

Lecture 13 – 3 March 2009



- **SCIENCE TOPICS:**
Inner Planets Close Up
Outer Planets Close Up
- **READING**
Ch 4, sec 4.1-4.2
Ch 6, 6.1, 6.2,
Beware of excessive detail
in the textbook
- **PRACTICE**
stay tuned

**TEST 2:
THIS THURSDAY,
5th March 2009**

Test 2:

- **When and Where:**

Thursday, 5th March 2009

in this classroom, during
regular class time.

- **Format and Time Limit:**

40 multiple choice
questions; 40 minutes

- **Material Covered:**

Doppler Effect; Spectra
(Continuous, Emission, Absorption,
Blackbody); Atoms and Energy
Levels; Telescopes; Overview of the
Solar System

- **What to Bring:**

- your PSU ID card
- #2 pencils and eraser
- a calculator

- **Other Rules and
Regulations:**

- closed book, closed notes,
closed everything
- work on your own
- items other than the above out
of sight (especially cellphones)

The Inner Planets Close Up

Mercury

- Named after Hermes the messenger of the gods

Venus

- The morning and evening star
- Named after Venus, the goddess of beauty

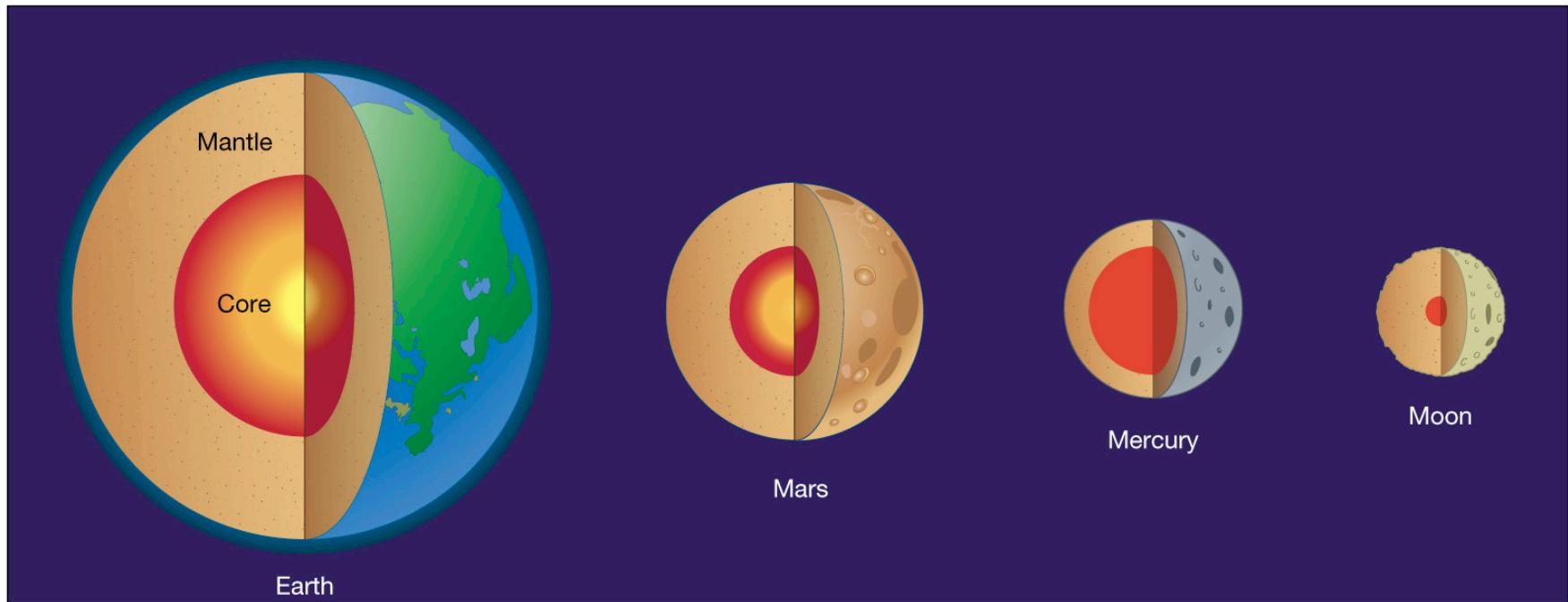
Earth

- Named after Gaia, the mother of all (titans)

