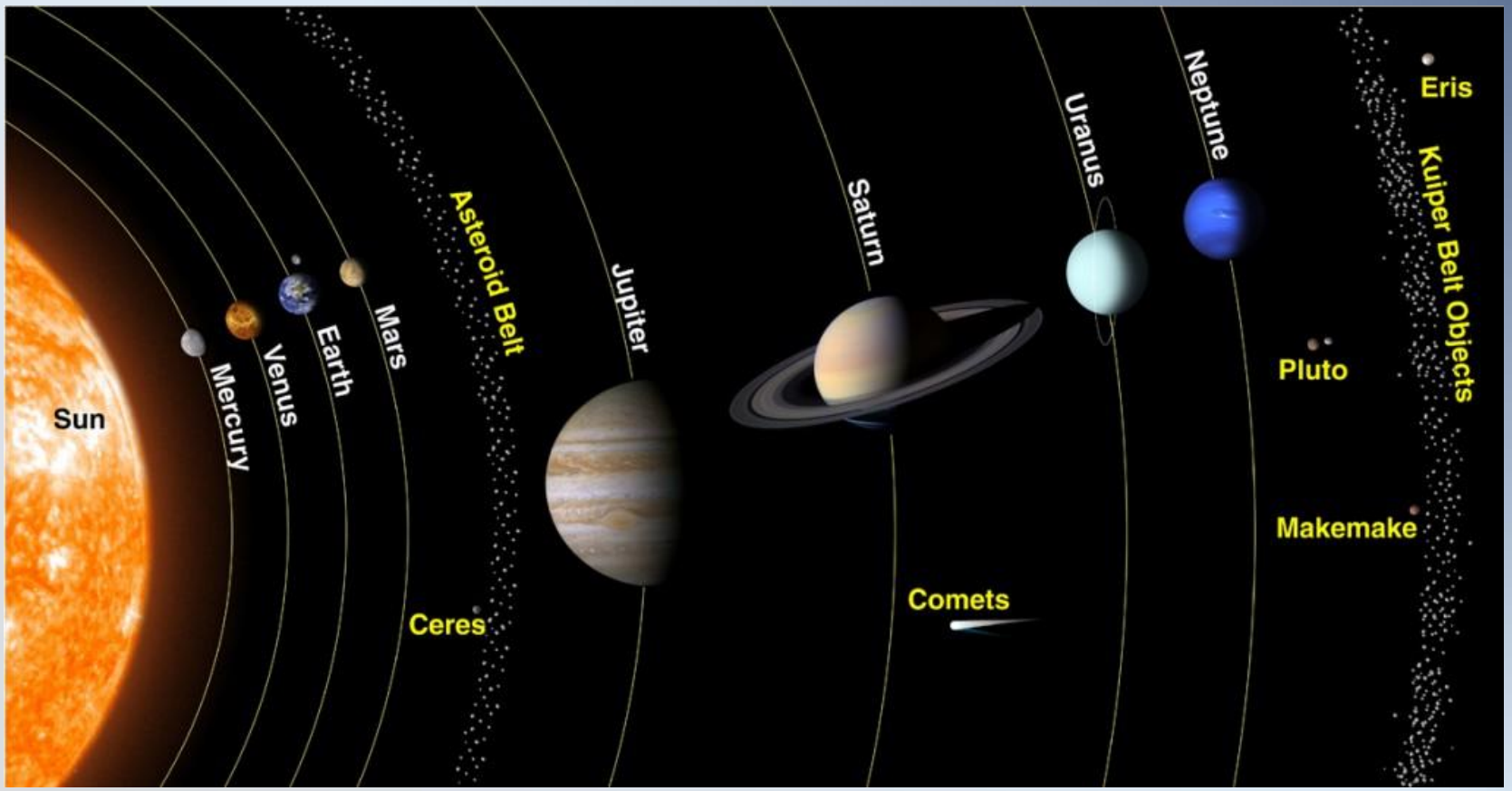
The Planets



Astronomers believe the solar system began 4.6 billion years ago.

A cloud of gas, ice and dust called a nebula.

