct** angle during summer than during winter

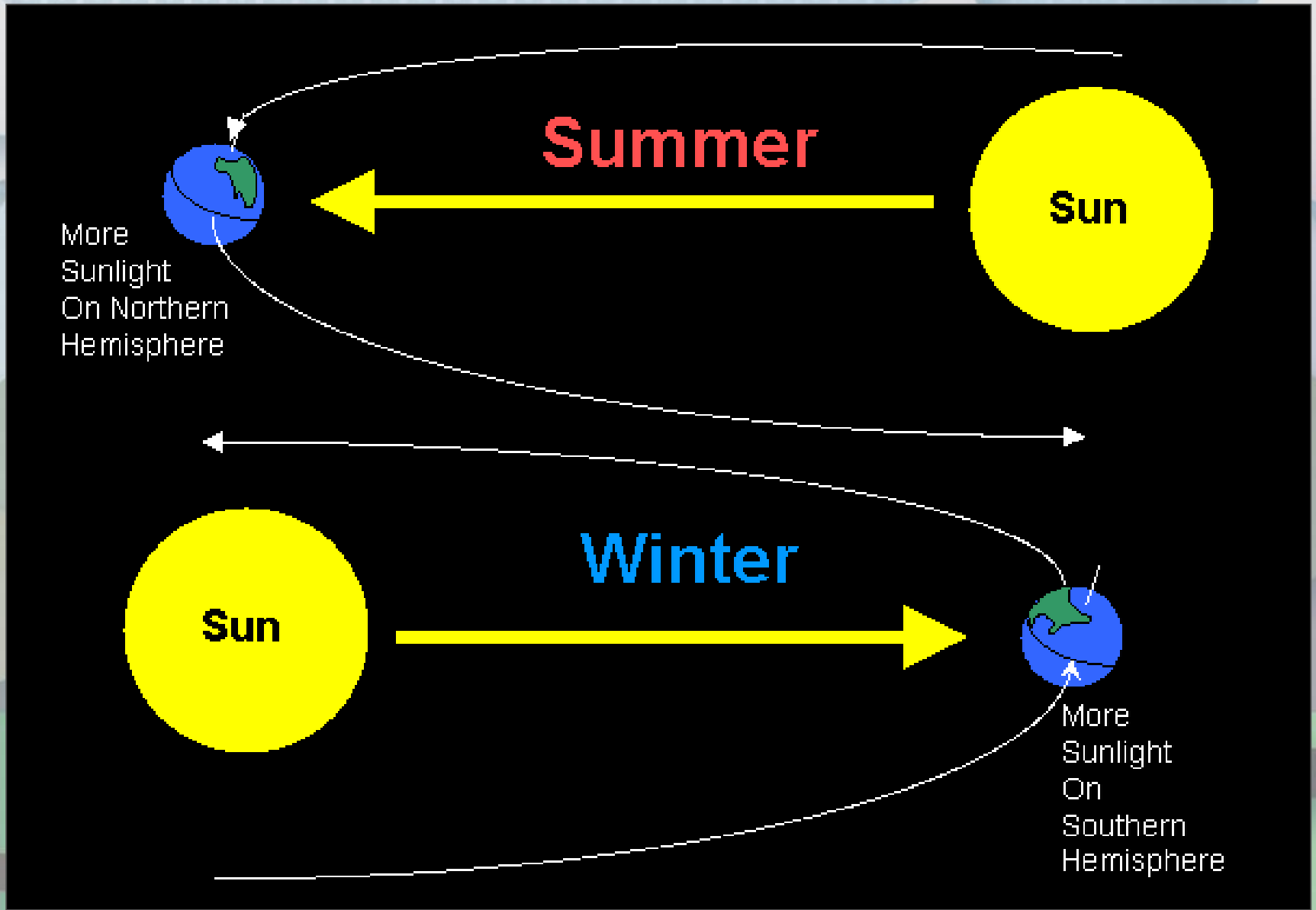


# Why do we have seasons?

- Also the days are much longer than the nights during the summer.
- During the winter, the Sun's rays hit the Earth at an extreme angle, and the days are very short. These effects are due to the tilt of the Earth's axis.



