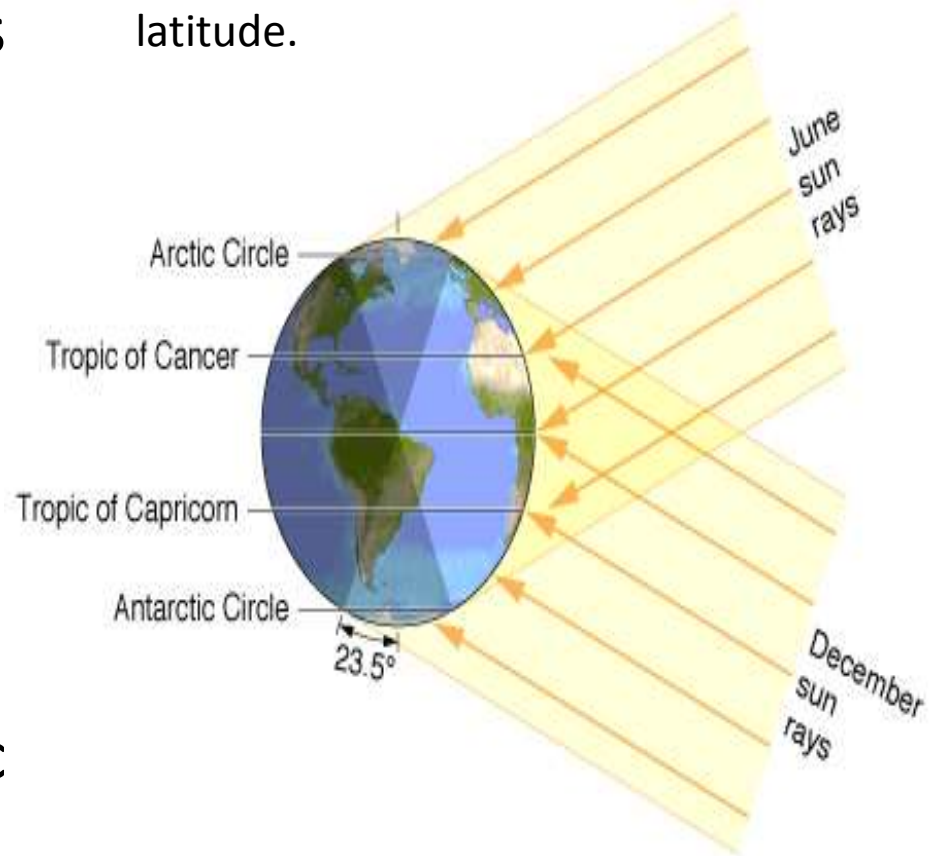


# The Seasons

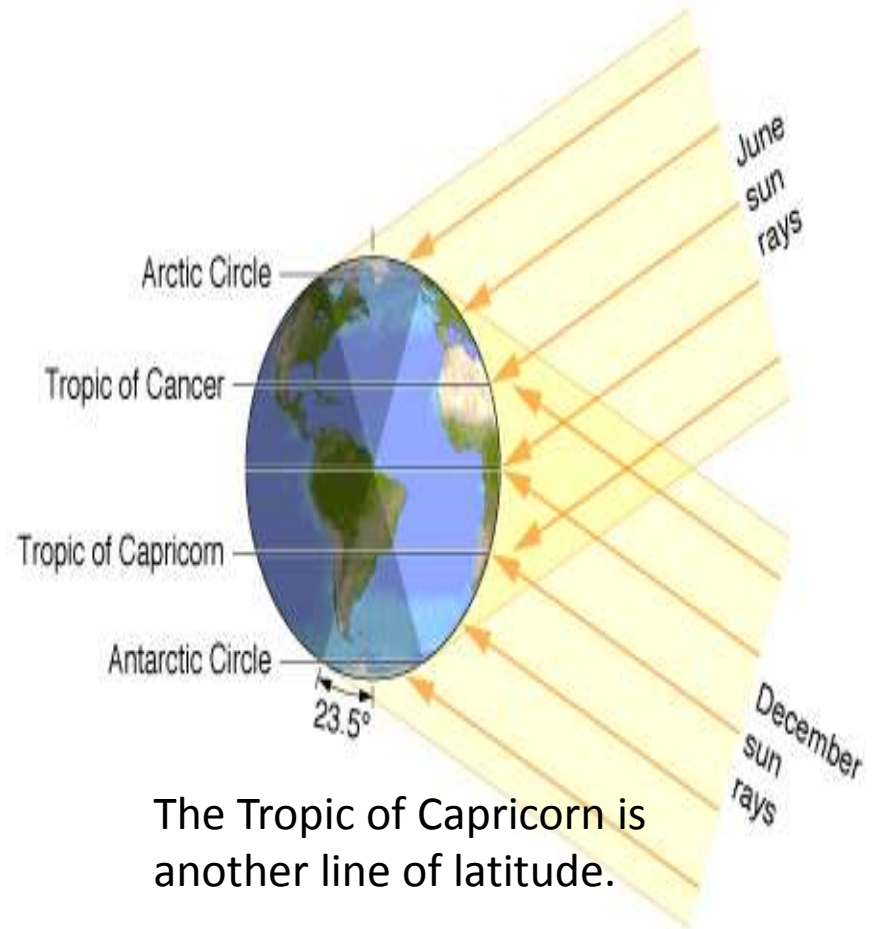
- We experience Seasons because the Earth does not receive the same amount of solar radiation at all times. When the Northern Hemisphere is tilted towards the Sun, we have Summer. The Sun's rays hit the Tropic of Cancer directly.

The Tropic of Cancer is a line of latitude.



