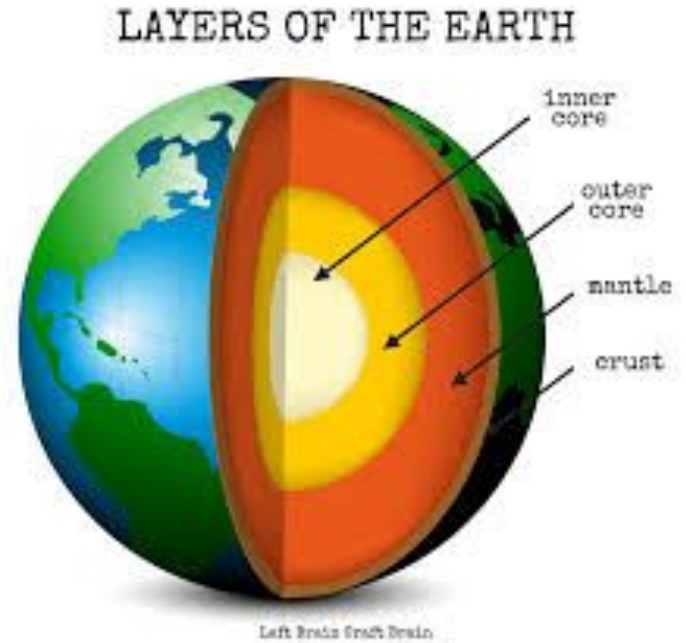


# STARGAZING

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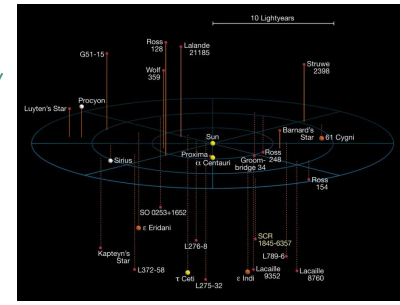
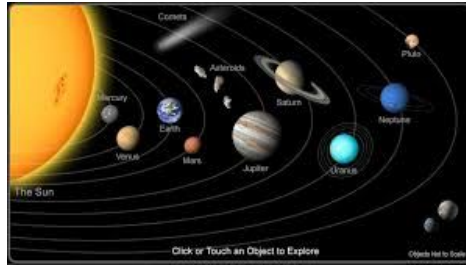
By: Isabella Oh, Brandon Hsu, Claudia Romer

- Earth: 13,000 km across and is made up of mostly molten rock and metal.
- Made up of four layers
  1. Inner core
  2. Outer core
  3. Mantle
  4. Crust