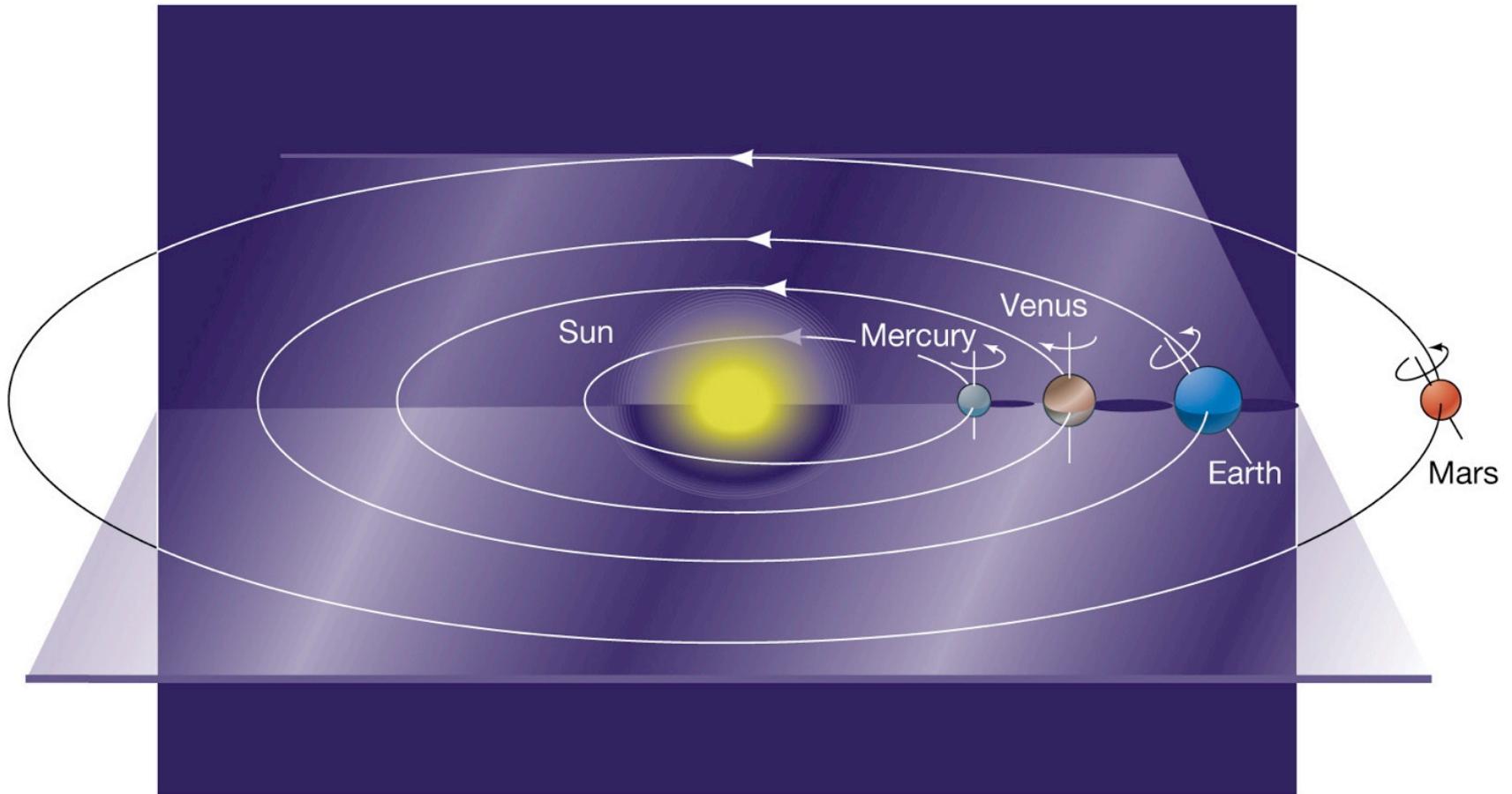
Mars

- Named after Ares, the god of war
- The origin of all alien invaders...