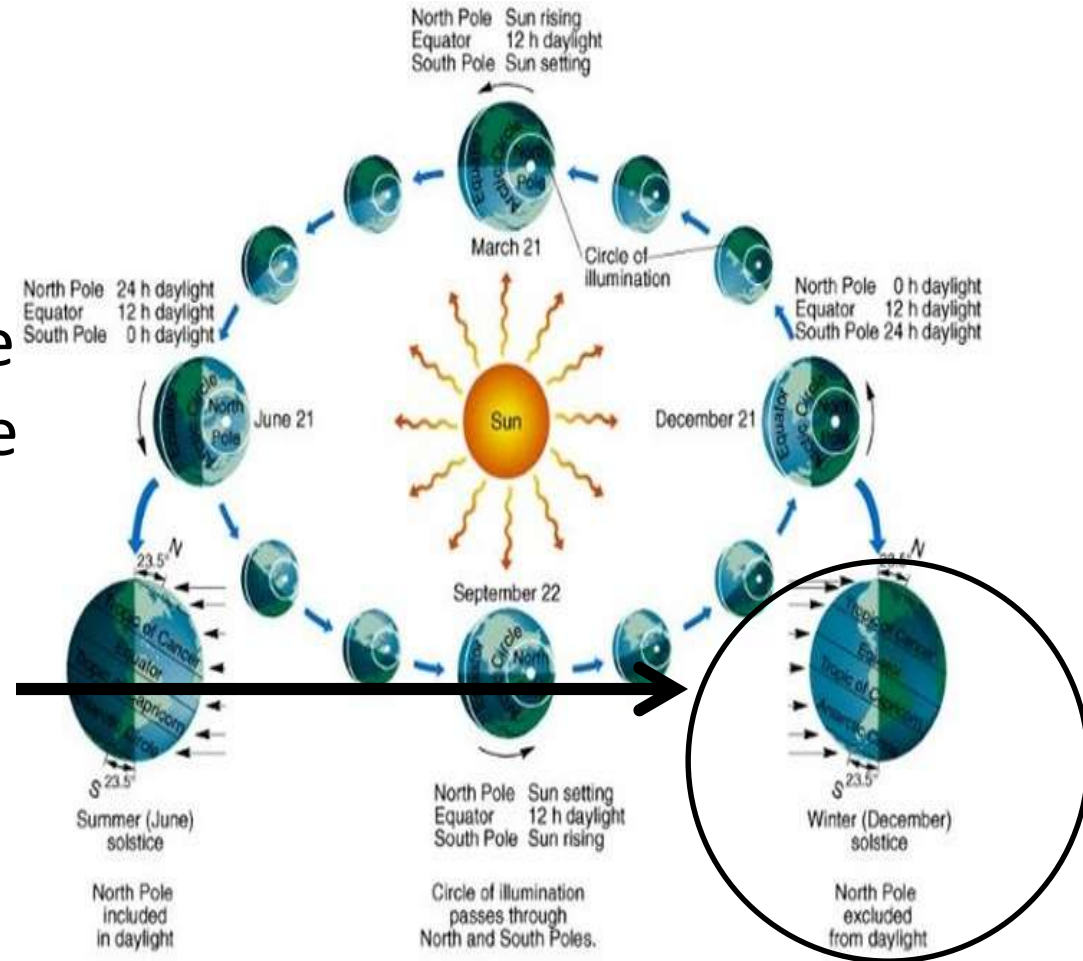
# Winter

- Notice here that the Sun's rays are shining directly on the Tropic of Capricorn in winter. At this time the Northern Hemisphere is tilted away from the Sun....But the Southern Hemisphere is not. They are experiencing their summer .



