Ast 312
Observational Astronomy

Tuesday 8-9:50 PM
Room 1420 BMPS

Also by arrangement

Office Hours:

Dr. Capriotti - M W 1:00 - 2:30 PM
T TH 9:00 - 10:00 AM

Aaron LaCluyzé T TH 2:00 - 3:00 PM
By arrangement

Software:

Starry Night Beginner

www.starrynight.com

Celestia

www.shatters.net/celestia

Astronomy Picture of the Day
http://antwrp.gsfc.nasa.gov/apod/astropix.html

Lansing Info:
42d 42m 23s North
05h 37m 56s West

General Questions:

1. What causes the seasons?
2. Does the moon rotate?
3. What causes an eclipse?
4. When are the shortest and longest days of the year?
5. Is Lansing a good place for astronomical observations?

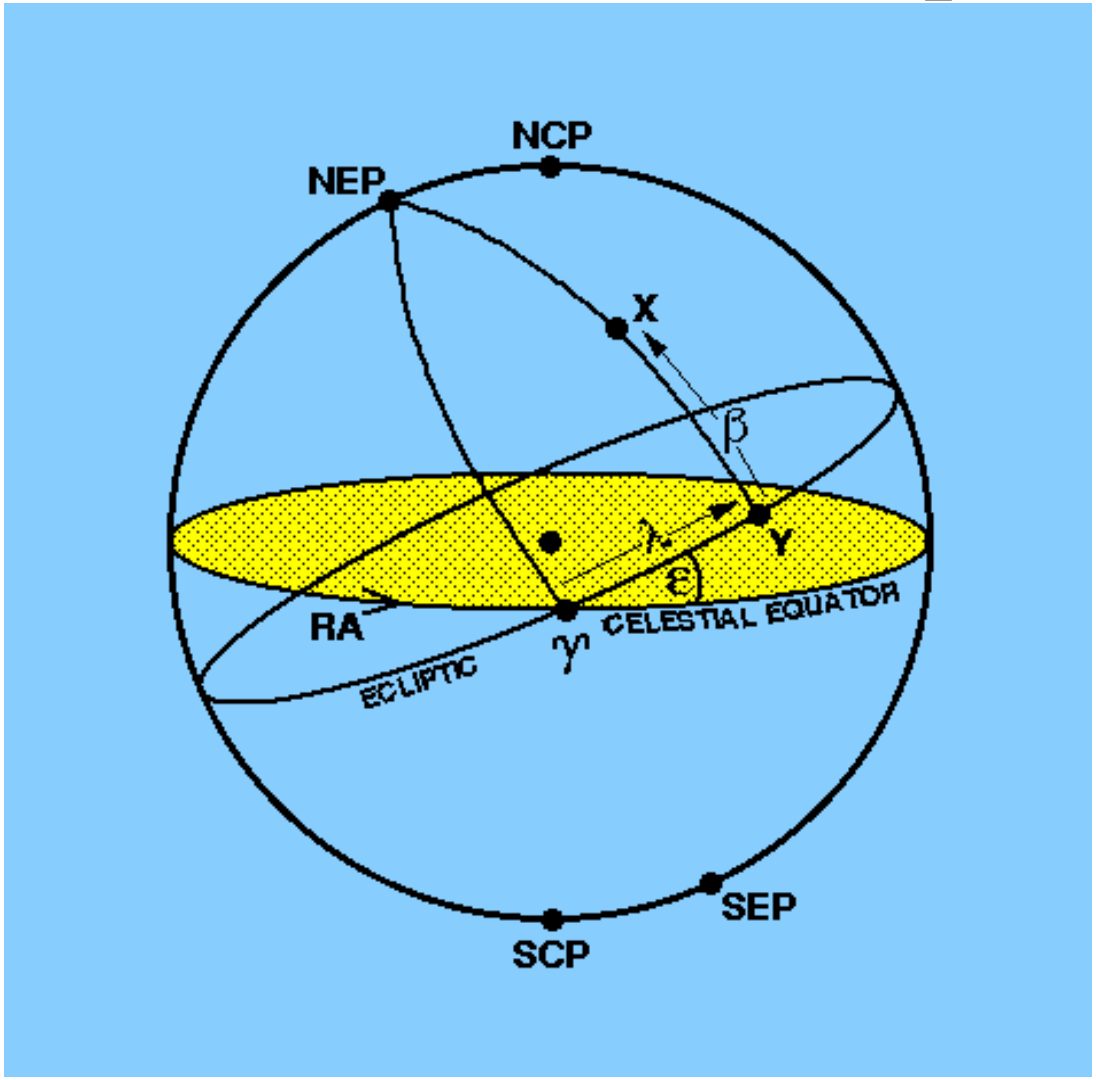
Not really....

