

Daily Routine

- Sit in your appropriate seat quietly
- All back packs on the floor
- All cell phones away
- All iPods off and headphones out of your ears
- Have all necessary materials out
- No food or drink except for water

Bell Work

- What is a nebula?
- Explain how the solar system formed.

Announcements

- Solar System Test on Thursday

What is a planet?

The Solar System:

Is Pluto a planet or a dwarf planet?

Today we will

- Graph relationships of different planet data
- Analyze graphs about planetary data
- Describe trends of graphs to determine locations of unknowns

Graphing our Solar System Planet Data

Name of Planet	Distance (AU)	Temperature (°C)	Orbital Period (Years)	Orbital Speed (km/sec)
Mercury	0.4	167	.2	48
Venus	0.7	464	.6	35
Earth	1.0	15	1.0	30
Mars	1.5	-65	1.9	24
Jupiter	5.2	-110	12	13
Saturn	9.5	-140	30	10
Uranus	19.2	-195	165	7
Neptune	30.7	-200	248	6

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Bell Work

- Explain how planets are formed.

Announcements

- Solar System Test on Friday 2/13

What is a planet?

The Solar System:

Is Pluto a planet or a dwarf planet?

Today we will

- Categorize Solar System objects
- Define the categories characteristics and observations
- Discuss what defines a planet
- Discuss whether Pluto is a planet

Categorizing Solar System Objects

- Get into groups of 2 people
- Categorize Solar System objects by prior knowledge, observations, and information on the cards
- Define your category with criteria
- Make sure that you write down the name of the category, the criteria for the objects in your category, and the objects in the category
- Answer questions on the back side

What defines a planet?

- Get into your groups at your lab stations.
- Discuss in your groups for a couple of minutes about what a planet is
- We will define what a planet as a class
- Is Pluto a planet or something else? Why?

What is a planet? Reading

- After reading answer the following questions:
- What is the definition of a planet?
- Why does or why doesn't Pluto fulfill the definition of a planet?

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- What is a planet?
- Why isn't Pluto considered a planet?

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What is a planet?

The Solar System:

Is Pluto a planet or a dwarf planet?

Today we will

- Define the categories of Solar System objects based on characteristics and observations
- Discuss what defines a planet
- Discuss whether Pluto is a planet

Yesterday's activity

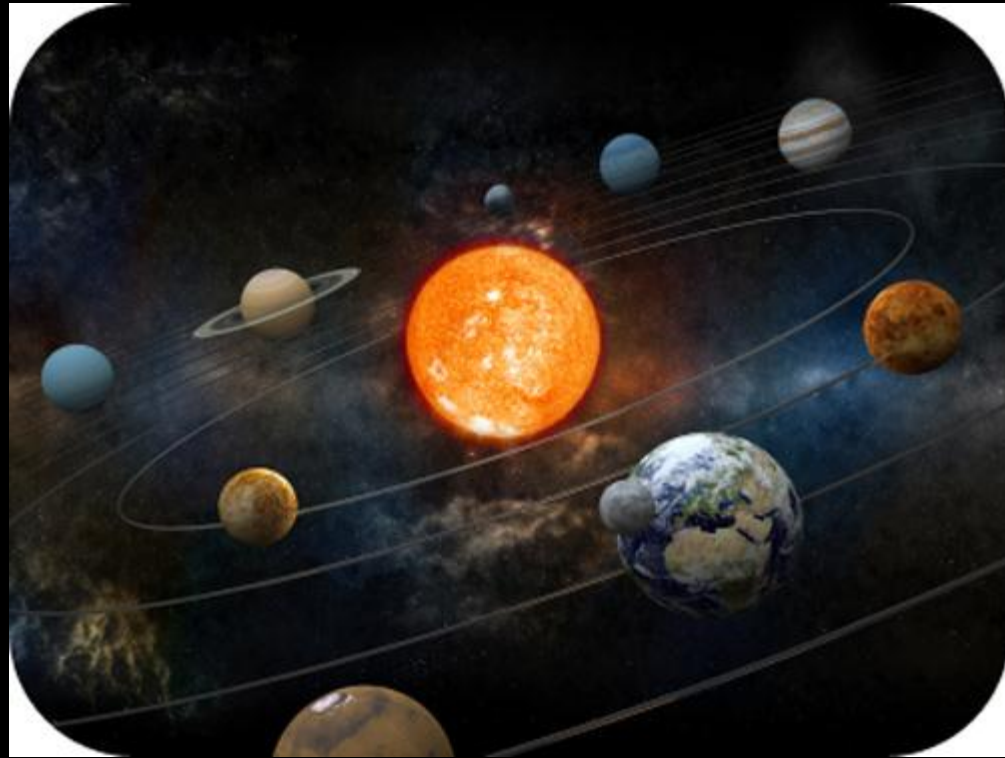
- How are creating categories of objects a useful way for organizing scientific information?
- Is it acceptable that scientists use different personal categories or similar categories when performing observations or scientific studies?
- In the case of new discoveries, do you think scientists should create a new category for an object, or revise and redefine current categories?

