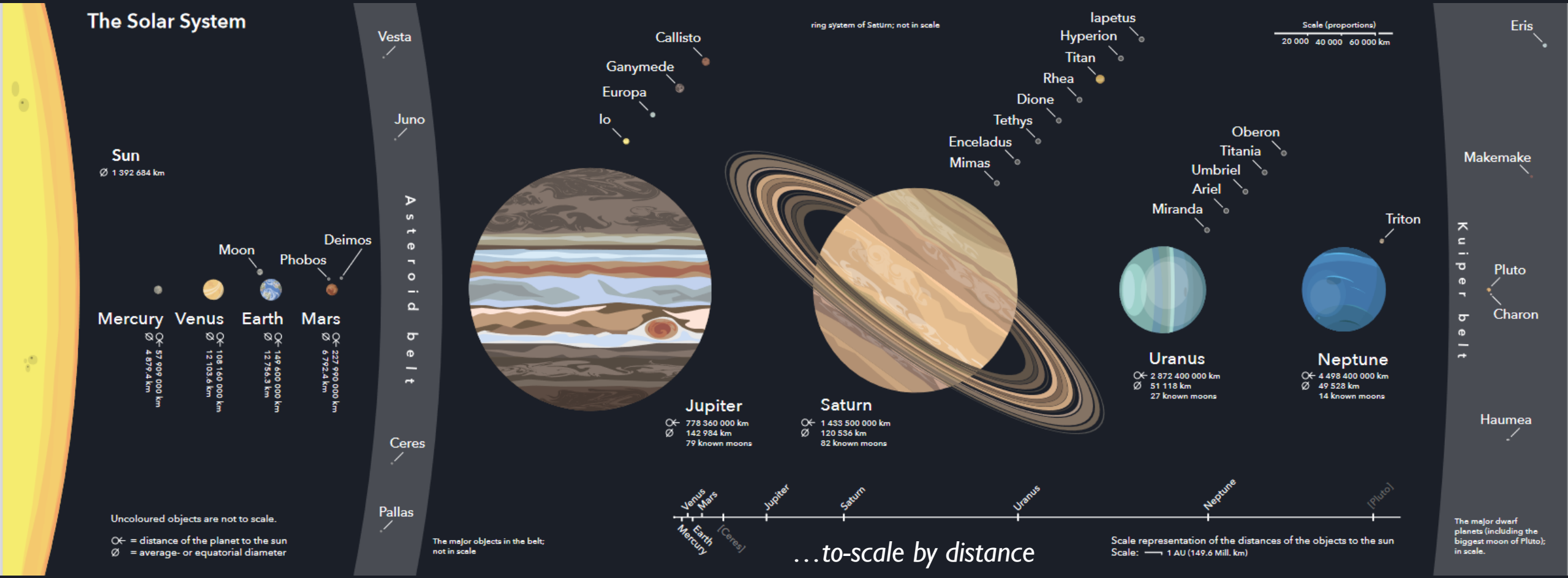


*An introduction to*  
**the Solar System**

Zach Meisel

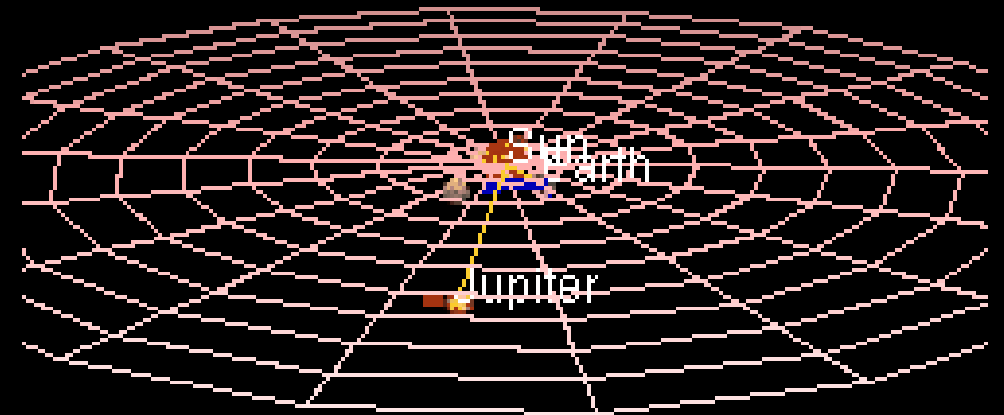
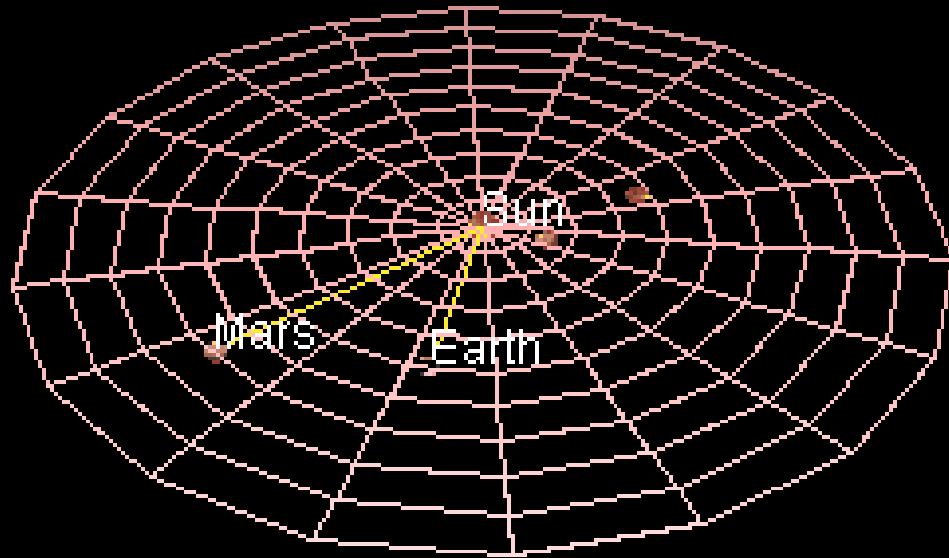
Ohio University - ASTR 1000

