Tour of the Solar System

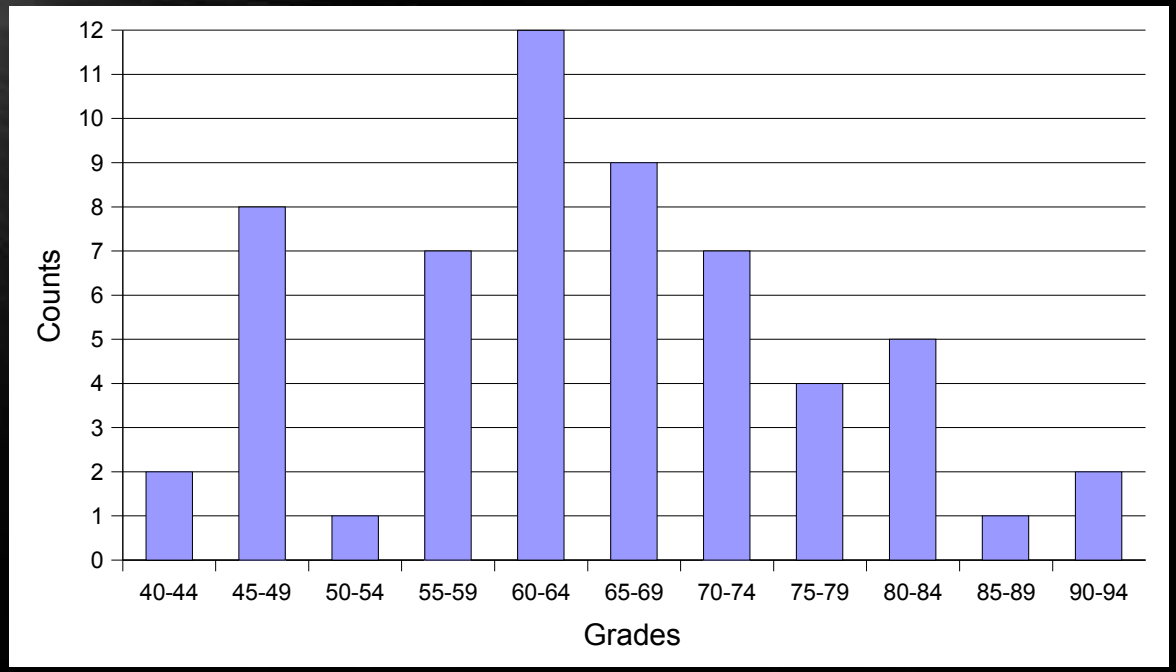
10-8-2005

Opening Discussion

- Have you seen anything interesting in the news?
- Why I write hard tests. Why I want you to be able to do the harder problems.
- If UV rays don't reach the ground, why wear sunscreen?
- Observing on the Trinity campus.
- Doing the Saturn dance (rollerskating Tuesday nights).