What are the different categories of Solar System Objects?

- Planets
- Dwarf Planets
- Moons
- Asteroids/Meteors/Meteorites
- Comets
- Stars – The Sun

What are planets?

- Orbit around a star like the Sun
- Has enough mass to be nearly spherical in shape
- Spherical shape created by equal distribution of gravity
- Has cleared out the neighborhood around its orbit



What is a dwarf planet

- Orbits around a star like the Sun
- Has enough mass to be nearly spherical
- Has not cleared the neighborhood around its orbit
- Shares orbital neighborhood with other objects like it



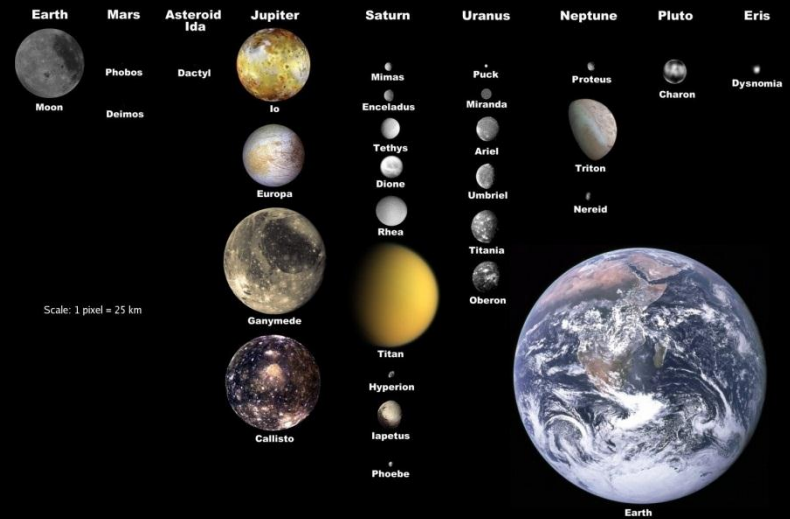
Confirmed & Candidate Dwarf Planets



What are moons?