# Overview of the solar system

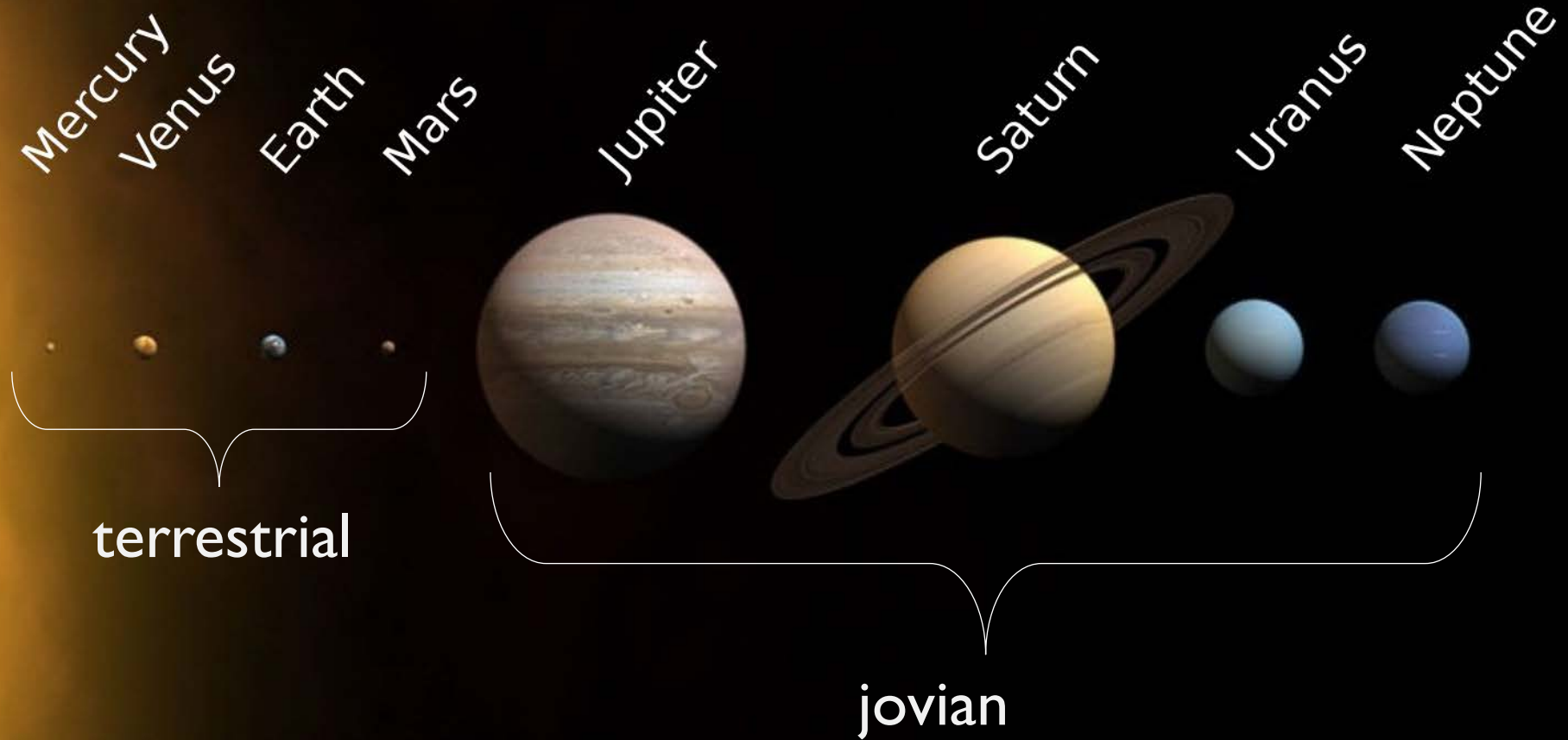


# Overview of solar system orbits

For the most part, orbits are pretty close to circular and close to the **ecliptic**