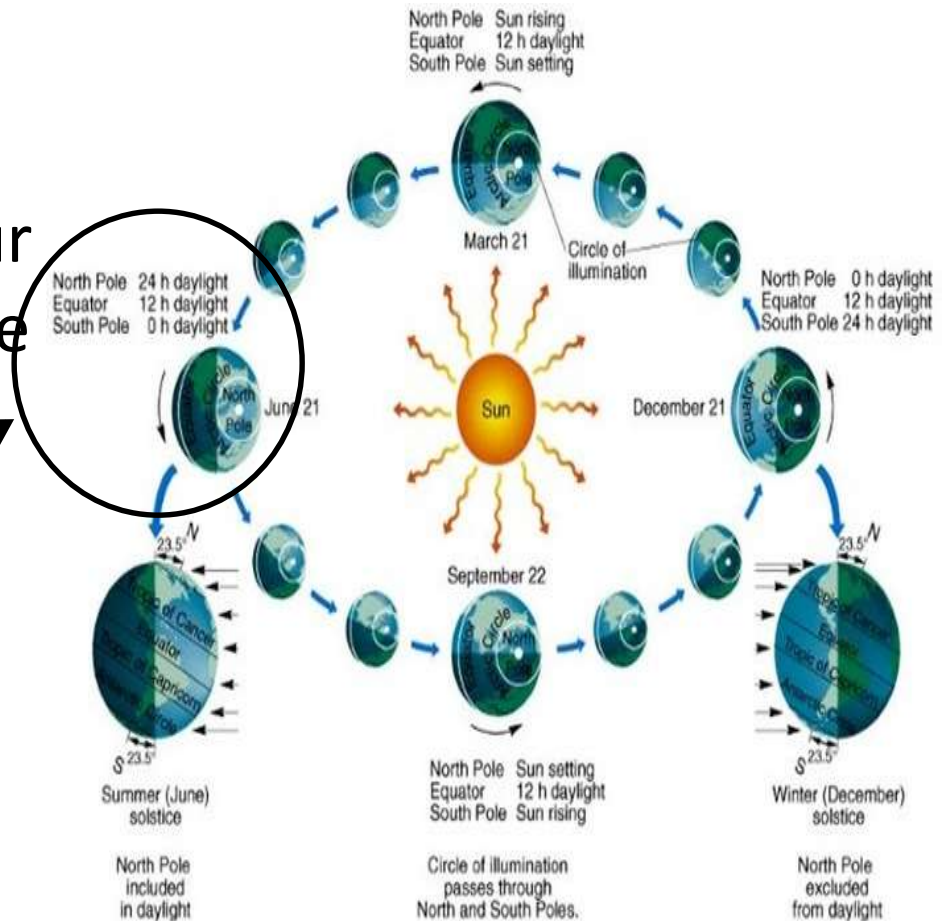
# What happens at the Poles?

- An interesting phenomenon occurs at the North Pole in the winter. When the Northern Hemisphere is tilted away from the Sun, the North pole receives little or NO sunlight!