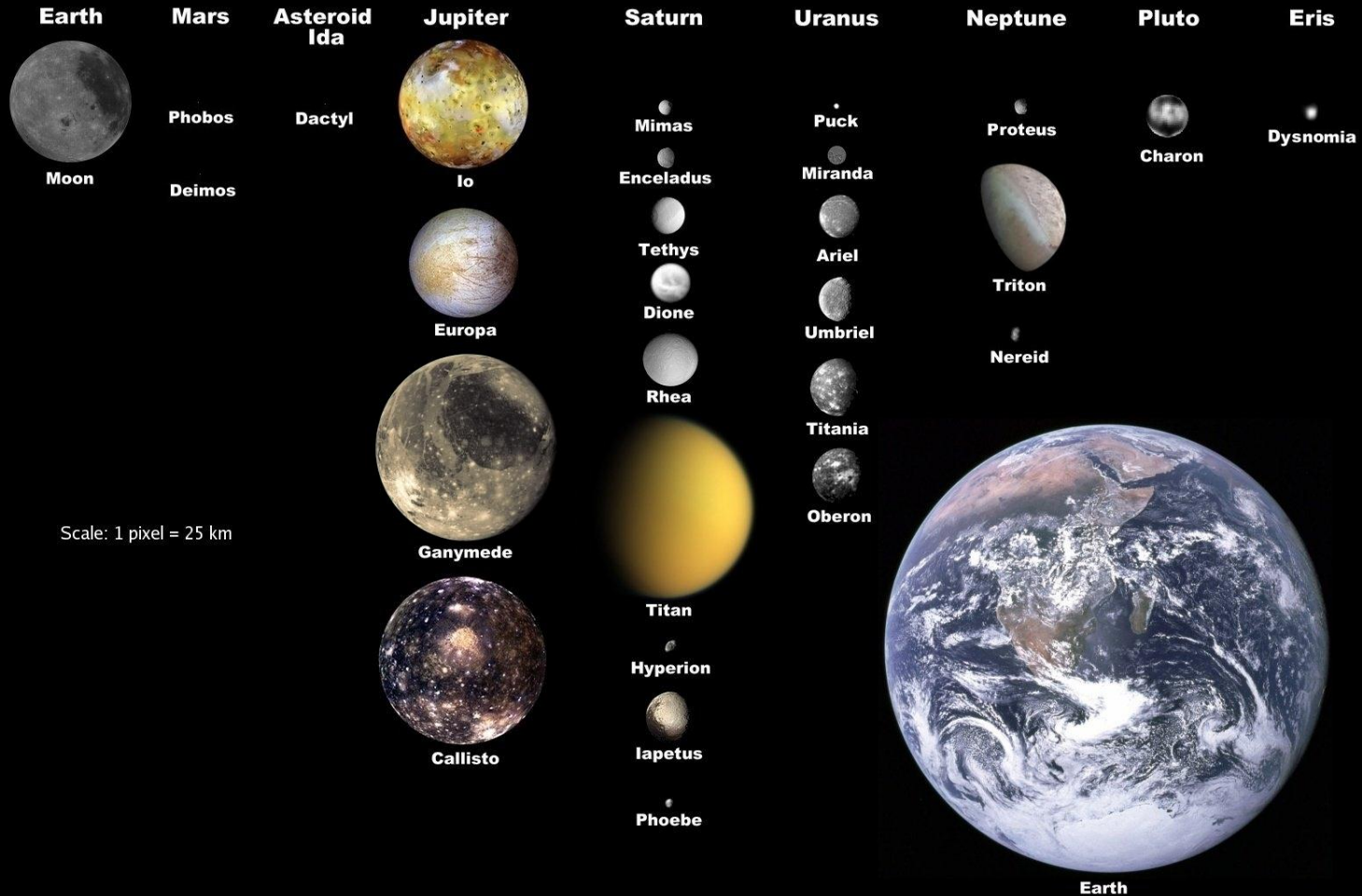
- Known as satellites
- Orbits another object that orbits the Sun
- Orbits planets, dwarf planets, or asteroids