# Seasons...in a nut shell



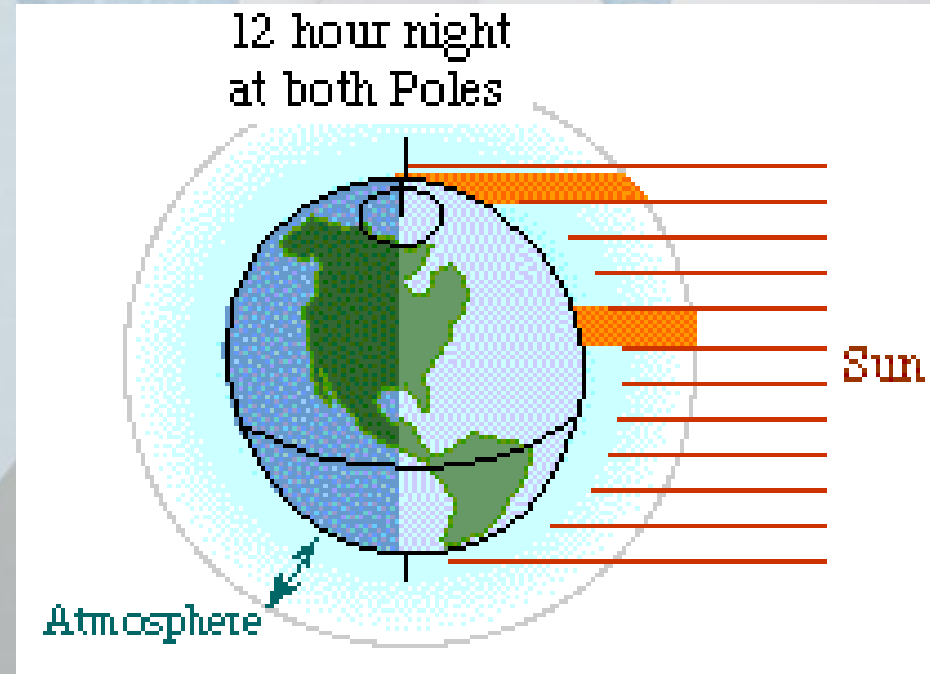
# Solstices

- Occur twice a year, when the tilt of the Earth's axis is oriented at its extremes. **Tilted the farthest or closest**
- Winter solstice is the shortest day of the year. In the Northern Hemisphere. It occurs on **December 21 or 22** and marks the beginning of winter.
- The Summer Solstice is the longest day of the year. It occurs on **June 20 or 21** and marks the beginning of summer.