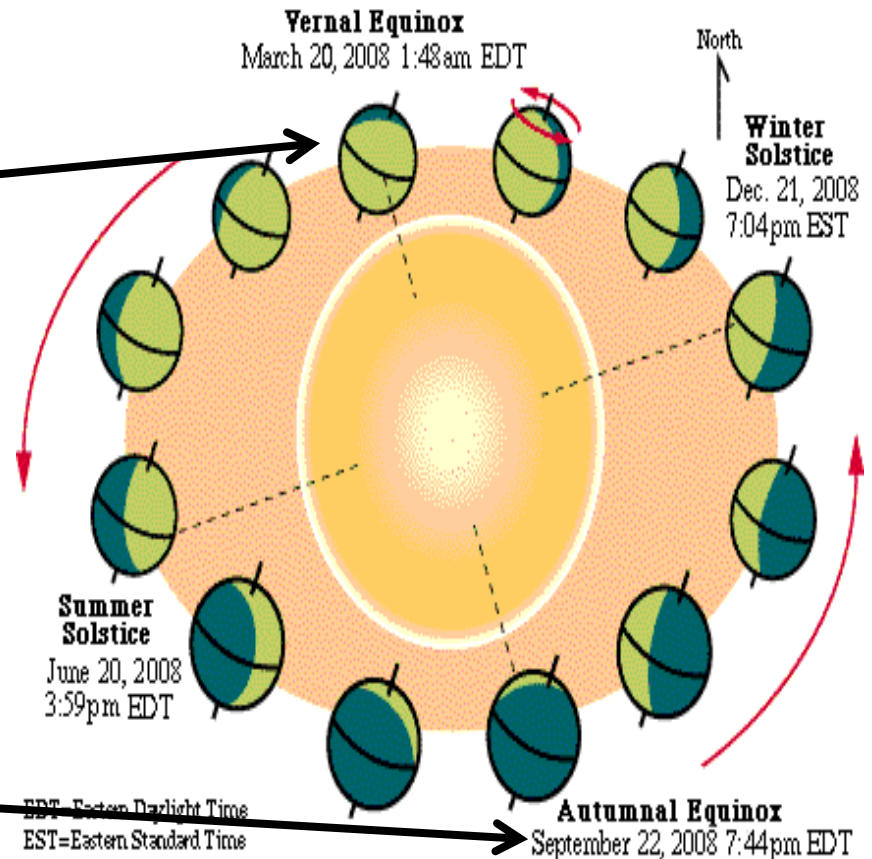
# Does this happen at the South Pole?

- This can happen at the South Pole, too! In June, while we have our summer, the South pole is tilted away from the Sun and receives little or NO sunlight.