Selected Moons of the Solar System, with Earth for Scale



Moons of the Solar System

Selected Moons of the Solar System, with Earth for Scale



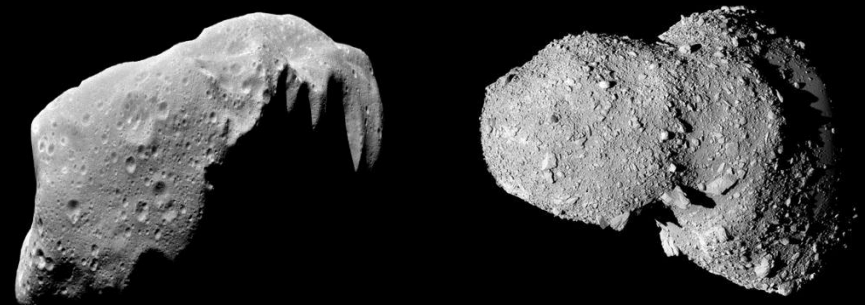
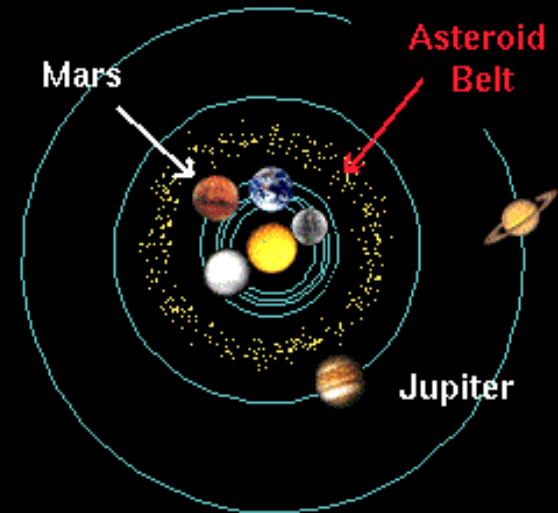
What are comets?

- small body that orbits the Sun
- Elliptical orbit
- Orbit created by gravitational pull by planets and the Sun
- Has a tail when gets closer to the Sun
- Solar radiation causes tail to form
- Made from rock, dust, and ice



What are asteroids?

- Small rocky or metal body that orbits the Sun
- Can be part of the asteroid belt between Mars and Jupiter
- When entering planet atmosphere, it becomes a meteor
- When making an impact at the surface, it is known as a meteorite



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Bell Work

- What does it mean when a planet has “cleared its neighborhood around orbit”?
- What are asteroids, meteors, and meteorites?

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What is a planet?

The Solar System:

Is Pluto a planet or a dwarf planet?