Midterm Grades

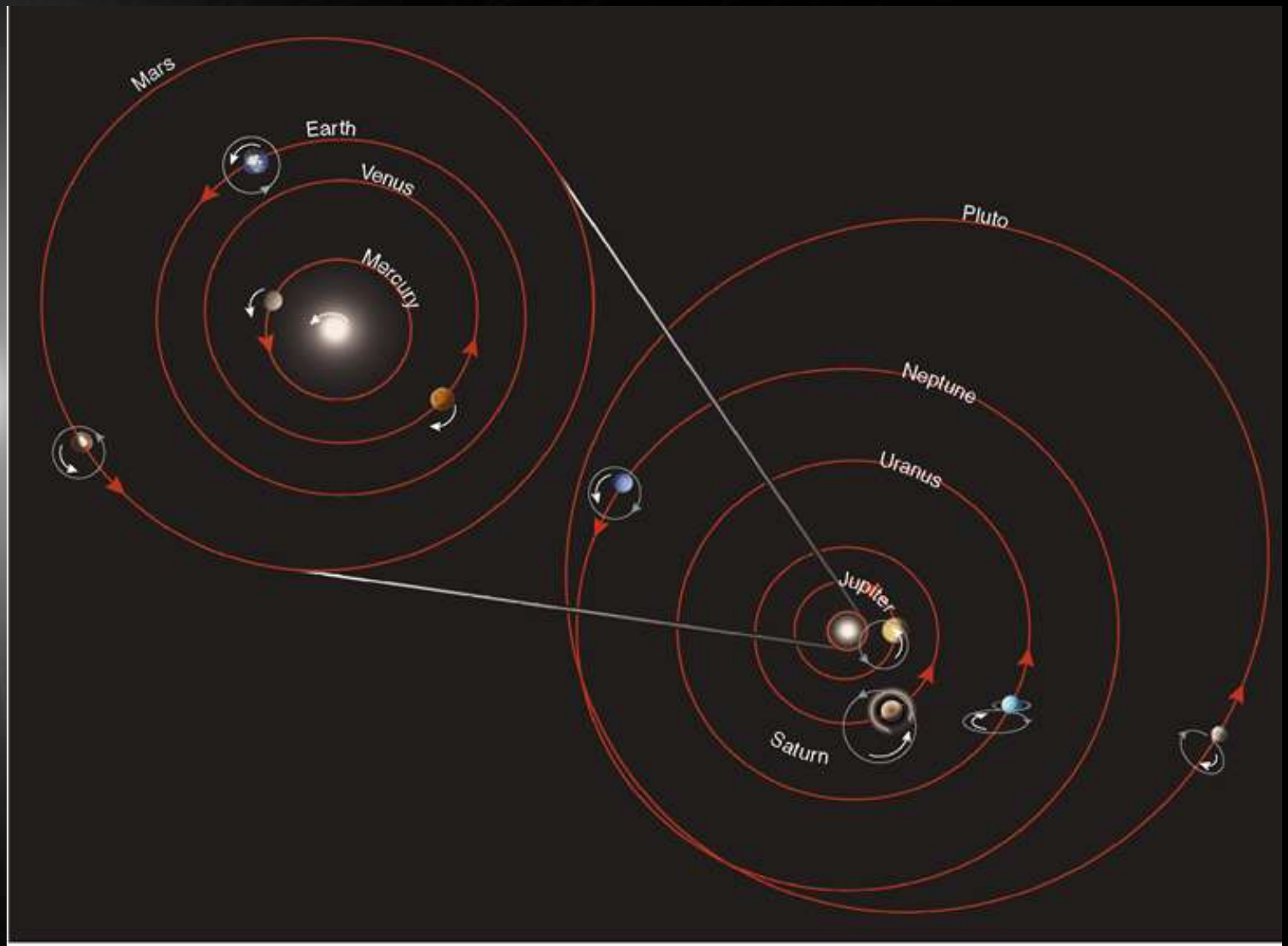
- This is the natural distribution. The median was a 64 so I'm applying a 16 point curve to take the median to an 80.
- Check with me about possible extra projects. They will generally be more work than they are worth.