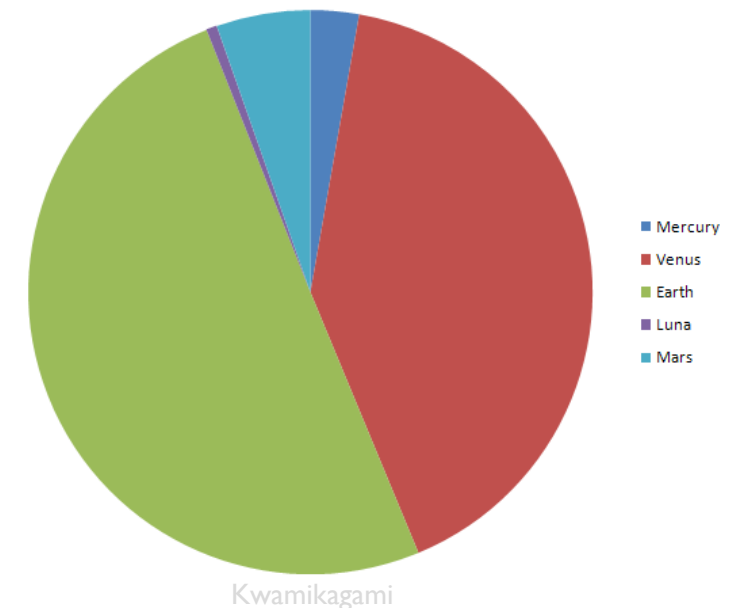
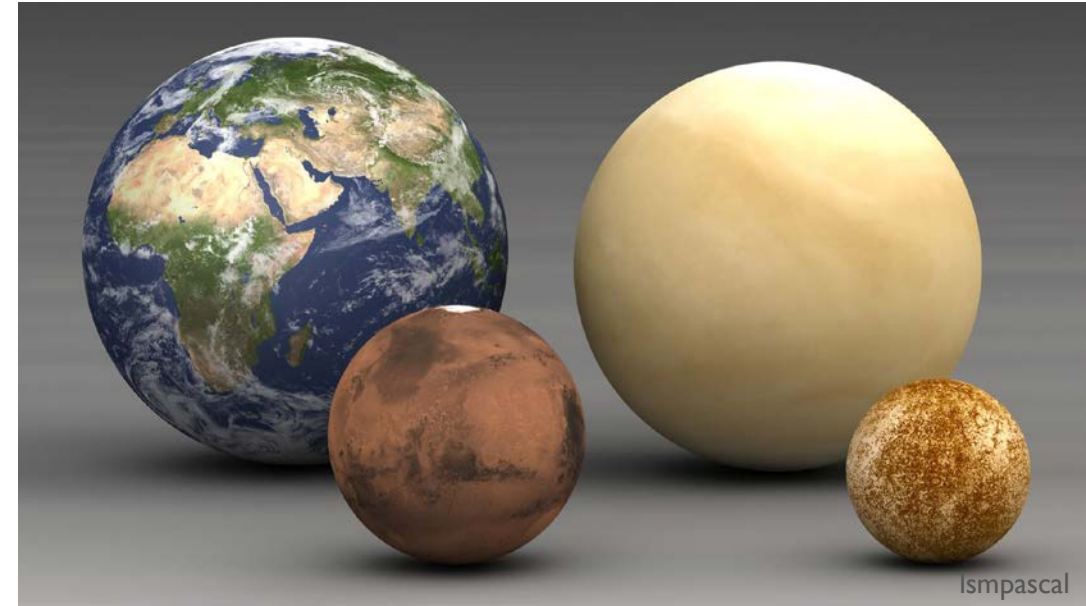


