

Space Debris

Asteroids

- Thought to have formed by various meteoric collisions
- Now believed to have formed during the formation of the universe
- They're like small planets with no atmosphere
- Bigger than meteoroids yet smaller than planets
- Three types of asteroids

Carbonaceous (C-Type)

- 75% of known asteroids
- Composition is thought to be similar to the sun minus helium and hydrogen
- In the main outer regions of the Asteroid Belt



Silicate (S-Type)

- 17% of known asteroids
- Metallic iron
- Dominate the inner asteroid belt



Metallic (M-Type)

- Made primarily of metallic iron (nickel)
- Are part of the the middle region of the asteroid belt
- Relatively bright



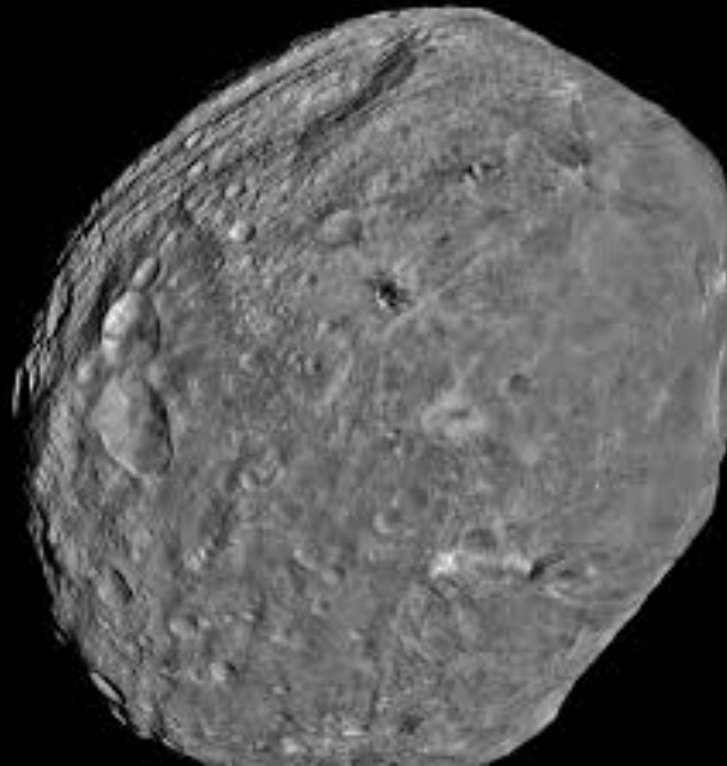
Asteroid Belt's Largest Objects

- The belt is between Mars and Jupiter
- Ceres, Vesta, Pallas and Hygiea (half the total mass of the belt)

Ceres (Dwarf Planet)



Vesta



Pallas

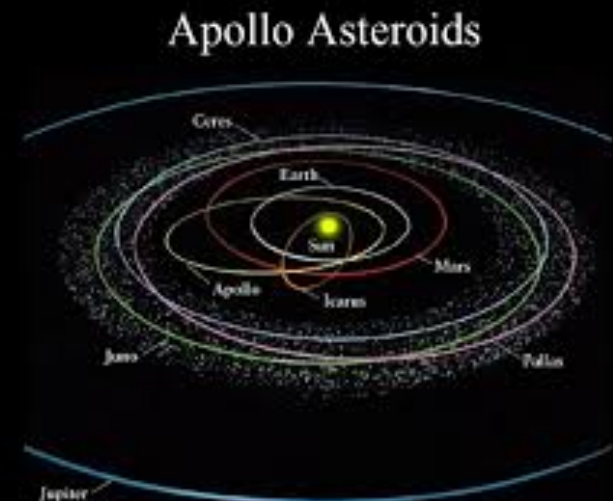


Hygiea



Impact!

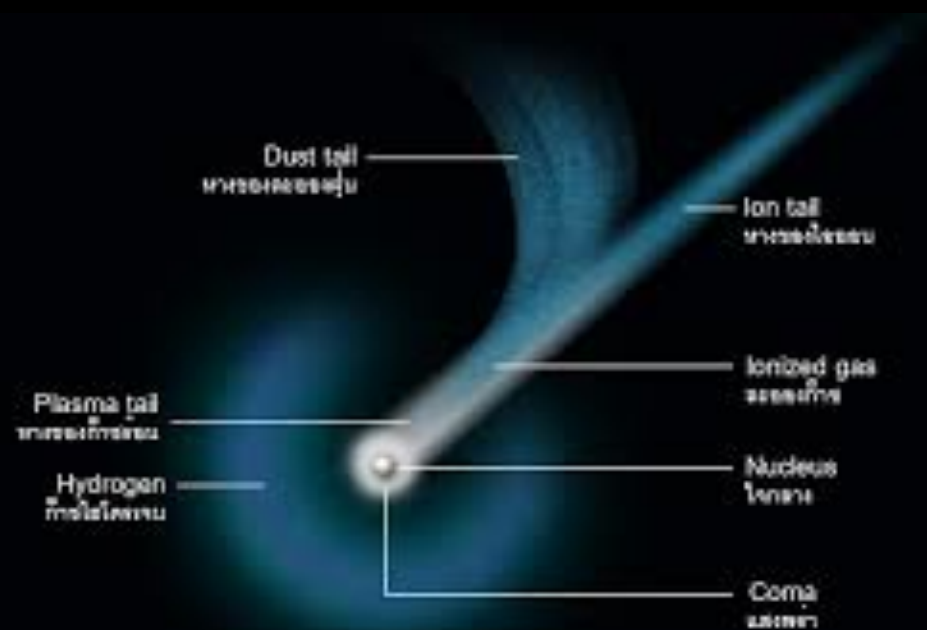
- Majority of asteroids remain in the belt, some have a high eccentric orbit that can cross the orbital path of the Earth
- Nearly 100 Apollo asteroids have been identified
- We do track the negative impacts asteroids may have on Earth