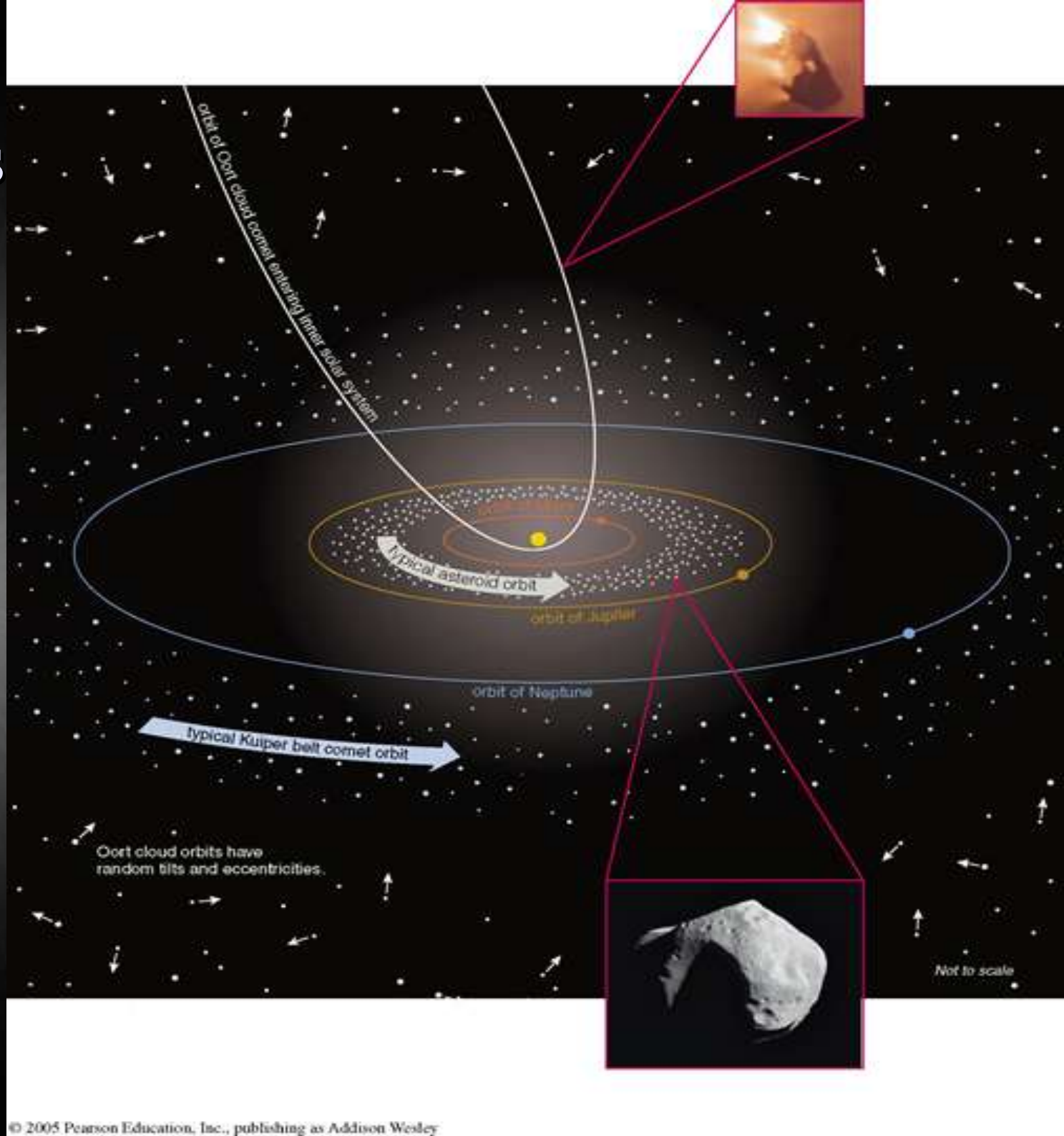
Introduction to the Solar System

- Most of the rest of the semester will be spent doing comparative planetology. That is where we compare the features of planets to gain a deeper understanding of them. Today and next class though we will familiarize ourselves with the basics of our Solar System.
- Our Solar System has 4 terrestrial planets (Mercury, Venus, Earth, and Mars) and 4 jovian planets (Jupiter, Saturn, Uranus, and Neptune).