- Light pollution
- Weather, weather, weather
  - Many cloudy days
  - Highly variable humidity
  - Broad range of temperatures

Terms to know

- Zenith - the point on the celestial sphere directly overhead
- Ecliptic - The apparent path the Sun traces out on the celestial sphere during the year
- Celestial Sphere - Imaginary sphere surrounding the Earth that all of the stars are fixed upon.
  - Celestial equator / poles - projection of Earth's poles and equator upon the celestial sphere.

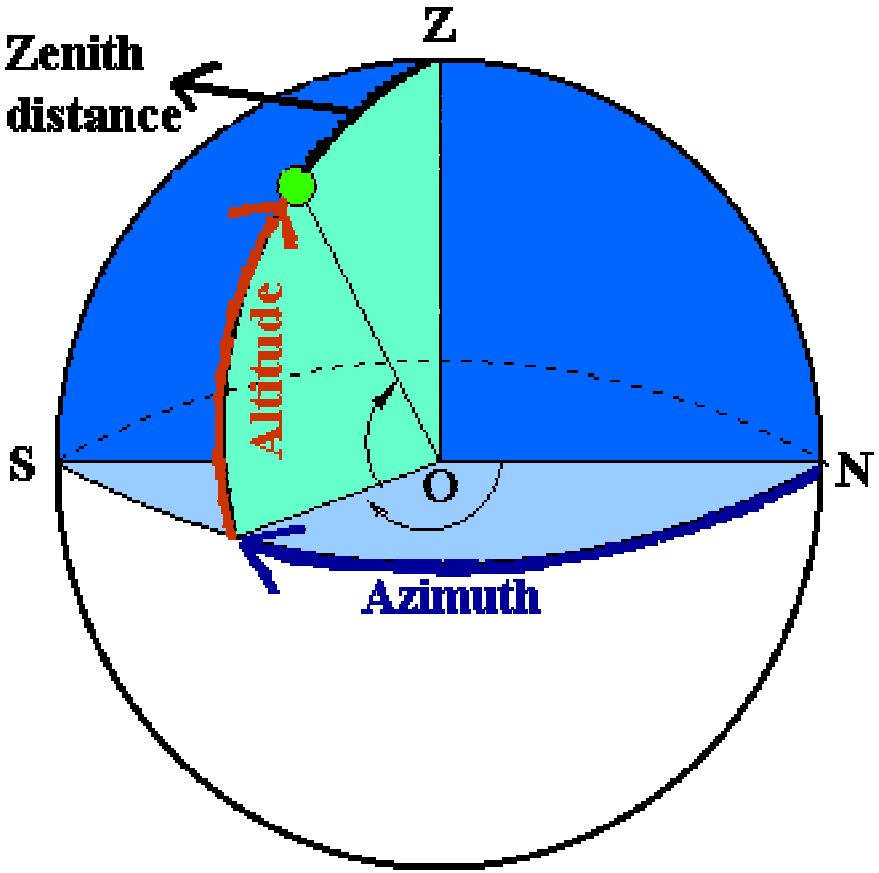
Ecliptic



Ecliptic Longitude (λ) - Measured along ecliptic from first point of Aries

Ecliptic Latitude (β) - Measured up and down from the ecliptic

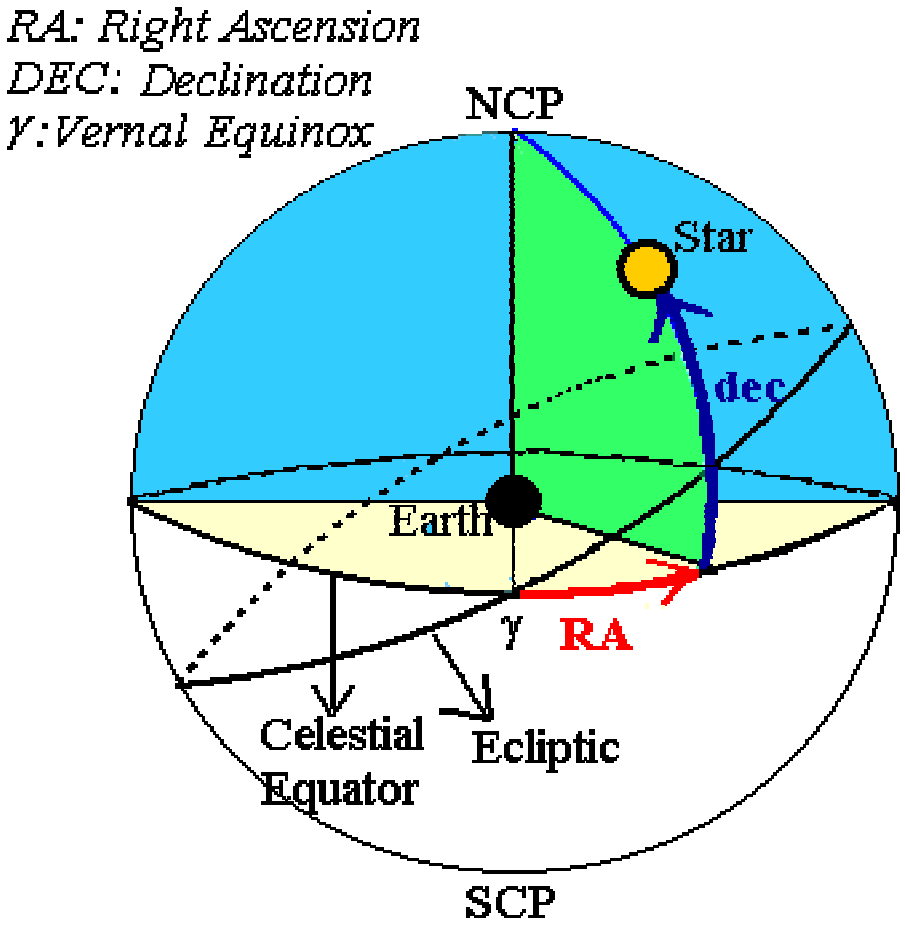
Altitude / Azimuth



Azimuth - angle measured from North, going East.

Altitude - angle measured up from horizon to object on a circle passing through the observers zenith