# The Planets



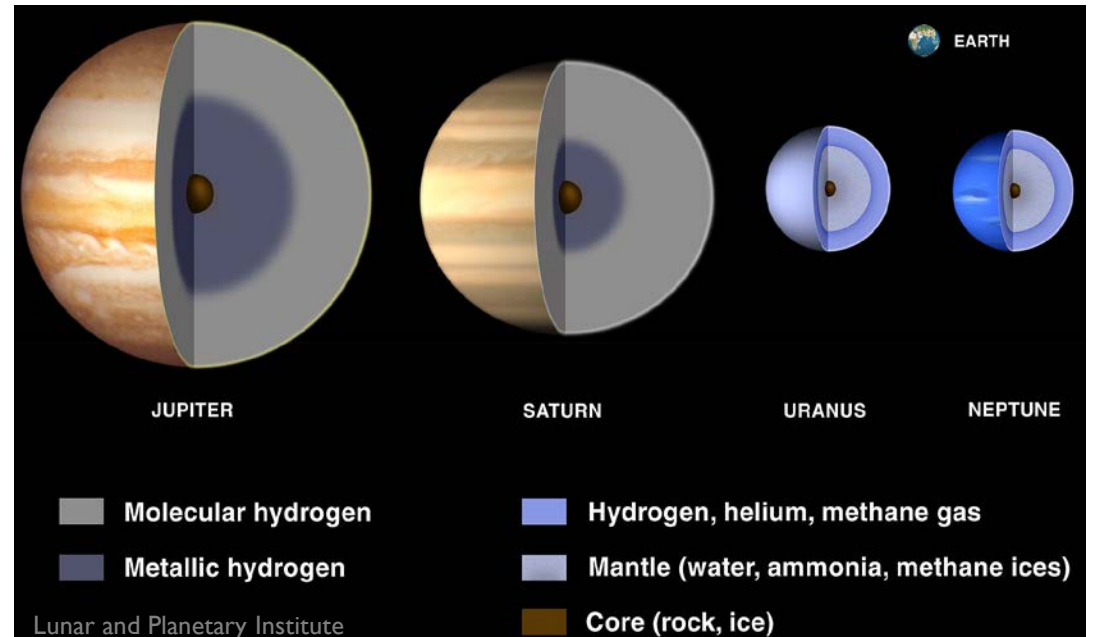
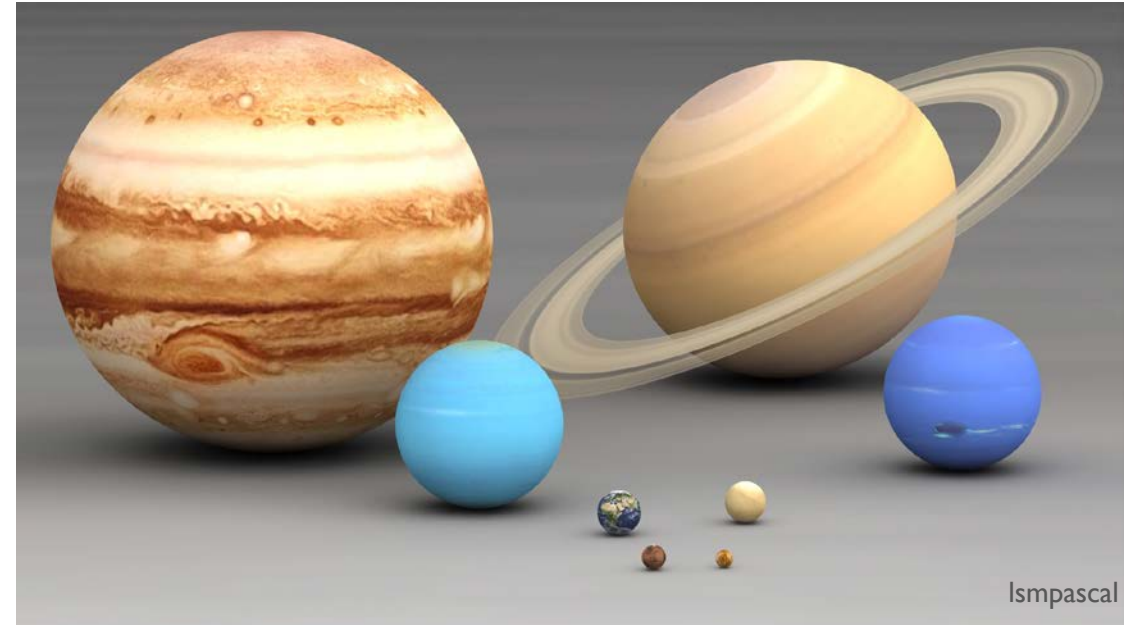
# Terrestrial Planets (*a.k.a. inner planets*)

- Inside the solar frost line ( $\sim 5$  AU), so
  - densities of  $\sim 4\text{-}6$  g/cm<sup>3</sup> (rocks & minerals)
- Thin atmospheres are
  - thick enough for weather, except on Mercury
  - secondary! i.e. are from volcanic activity and comet impacts and were not formed by accretion during formation
- Earth is the largest in the solar system
- Few moons:
  - Mercury: 0
  - Venus: 0
  - Earth: 1 planet-sized moon
  - Mars: 2 asteroid-sized moons