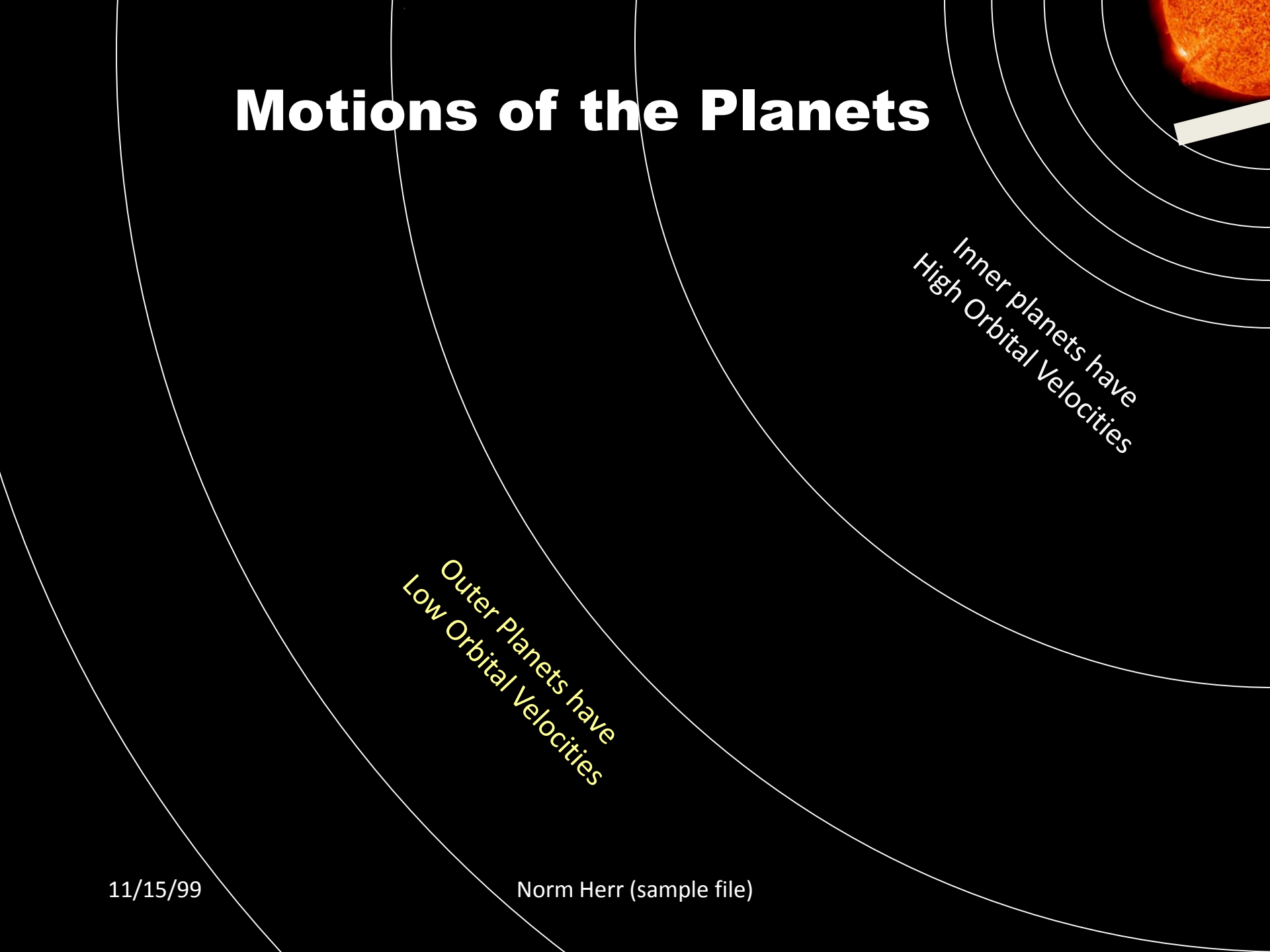
Today we will

- Define the categories of Solar System objects based on characteristics and observations
- Discuss what defines a planet
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Solar System Planet Activity

- Groups of four people
- Need to take out a piece of paper...make sure to write your name, date, and period on the paper.
- Make sure write the name of the planet of the station before answering the questions
- Answer all questions in complete sentences
- After 2-3 minutes I will ask you to switch stations to the next planet

Motions of the Planets

A diagram of the solar system with the Sun in the top right corner. Several concentric white circles represent the orbits of the planets. A white rectangular bar is positioned on the innermost orbit. The text 'Inner planets have High Orbital Velocities' is written in white, following the curve of the inner orbits. The text 'Outer Planets have Low Orbital Velocities' is written in yellow, following the curve of the outer orbits.

Inner planets have
High Orbital Velocities

Outer Planets have
Low Orbital Velocities

Inner (*Terrestrial*) Planets vs. Outer (*Gassy*) Planets

- *The Inner (Terrestrial) planets are:*
 - Mercury, Venus, Earth, and Mars
 - Smaller and Closest to the sun
 - Rocky, & therefore more dense
 - Orbit the sun faster
 - Made mostly of Iron and silica
- *The Outer (Gaseous Giants/Jovian) planets are:*
 - Jupiter, Saturn, Uranus, and Neptune
 - larger & Farther from the sun
 - Made of gas, and therefore less dense
 - Orbit the sun slower
 - Made mostly of Hydrogen and Helium

Floating Debris Past Neptune...

- Keiper Belt
 - Donut shaped cloud of material past Neptune
 - Contains short-period comets and dwarf planets
 - Icy material from early Solar System
- Oort Cloud
 - Spherical cloud of material surrounding the Solar System
 - Contains long-period comets
 - Icy material from early Solar System