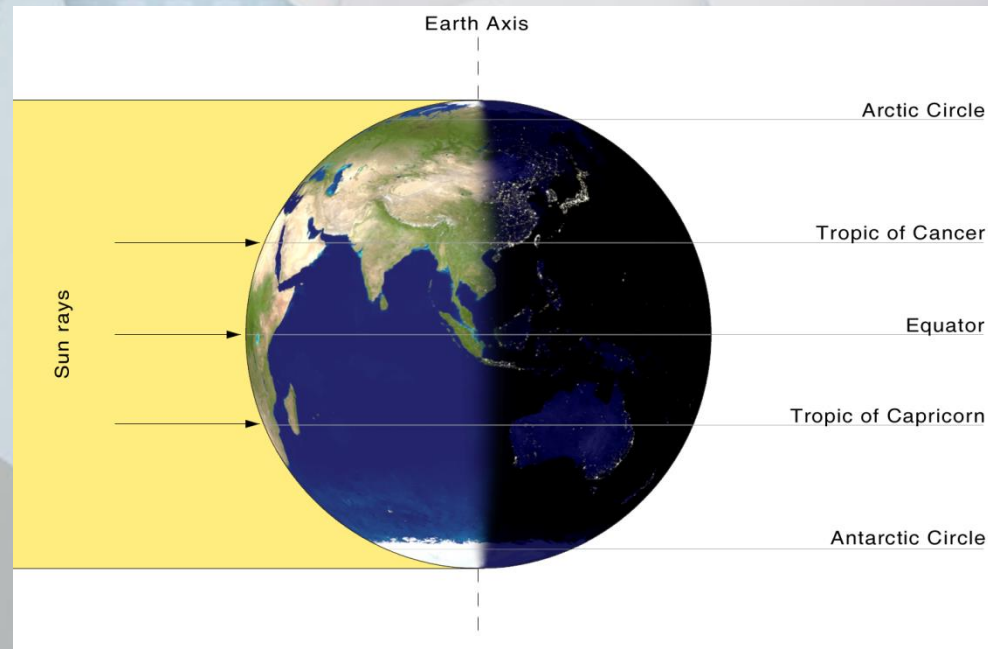
# Equinoxes

- A day lasts 12 hours and a night lasts 12 hours at all latitudes.
- Equinox literally means "equal night".
- Sunlight strikes the earth most directly at the equator.
- This occurs twice a year.