# Jovian Planets (*a.k.a. outer planets, a.k.a. giant planets*)

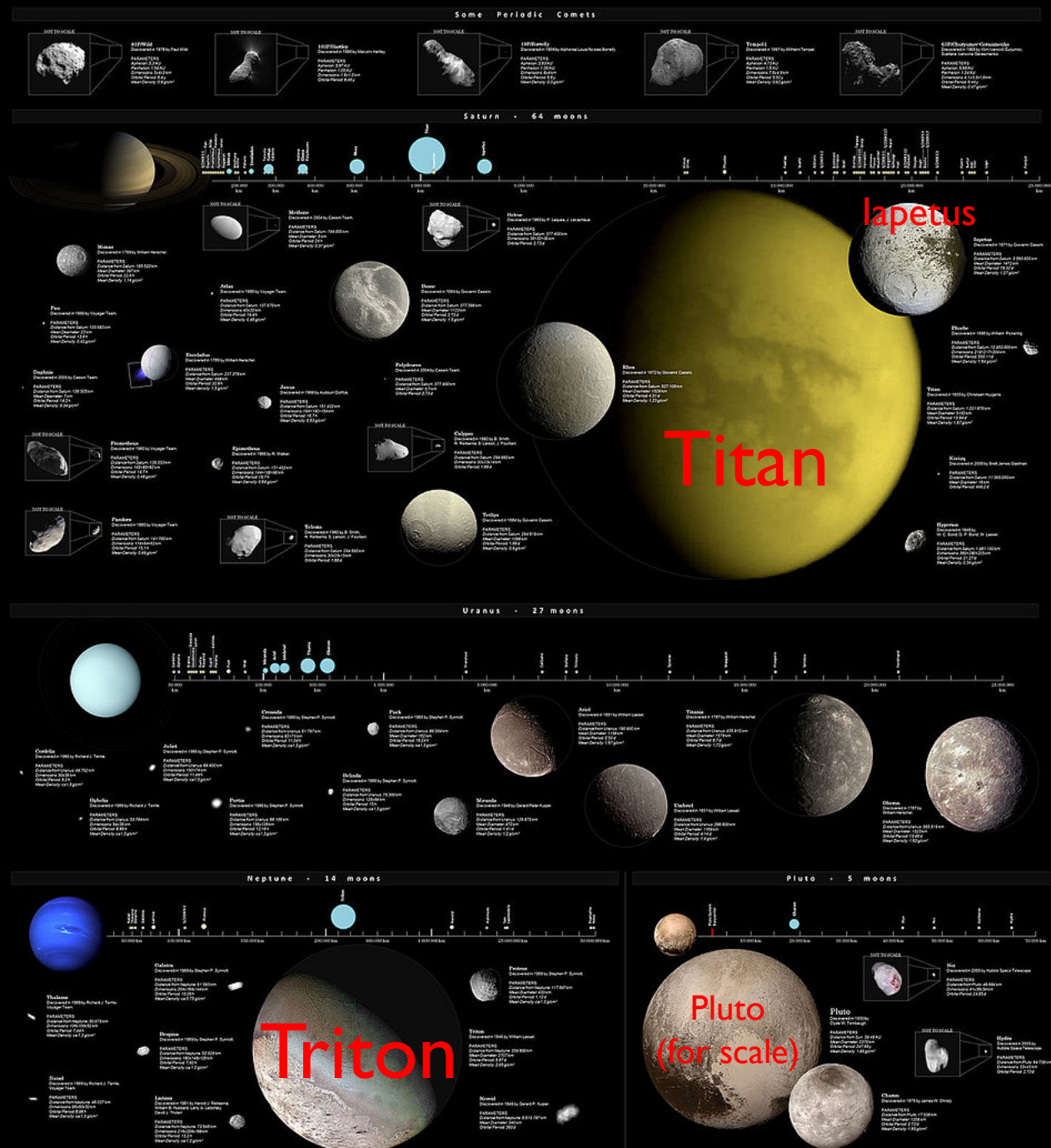
- **Outside** the solar frost line ( $\sim 5$  AU), so
  - densities of  $\sim 1$  g/cm<sup>3</sup> (**liquids & ices**)
- **Thick** atmospheres are
  - **most of the radius of the planet**
  - **primary**: were formed by accretion during formation
- **Jupiter** is the largest in the solar system
- **Lots of moons**:
  - Jupiter: 79 (4 of which are planet-sized)
  - Saturn: 82
  - Uranus: 27
  - Neptune: 14
- **Rings**