Comets

- Dirty snowball
- Composed of ice and dust
- Highly eccentric orbit
- As a comet approaches the Sun, material can vaporize and ionize to create a gaseous head (coma) with two long tails (one made of dust the other of ions)





SunflowerCosmos

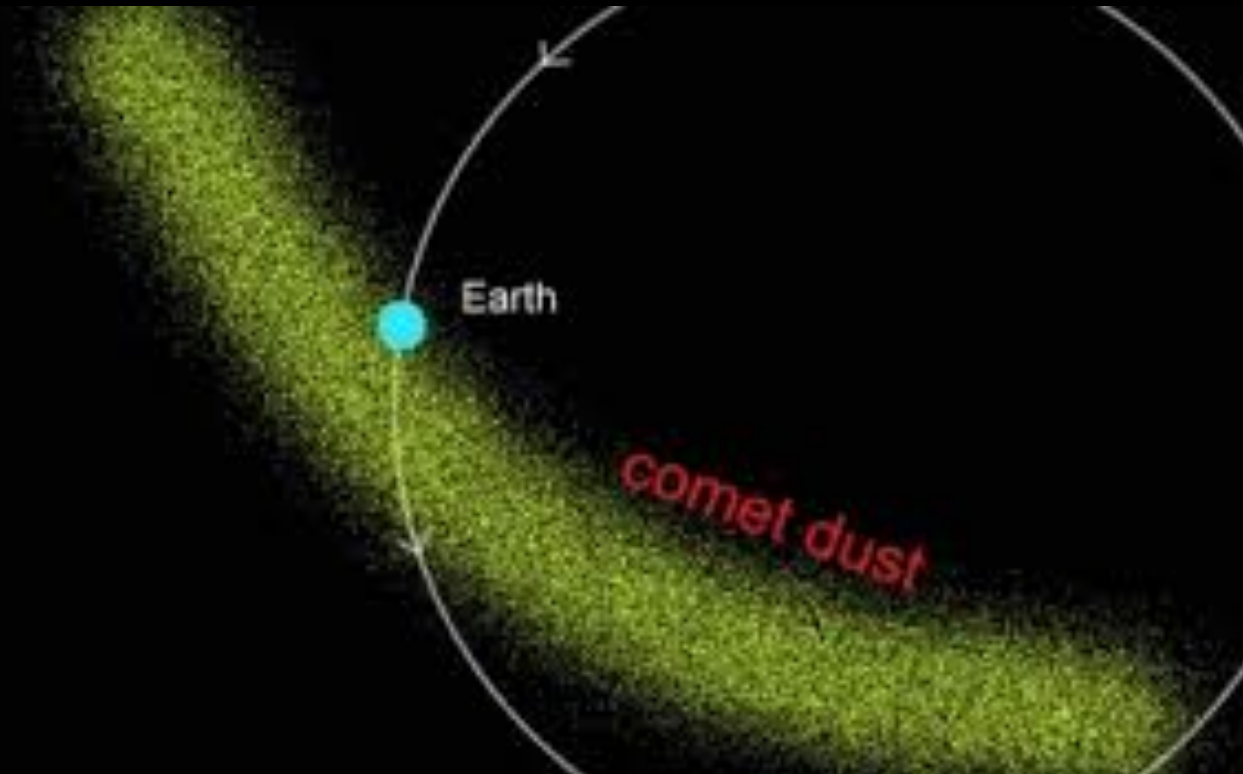
April Showers



April Showers Cont'd

- Meteor shower that occurs each year from April 16-26
- Located in the constellation Lyra (Lyrid)
- Longest known meteor shower
- Occurs as Earth passes through a trail of debris left by the comet Thatcher (C/1861 G1)
 - Comet seen 4/11/1861-9/07/1861
 - Takes 415.5 years for a complete orbit
 - The shower has been observed for 2,700 years (687 BC)

Thatcher Comet



Meteoroids

- Sand to boulder size debris
- Sometimes come from impacts of asteroids
- Rocky objects that enter the Earth's atmosphere
- Most burn up in Earth's atmosphere, larger ones can find their way to the surface
- The visible path of a meteoroid entering Earth's atmosphere is the "meteor"

Meteors

- Commonly known as the “shooting star”
- Meteors become visible 40-75 miles above Earth’s surface
- Streak of light is from intense heat of a narrow channel in Earth’s atmosphere
- Most meteoroids that cause meteors are about the size of a pebble

Meteorites

- Portion of the meteoroid or asteroid that survives passage through the atmosphere and impacts the ground without being destroyed
- Most disintegrate when entering the atmosphere
- Estimated 500 meteorites ranging from the size of marbles to basketballs that hit the surface
- Few are recovered and made known to scientists