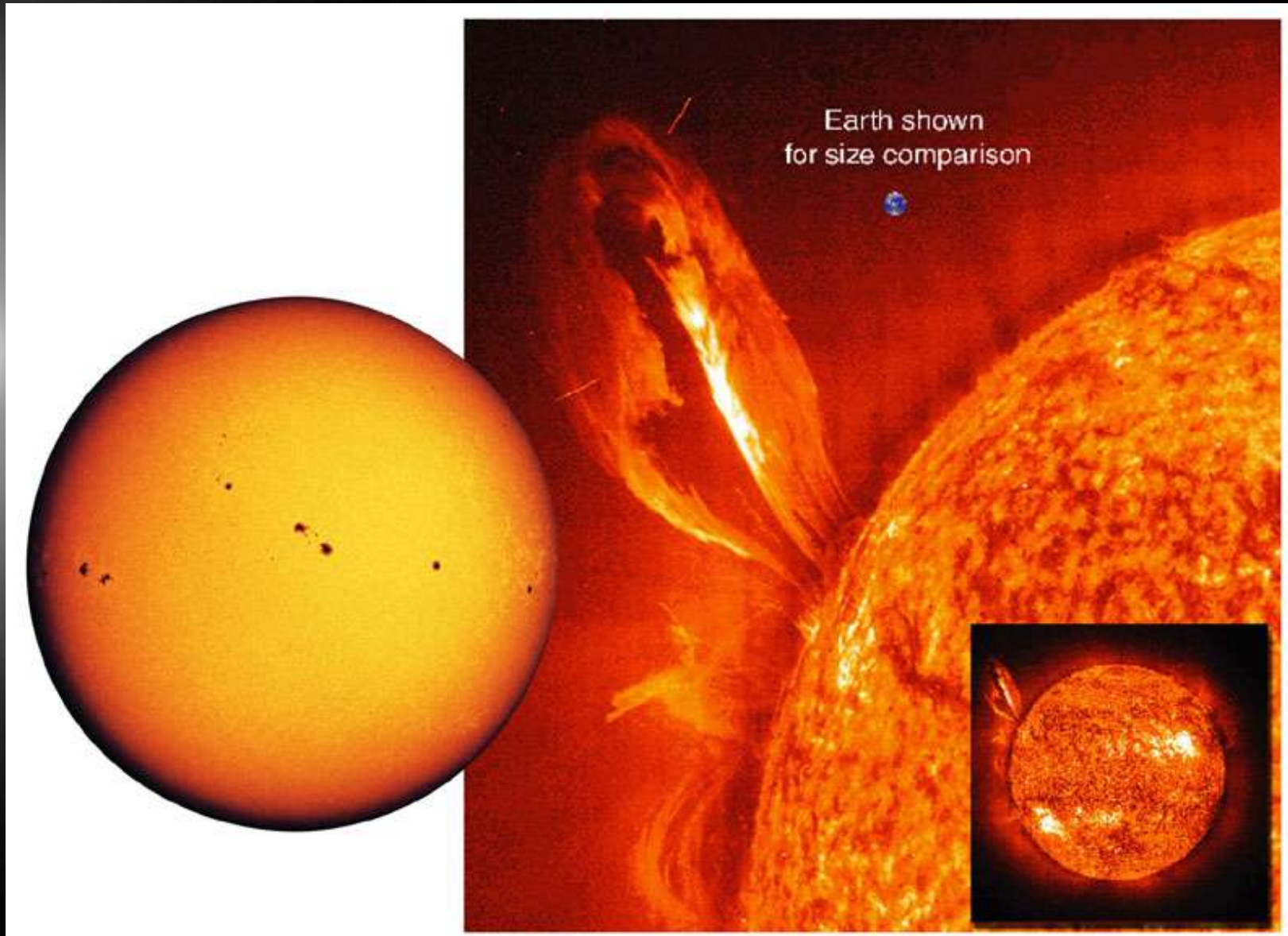
Patterns in Motion



Small Bodies



The Sun



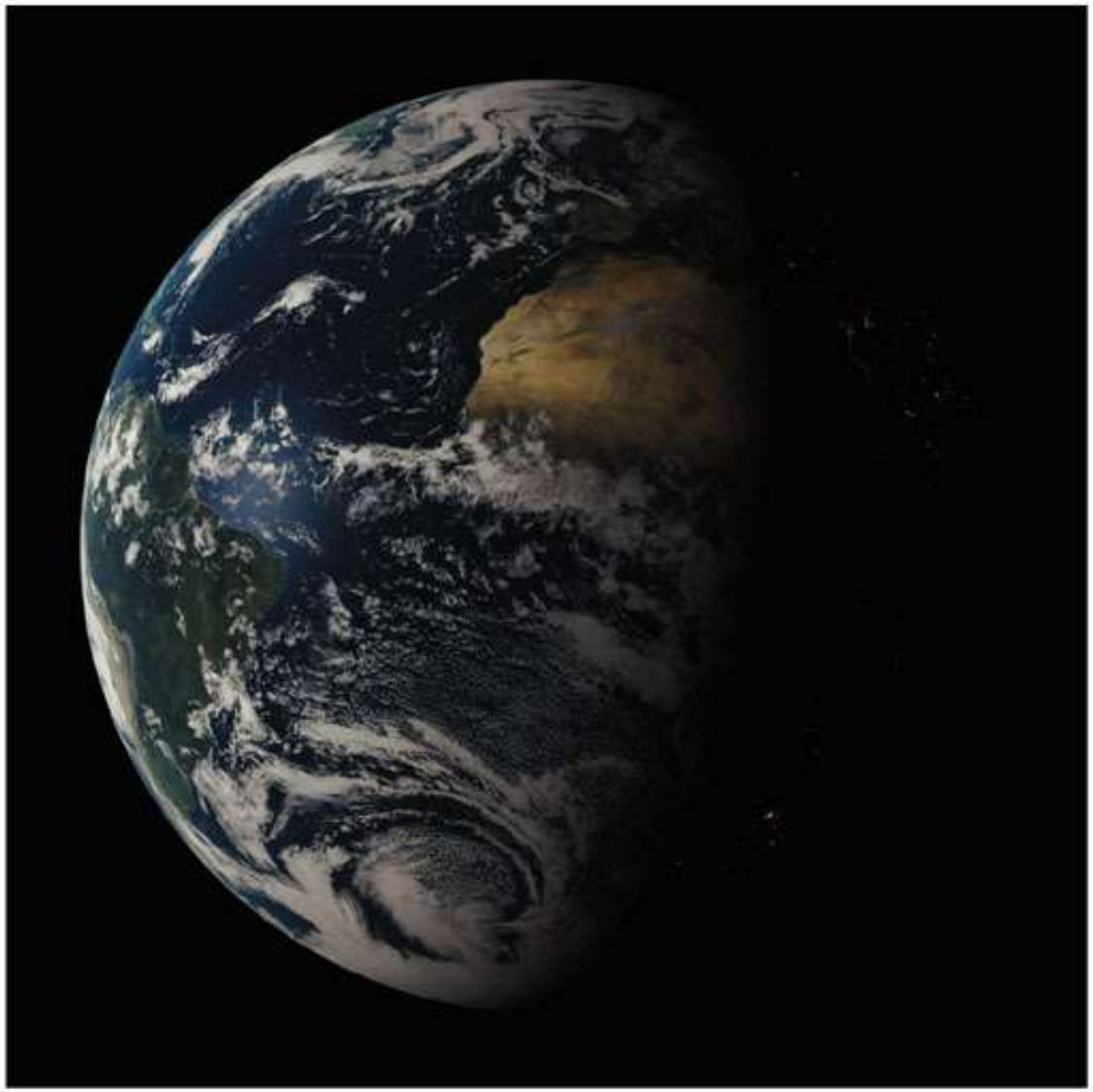
Mercury (0.39 AU, 2440 km, $0.055M_E$)

- The smallest of the terrestrial planets, Mercury is also the one we know the least about. Only one probe has been there.
- It many ways it is like our Moon, heavily cratered with no atmosphere.
- It is in a 3:2 spin-orbit resonance with the Sun so the days and nights each last about 3 months. This leads to huge temperature variations. The day side would roast you (425º C) while the night side will freeze you (-150º C).
- High density, made of iron.