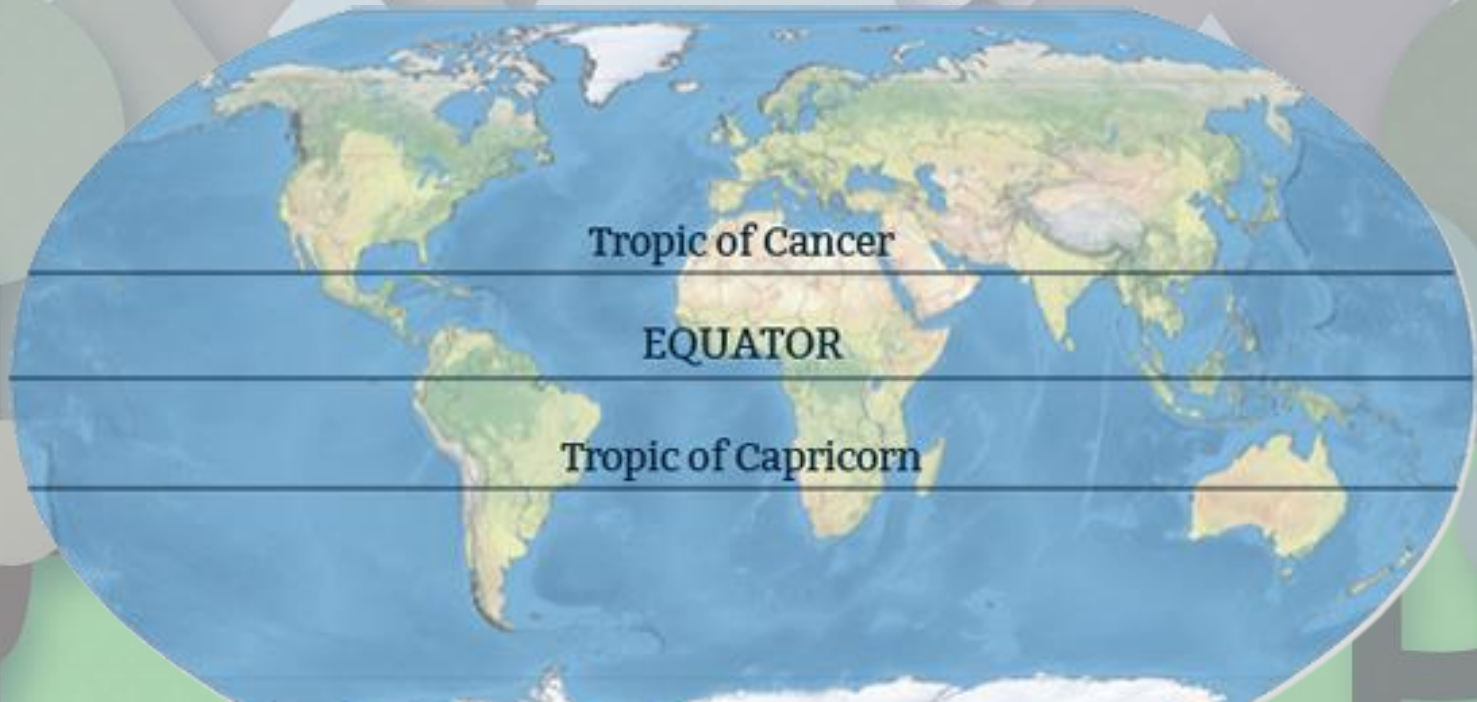
# Equinox

- The vernal (spring) equinox occurs March 20.
- The autumnal (fall) equinox occurs September 22 or 23.



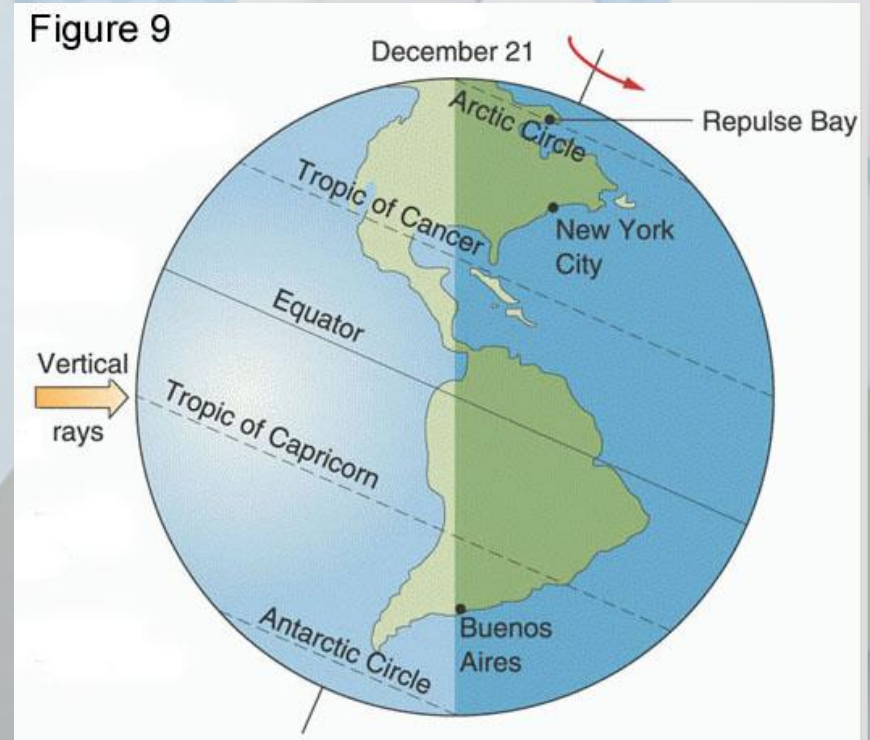
# Tropic of Cancer / Capricorn

- The point where the Sun is right overhead at noon during a solstice.



# Arctic circle / Antarctic circle

- The point where the Sun is just below the horizon during a solstice / The point where the Sun is always visible during the opposing solstice.