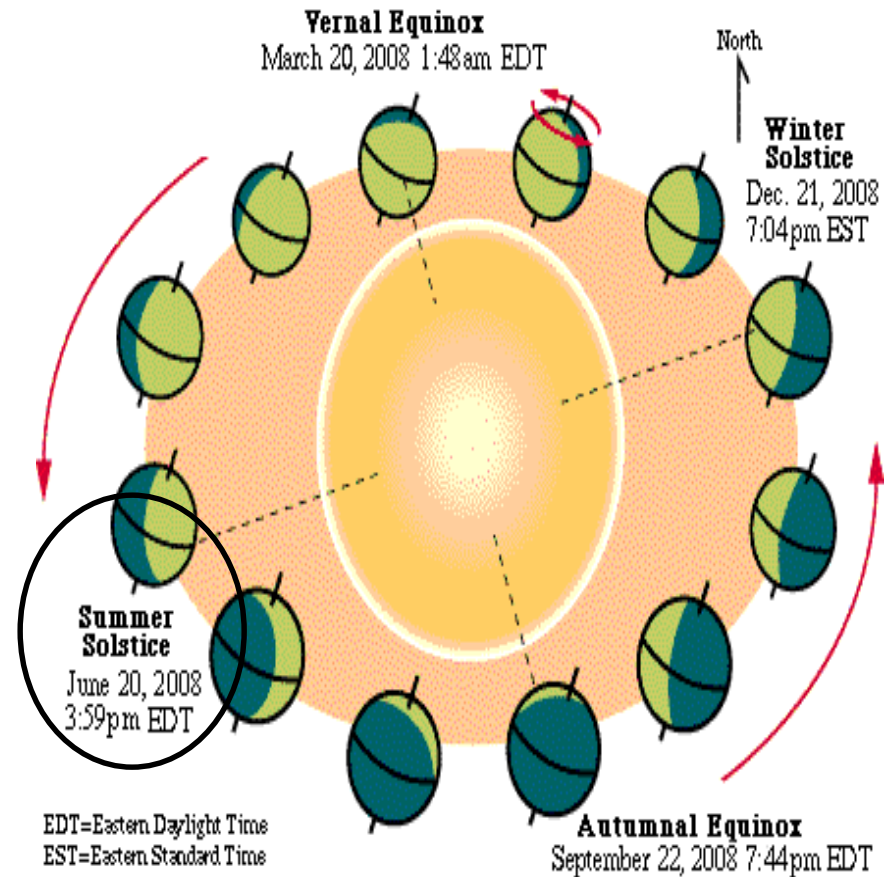
# Now let's look at all our Seasons

- The word “equinox” literally means equal night. During the Vernal and Autumnal Equinox, the Sun's rays fall directly on the equator. We experience equal hours of darkness and sunlight.
- Vernal means Spring.
- Autumnal means Fall.



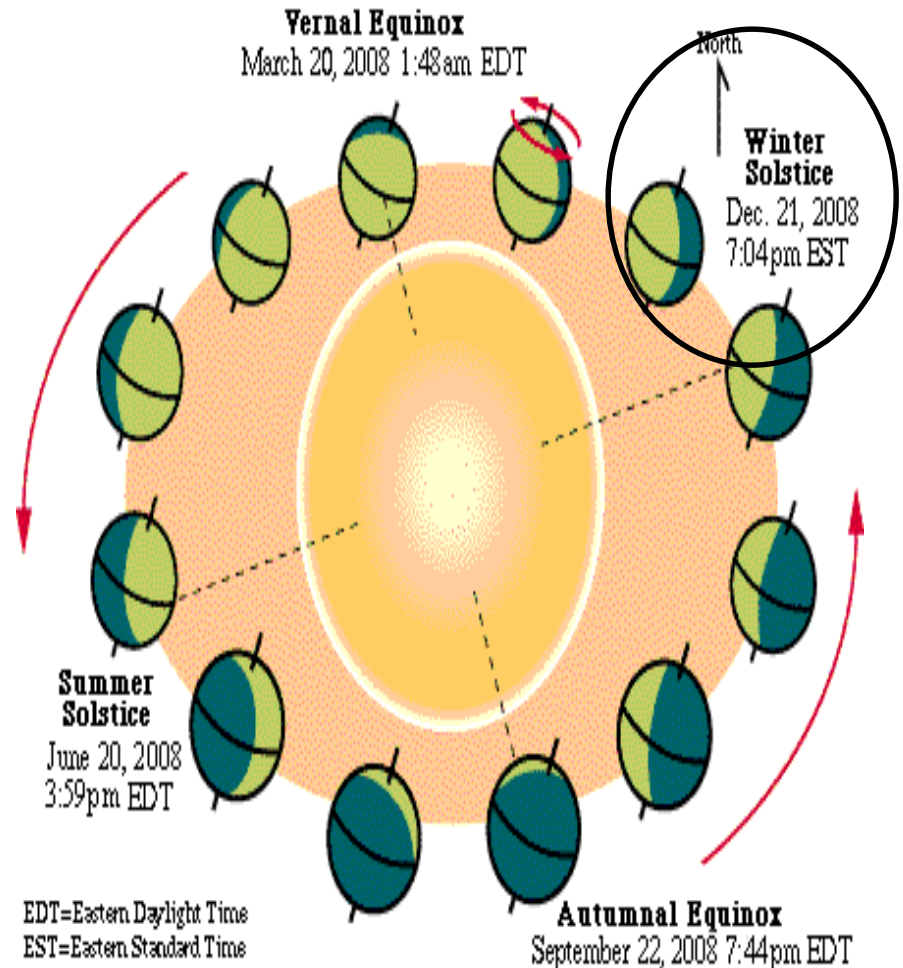
# But what happens in the Summer?