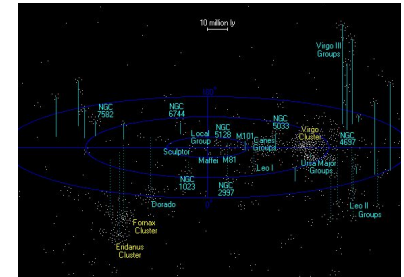
# Atmosphere/Magnetic field

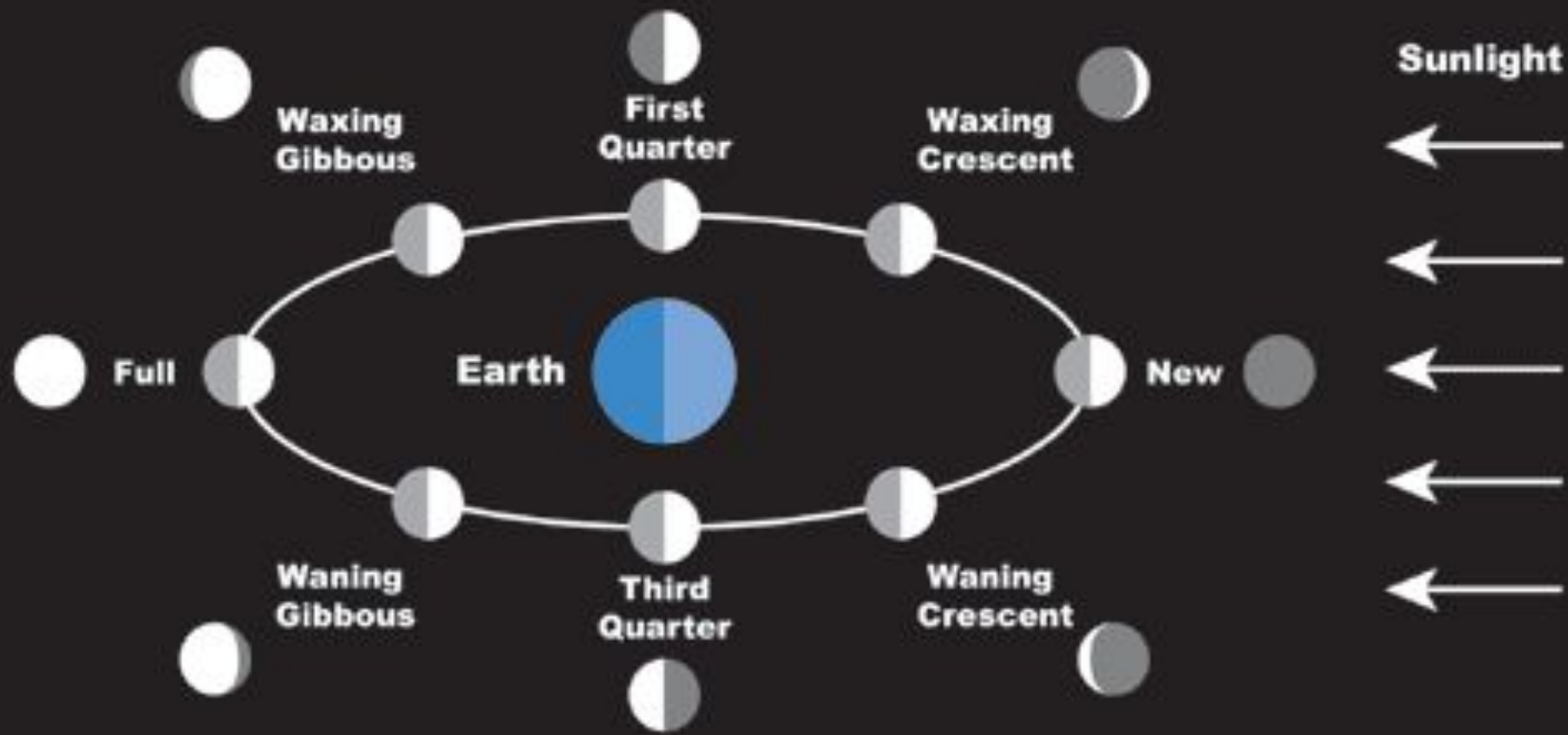
- Has an atmosphere of 100 km high
- The atmosphere is what makes the Earth livable
- Blocks some of the Sun's rays, traps heat, and has oxygen so we can breath.
- Surrounded by a magnetic field
- The magnetic field protects the Earth from the Sun's subatomic particles



Earth → Solar System → Interstellar Neighborhood →

Milky Way → Virgo Galaxy Cluster → Virgo Supercluster





# History of Stargazing

Copernicus - heliocentric

Brahe/Kepler - heliocentric

Newton - telescope, math, physics → revolution in astronomy

Galileo - improved telescope

Photography

Digital detectors

Satellites

Solar Eclipse: When the moon passes over the Sun, which creates a large shadow.



Lunar Eclipse: When the Moon passes directly behind Earth and into its shadow



## Naked Eye Observation

1. Lots of stars
2. Different brightness
3. Different colors
4. Uneven in the sky
5. Not all things in the sky are stars
6. Stars move over time

## Magnitudes

- Created by Hipparchus (Greek astronomer)
- Bright stars → lower magnitude
- Dimmer stars → higher magnitude

## Stars

After finding distance and brightness, we can find a star's:

- luminosity
- temperature
- mass
- diameter

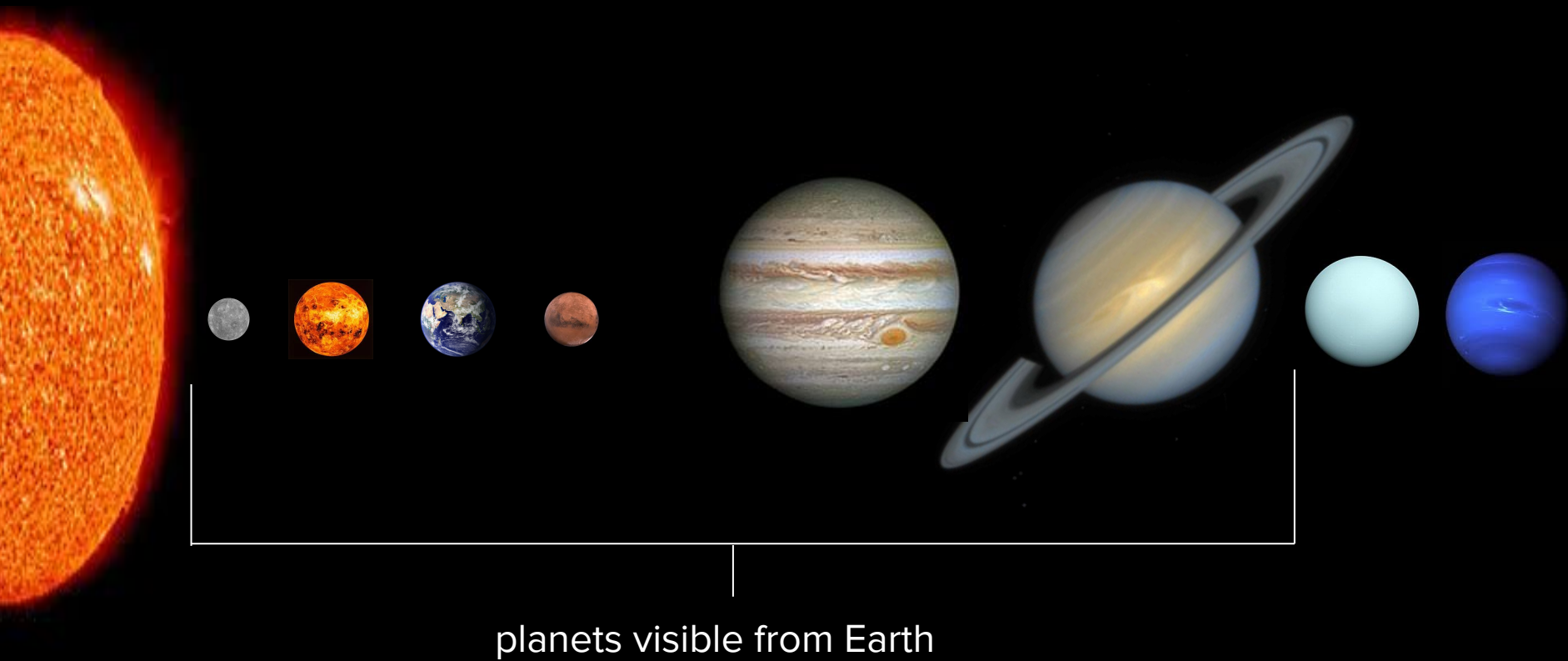


# Constellations

- Constellation: a group of stars forming a recognizable pattern that is traditionally named after its apparent form or identified with a mythological figure.
- Used to identify different regions in the sky
- Stars in constellations are assigned Greek letters based on brightness
- But most stars are given numbers



# Planets



# Telescopes

A telescope can make things easier to see: make the invisible visible, and make things already visible more clear

- Gathers light through the objective
  - Lens or mirror used by a telescope for collecting light
- Exponential increase with objective area
- Changes direction of light
  - Refracting telescope (breakable, bend frequencies of light differently)
  - Reflecting telescope (mirrors easier to use)

# Measuring the Universe

- Calculate distance to moon using lunar eclipse
- Using Kepler's 3rd law you can figure out distance from the sun
  - Transits of Mercury and Venus
- We then could predict motion of objects in space
- Parallax helped us determine distance to certain objects
  - Stars “move” due to Earth's rotation