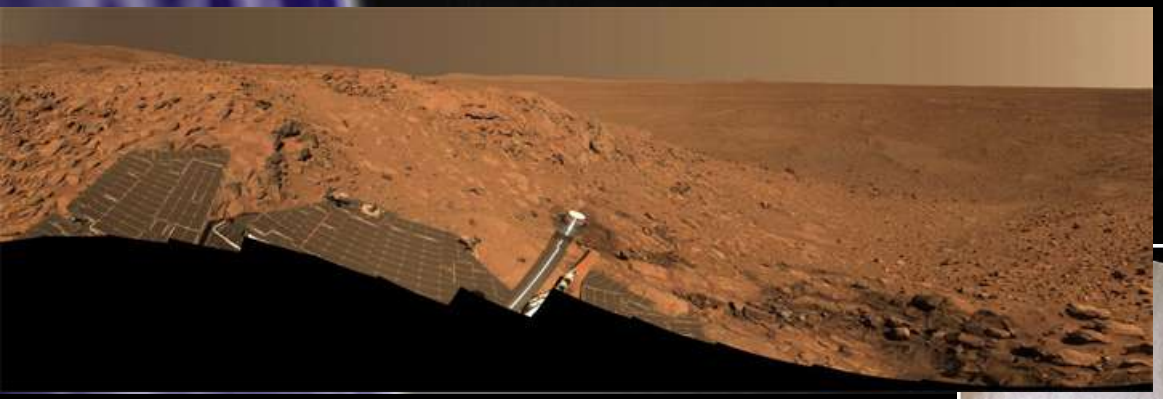
Venus (0.72 AU, 6051 km, 0.815M_E)

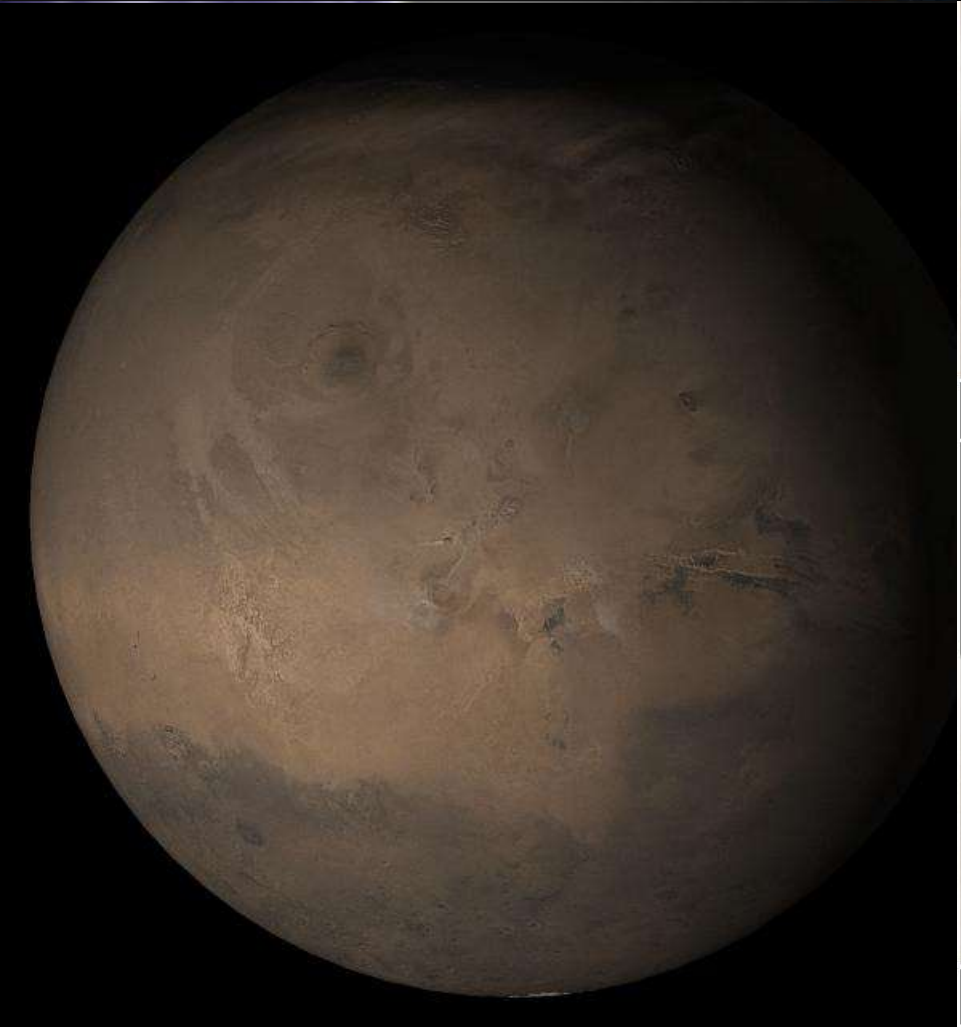
- Hottest planet in Solar System (425º C) thanks to extremely thick CO_2 atmosphere. Days and night extremely long, but both equally hot.
- Surface hard to see through clouds and haze, requires radar imaging.