Shock waves (possibly from a supernova, or exploding star) might have caused the cloud to compress.

Cloud became more dense, rotated faster, heated up, and flattened to form a disc

Heated material from contracting cloud triggered nuclear fusion, forming the Sun, material left behind became objects of solar system

Objects that orbit the Sun

- major planets – a planet must 1) orbit the Sun, 2) have a nearly spherical shape (static equilibrium) and 3) cleared most of its orbit around the sun

- dwarf planets – a dwarf planet must 1) orbit the sun, 2) have a nearly spherical-shape (static equilibrium), 3) has not cleared most of its orbit around the sun, and 4) is not a satellite (moon)

Major Planets

Planets are classified according to their location in the solar system.

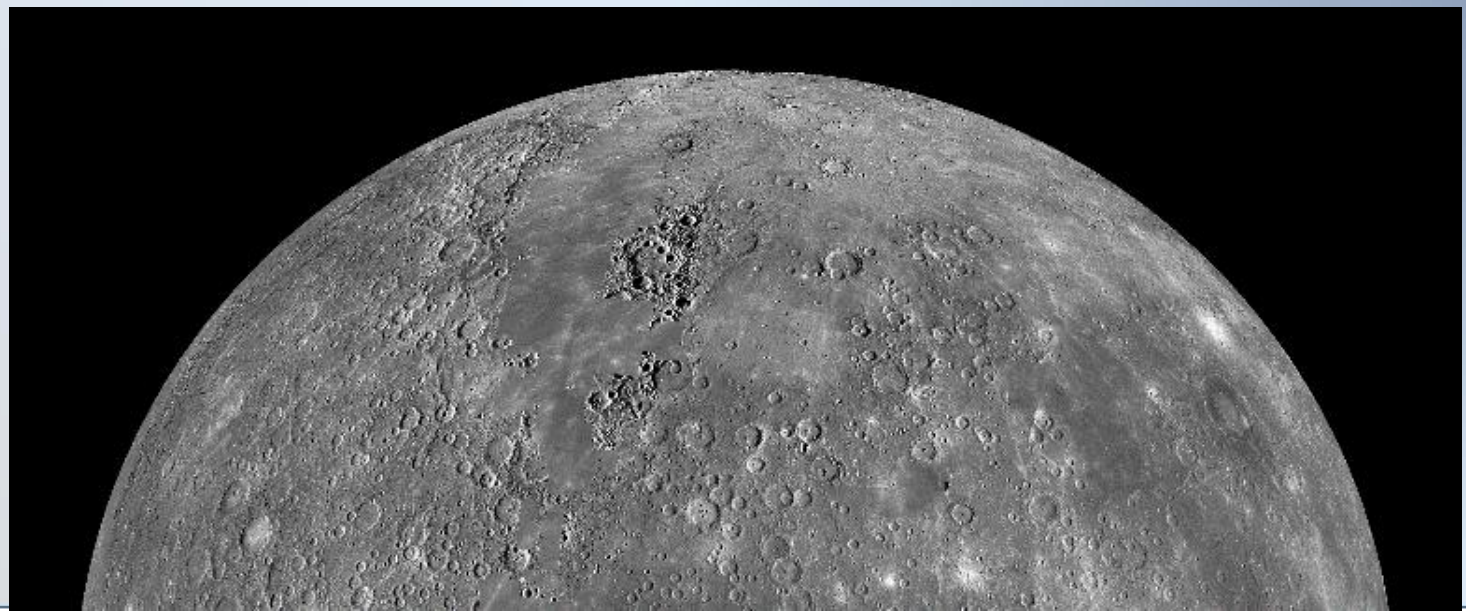
Inner planets are those with orbits between the Sun and asteroid belt; outer planets orbit outside the asteroid belt.

Terrestrial planets are made mainly of rocky material and giant gaseous planets are made mainly of ice and gas.