- In the first slide we learned that the Sun's rays fall directly on the Northern Hemisphere in the Summer. June 20<sup>th</sup> is called the Summer Solstice. At that time we have the largest number of daylight hours and the shortest number of hours of darkness.



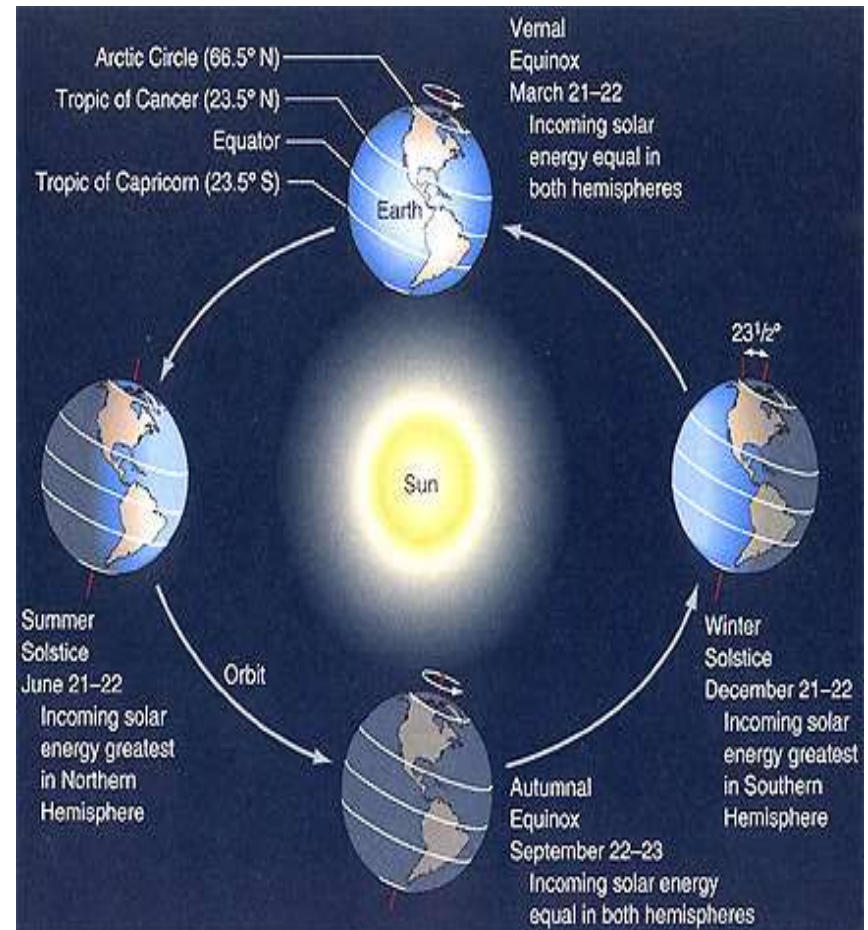
# Looking at the Winter Solstice

- The winter solstice occurs on December 21<sup>st</sup>. At this time, the Northern Hemisphere is tilted away from the Sun and it receives the fewest hours of daylight and the largest numbers of hours of darkness.



# Putting it all together

- The Earth rotates Counterclockwise around the Sun.
- Summer Solstice= June 21<sup>st</sup>
- Autumnal Equinox (Fall) =Sept 22<sup>nd</sup>
- Winter Solstice= Dec 21
- Vernal Equinox (spring)= March 21<sup>st</sup>





# Here is a Summary Simulation

- When we put all these ideas together, we can also see that the Southern Hemisphere has Winter when we have Summer AND they have Summer when we have winter. This reversal of the seasons is due to the  $23.5^\circ$  tilt of Earth's axis.
- <http://www.videojug.com/film/why-does-the-earth-have-seasons>