Earth (1 AU, 6378 km, $1M_E$)

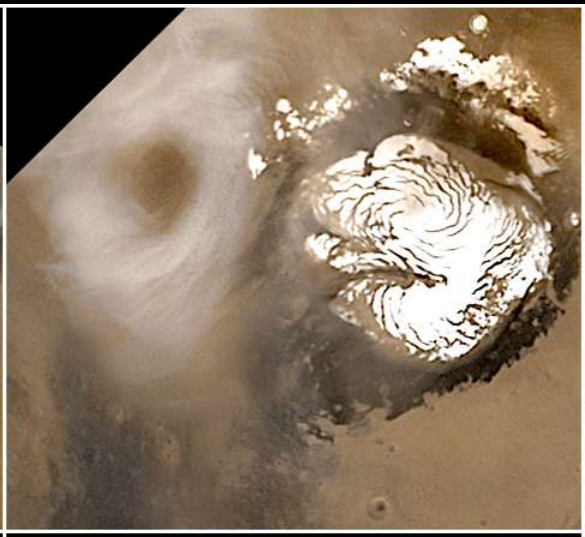


Mars (1.52 AU, 3397 km, 0.107M_E)

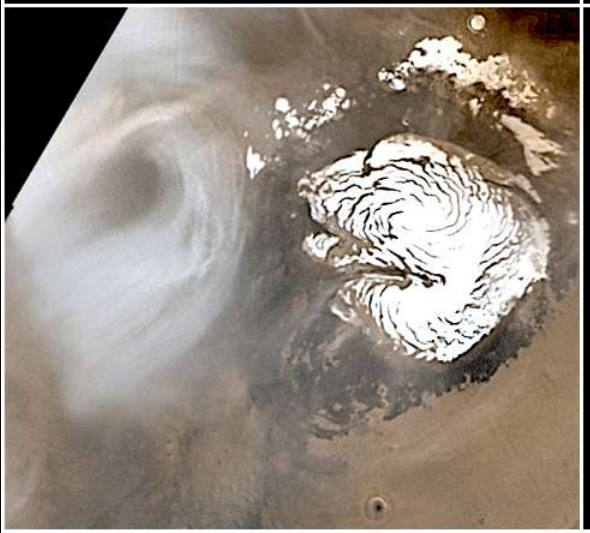




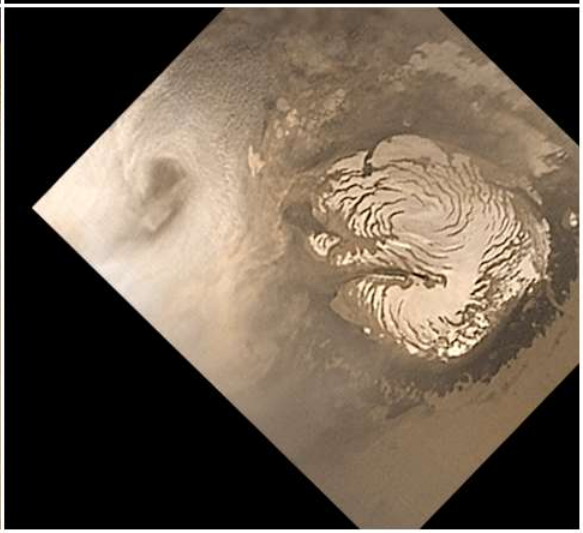
27 April 1999 HST WFPC2 Ls 130°



2 March 2001 MGS MOC Ls 124°



19 January 2003 MGS MOC Ls 124°



27 November 2004 MGS MOC Ls 121°

Minute Essay

- Tell me one fact about the planets we discussed today that you hadn't previously known.
- Tuesday at 8pm on NOVA, “Einstein's Big Idea”