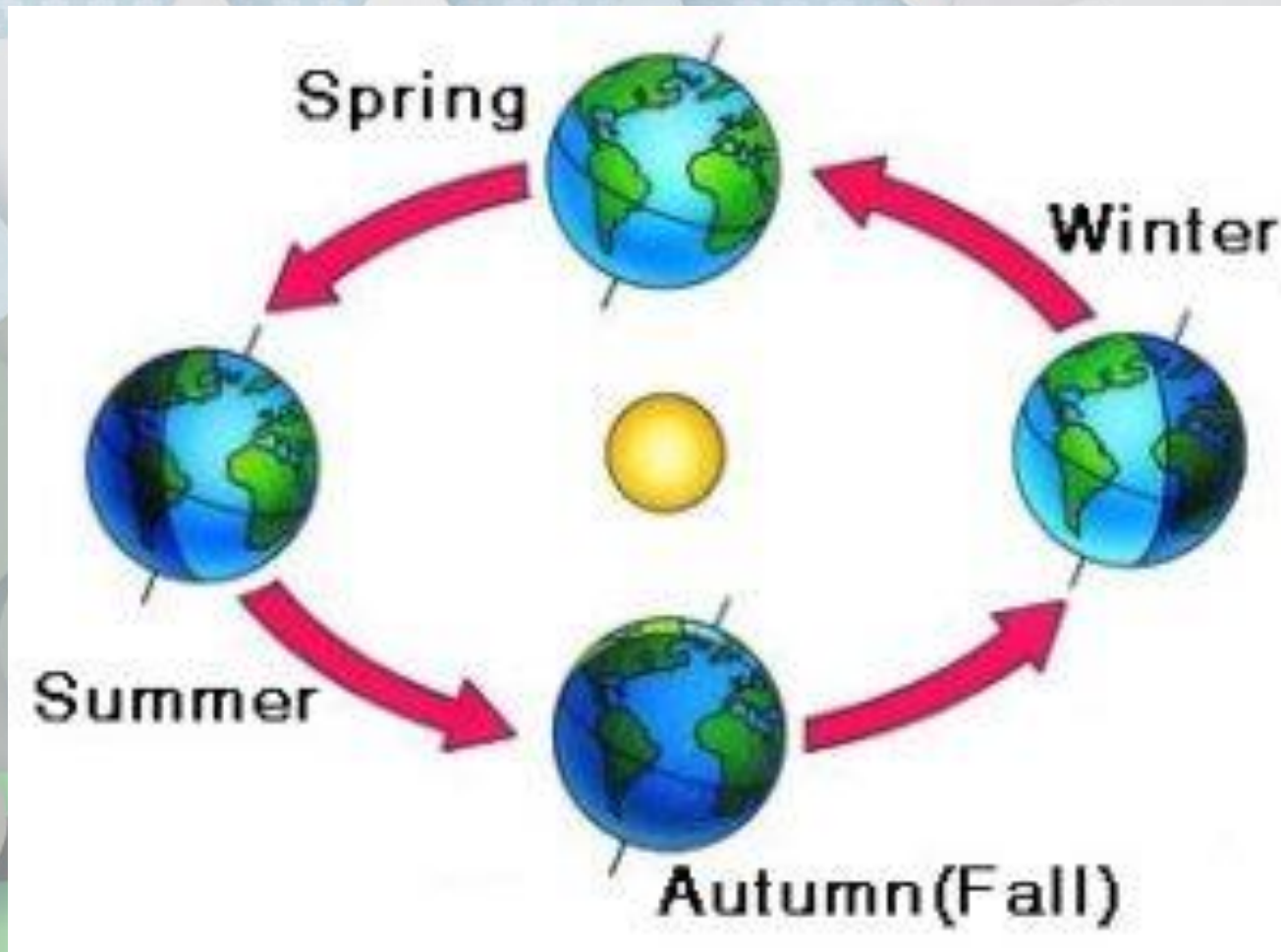


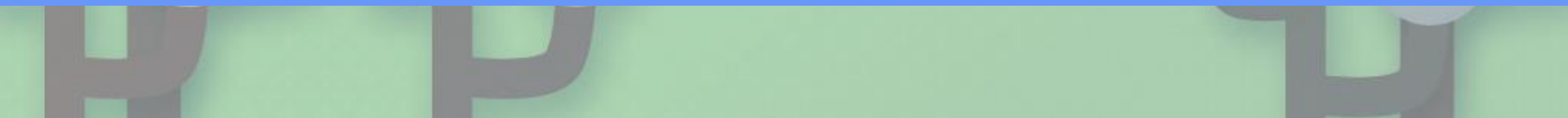
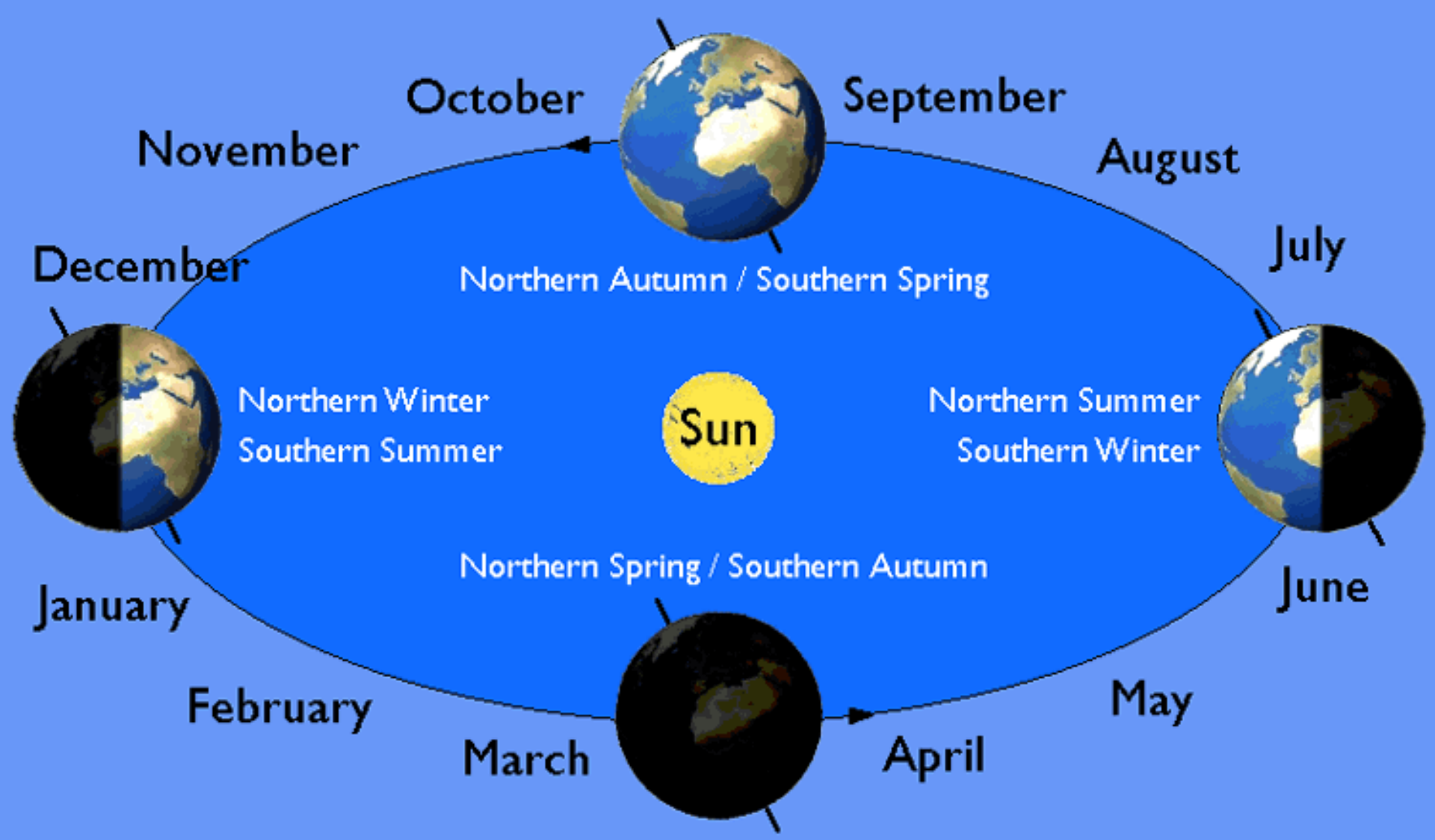
The Earth's seasons **ARE NOT** caused by the differences in the distance from the Sun throughout the year.



# Review

Look closely at where the Sun is hitting the Earth during each season:







<https://www.youtube.com/watch?v=Sr8bJT0qiuA>

<https://www.youtube.com/watch?v=051ddivQ2hl>

[https://www.youtube.com/watch?v=Wqk\\_CKSxlyU](https://www.youtube.com/watch?v=Wqk_CKSxlyU)