Mercury

Planet closest to Sun

- has no true atmosphere; surface temperatures are extreme
- has many craters and long, steep cliffs
- Considered a dead planet



Venus

Second from Sun and similar to Earth in size and mass

- extremely dense atmosphere of sulfuric acid clouds causing intense greenhouse effect resulting in surface temps between 450°C and 475°C
- Referred to as Earth's twin, similar in mass and size

Earth

Third planet from the Sun

- water exists on Earth as solid, liquid and gas
- atmosphere protects surface from meteors and Sun's radiation
- Has 1 moon

Mars

Fourth planet from the Sun

- called the red planet because of the iron oxide that is present in the surface rocks giving them reddish color
- thin atmosphere causing extreme temperatures, strong winds and global dust storms
- has polar ice caps, seasons, and other evidence that water is or was once present
- Has 2 moons
  - Phobos and Deimos

Jupiter

Largest planet in solar system; fifth from Sun

- atmosphere mostly hydrogen and helium; many high pressure gas storms with the most notable being the Great Red Spot
- has 79 confirmed moons and 5 unconfirmed with 4 having their own atmosphere
- Faint rings

Saturn

Sixth planet from Sun, second largest in solar system

- thick outer rings of hydrogen, helium, ammonia, methane and water vapor
- 53 known moons 9 waiting for confirmation, with largest moon, Titan, being larger than Mercury

Uranus

Seventh planet from Sun; large and gaseous

- methane in atmosphere gives planet it blue-green color
- Has a tilted axis of rotation moving around Sun like a rolling ball
- Is tilted on it's side, may have been from a collision.
- Has faint rings
- 27 confirmed moons –
  Most named after William Shakespeare characters

Neptune

Eighth planet from Sun

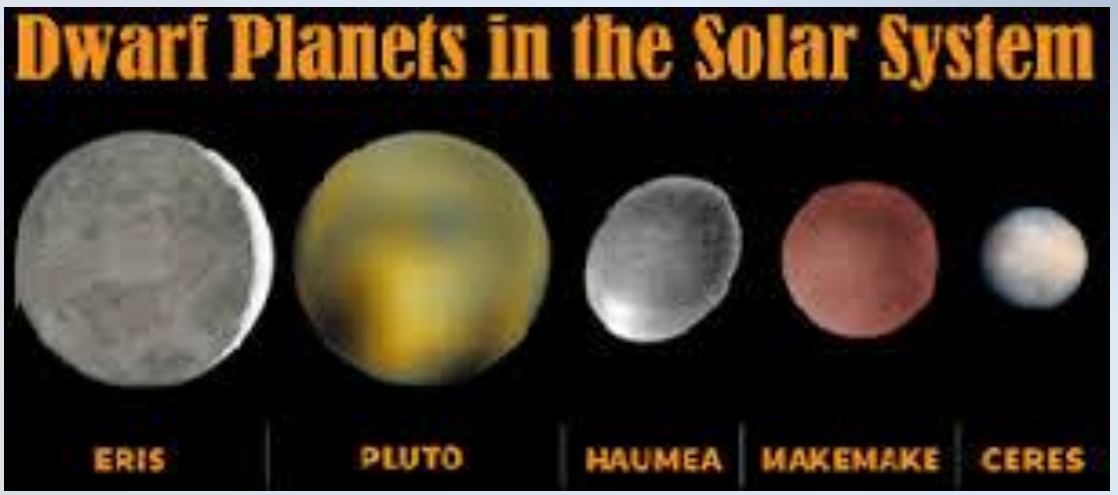
- has surface of frozen nitrogen and geysers that erupt nitrogen gas
- Has faint rings
- Has 13 confirmed moons, 1 waiting to be confirmed.
- It is the windiest planet.

Dwarf Planets

- The first 5 recognized dwarf planets are:
  - Ceres
  - Pluto
  - Eris
  - Makemake
  - Haumea
- Ceres is found in the asteroid belt between mars and Jupiter and was discovered in 1801 (Pluto is not the only one struggling to be a major planet)
- Pluto, Eris, Makemake, and Haumea are located in the Kuiper belt beyond Neptune's orbit

Dwarf Planets

Since 2005, more than 50 objects in the Kuiper belt are being monitored and may eventually become dwarf planets.



Possible new Model of the Solar System