Equatorial

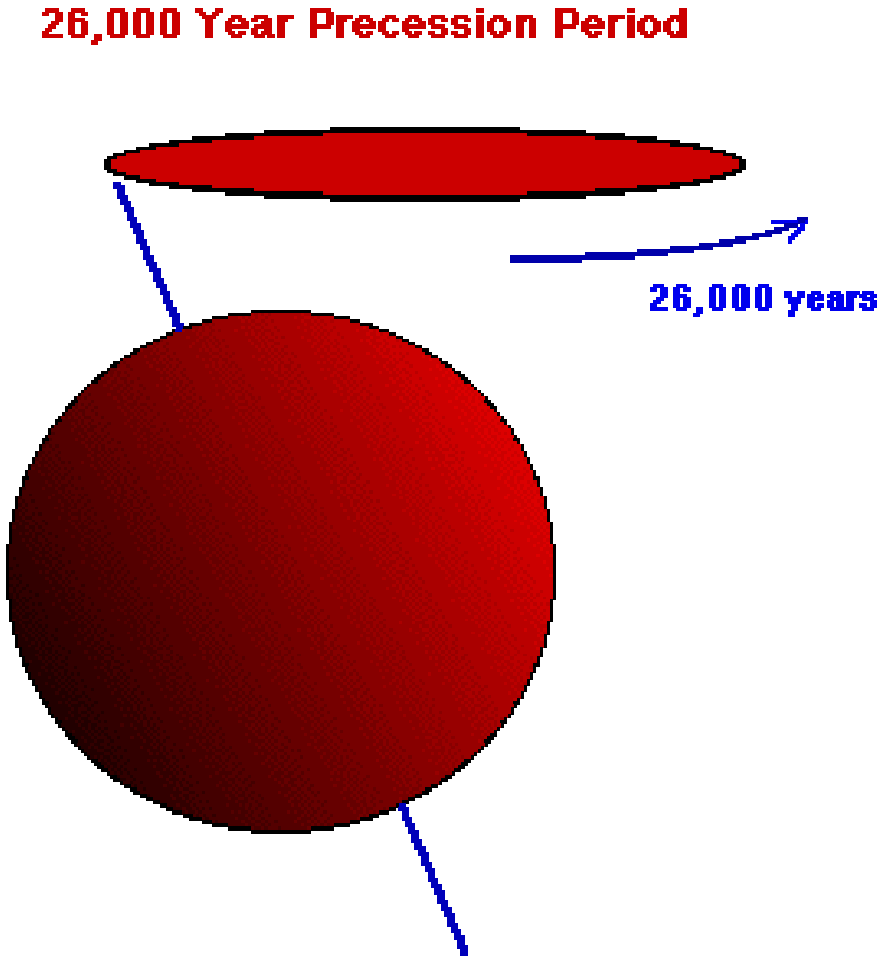


Right Ascension (RA) - angle measured in hours from the first point of Aries (24 hours = 360 degrees)

Declination (DEC) - angle measured in degrees from the celestial equator up or down

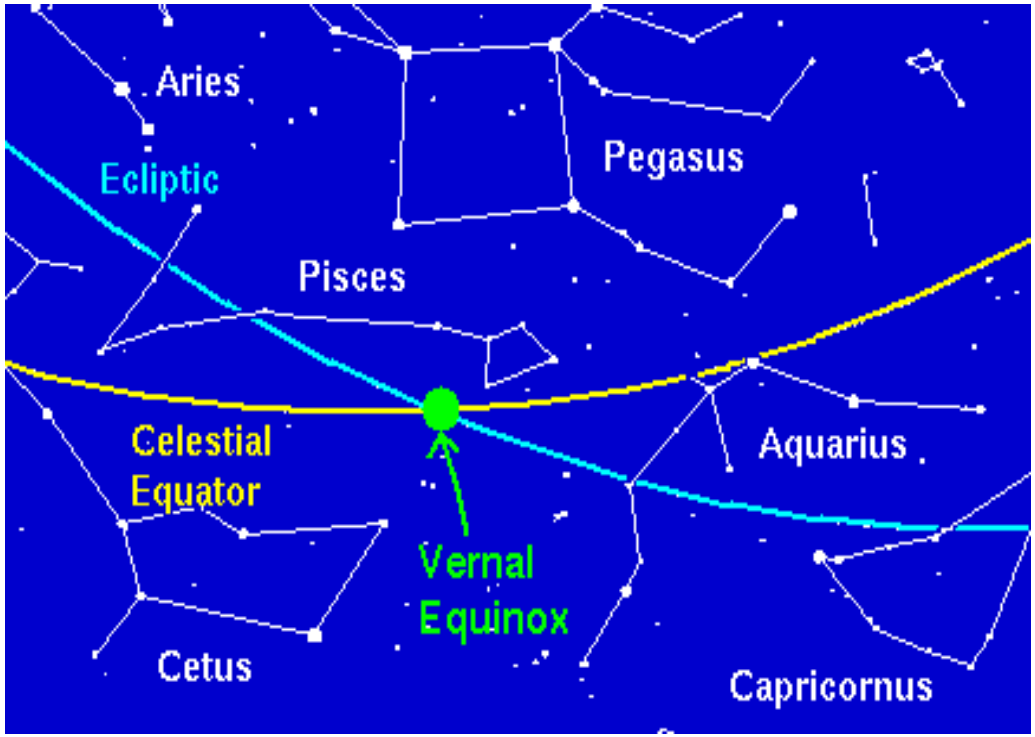
This is the system most commonly used in astronomy.

Problems With Equatorial



- Earth's poles define celestial poles/equator.
  - Earth's rotation is not 100% stable, it precesses like a top.
- Also, stars themselves are not stationary.

Vernal Equinox



The vernal equinox is defined as the point where the Sun's path along the ecliptic crosses the celestial equator.

Since the celestial equator is defined by the Earth's poles, and the Earth is precessing, this point changes over time.