# 200+ Moons (a.k.a. natural satellites)

THE REPRESENTATION BETWEEN MOONS & PLANET ON DISTANCE LINE AND PLANET & PLANET OF DISTANCE LINE IS NOT TO SCALE

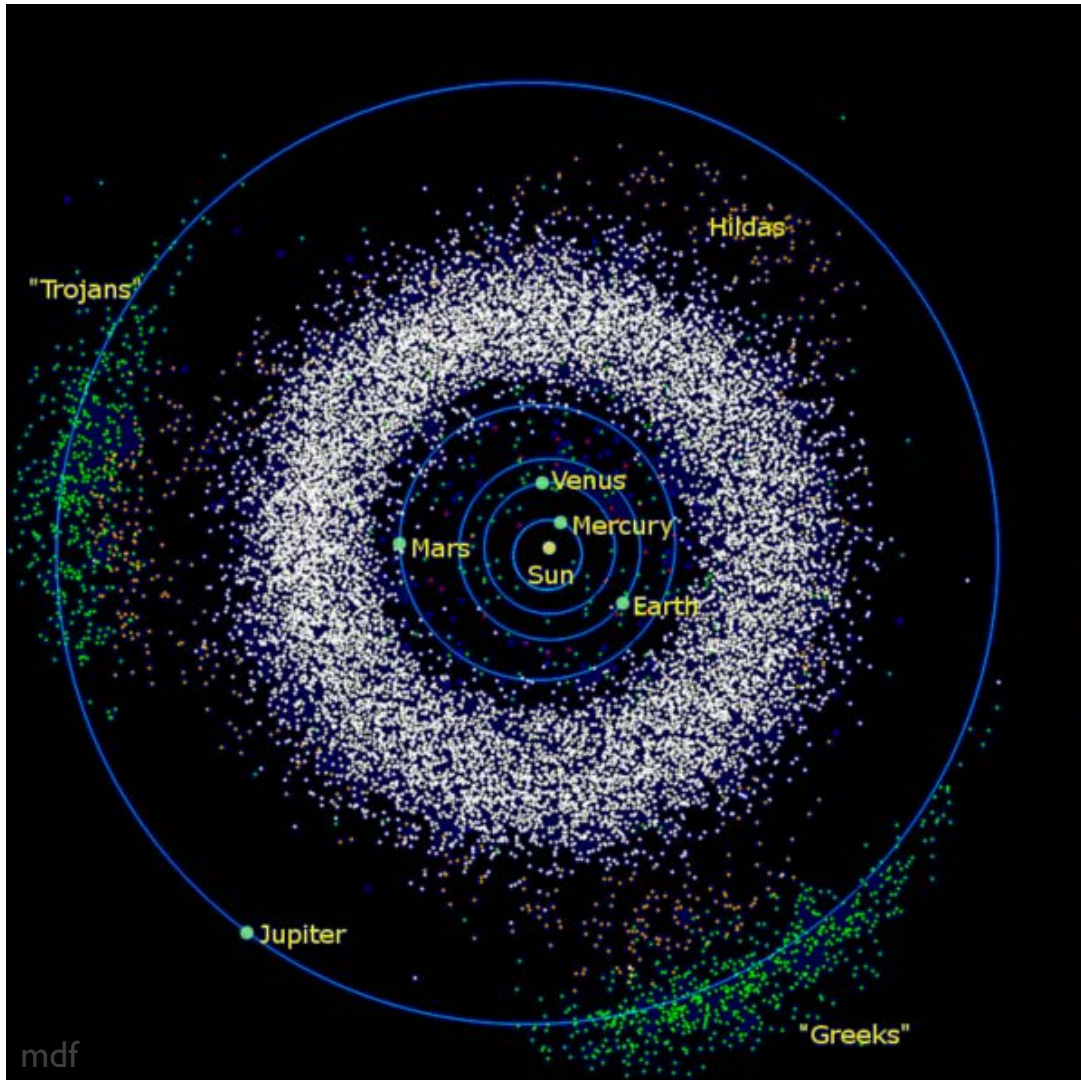




# Belts

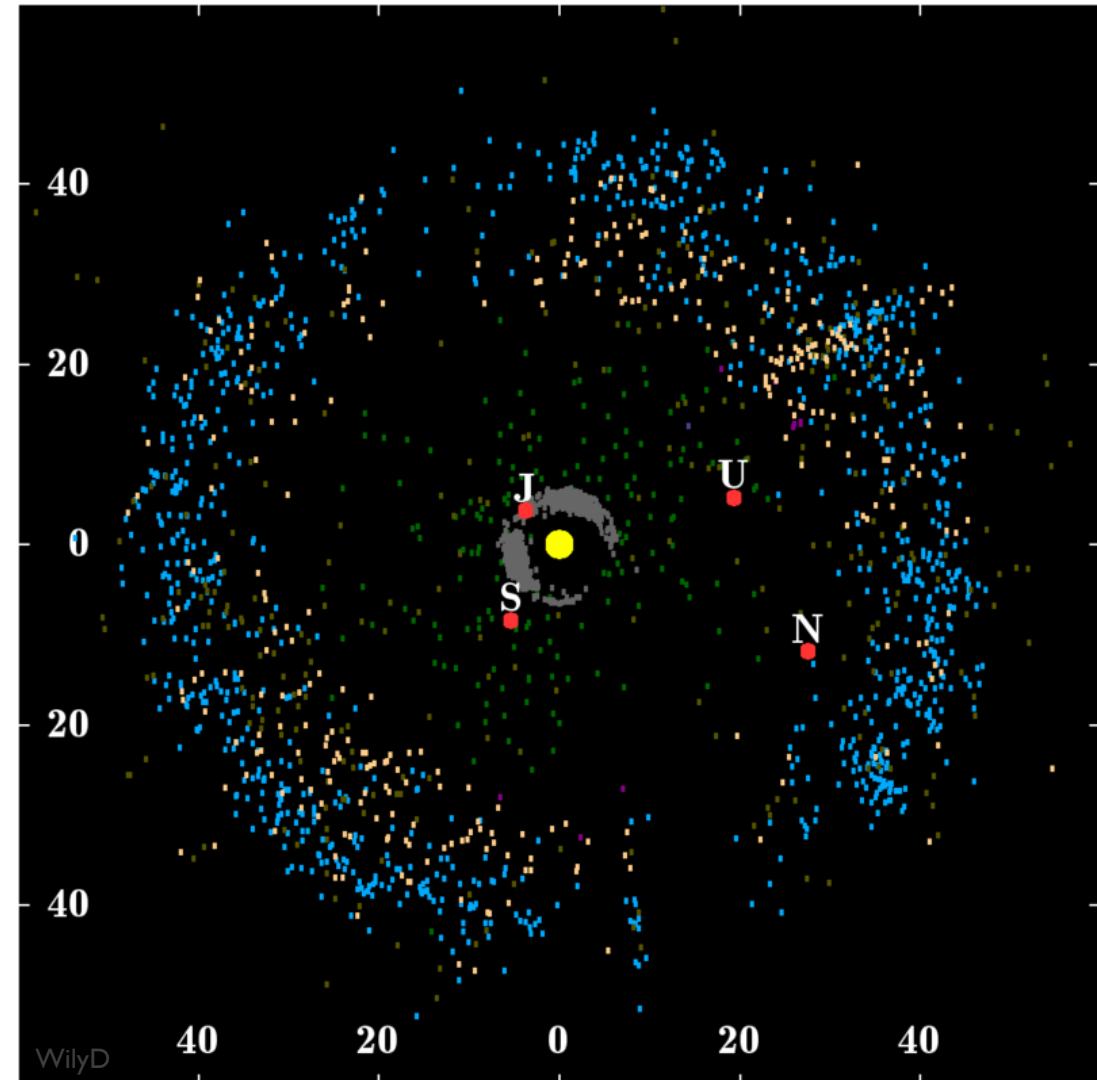
## Asteroid Belt

*rocks (some very large) that didn't form a planet*



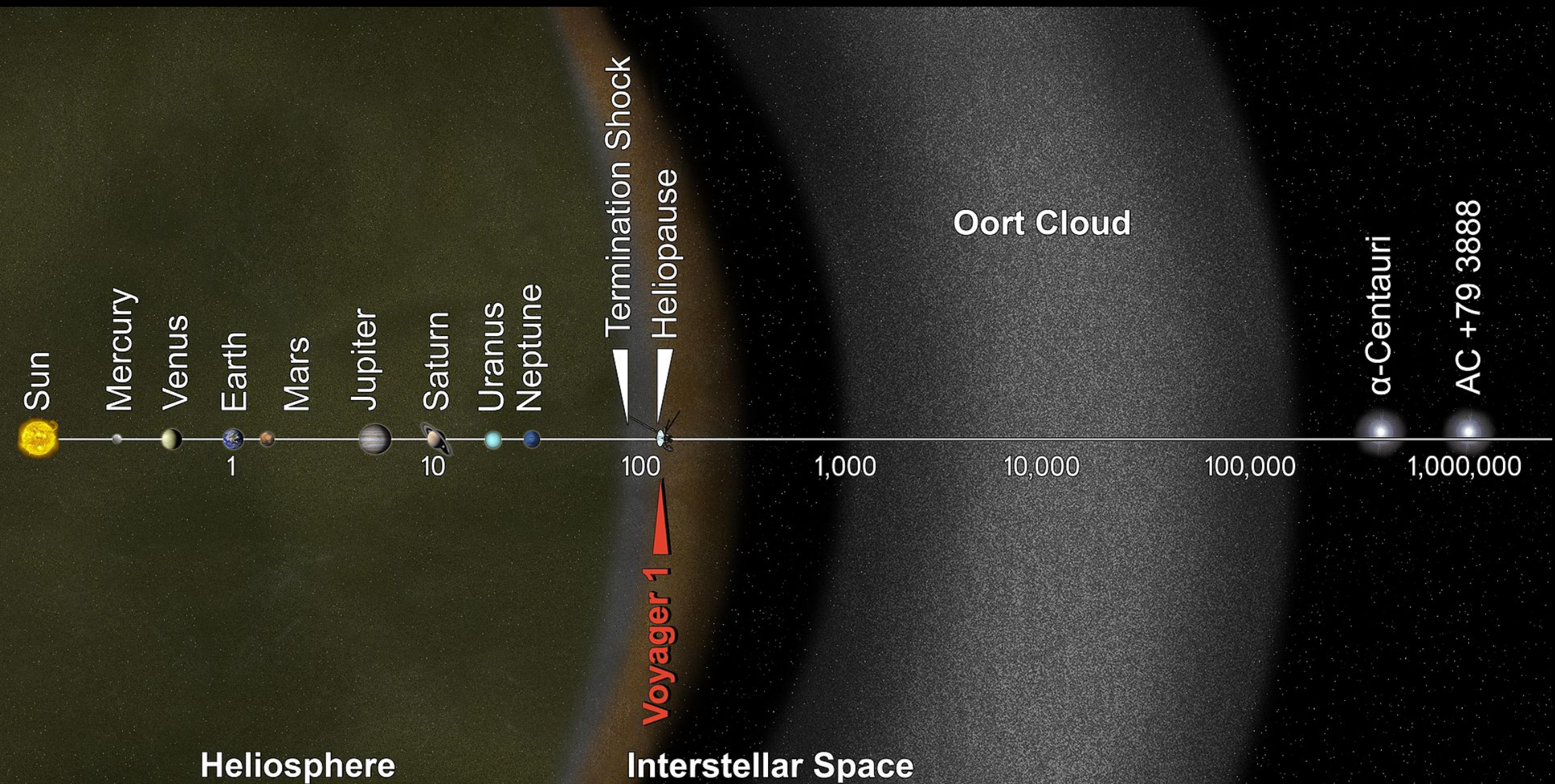
## Kuiper Belt

*ice (some very large) that didn't form a planet*





# The Oort Cloud: *Hypothetical* disk & spherical shell of icy objects



Heliosphere

Interstellar Space

Oort Cloud

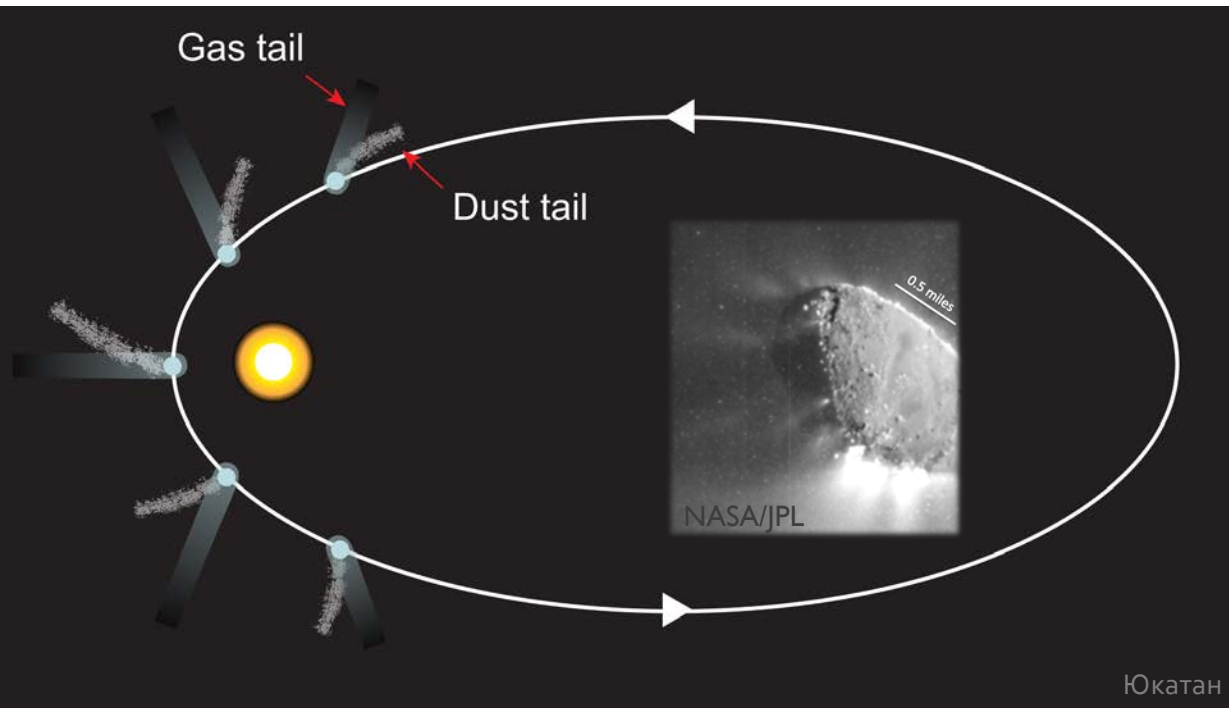
$\alpha$ -Centauri

AC +79 3888



# Comets & Meteoroids

**Comet:** an icy object originating from the outer reaches of the solar system with a highly eccentric orbit



**Meteoroid:** a small (~cm to m) rocky and/or metallic object originating from somewhere in the solar system (comet, asteroid, planet impact)