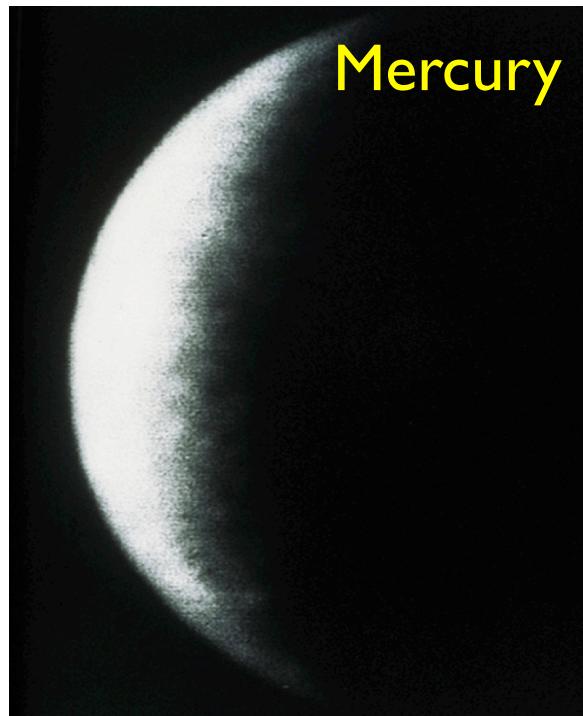
Internal Structure



Rotation



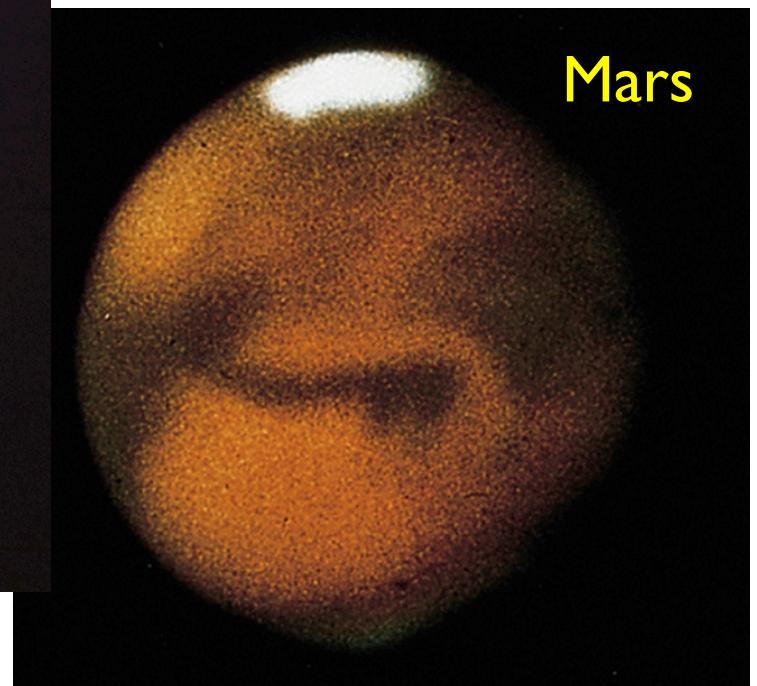
As seen with telescopes
from the Earth



Mercury



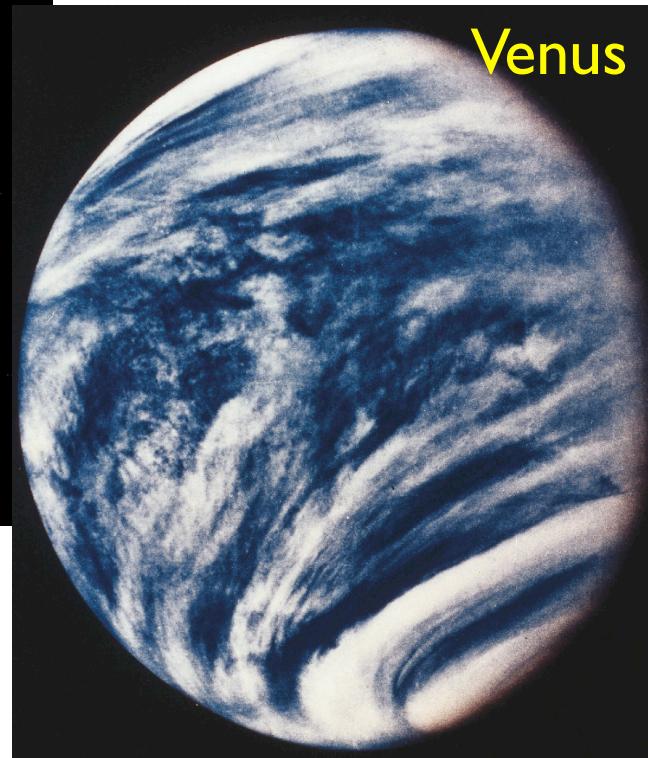
Venus



Mars

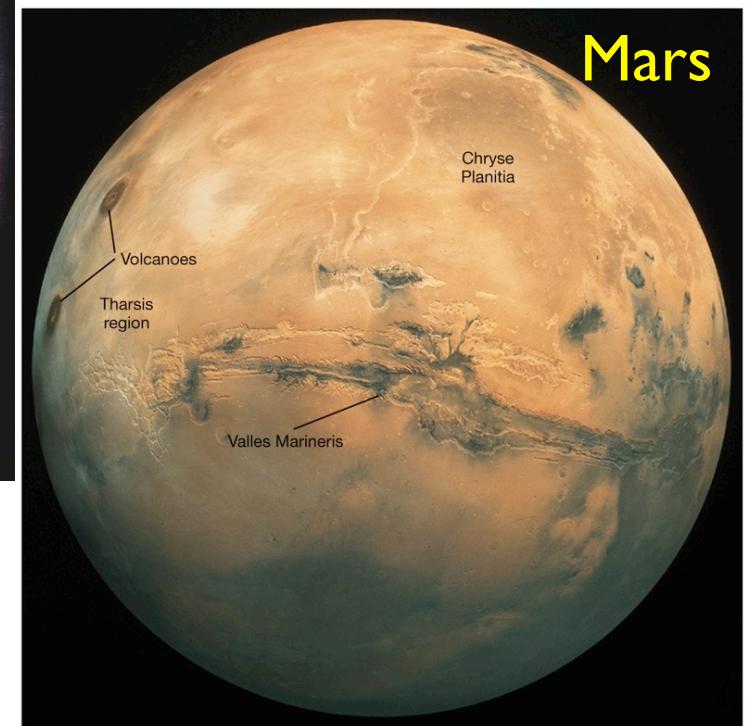


Mariner 10



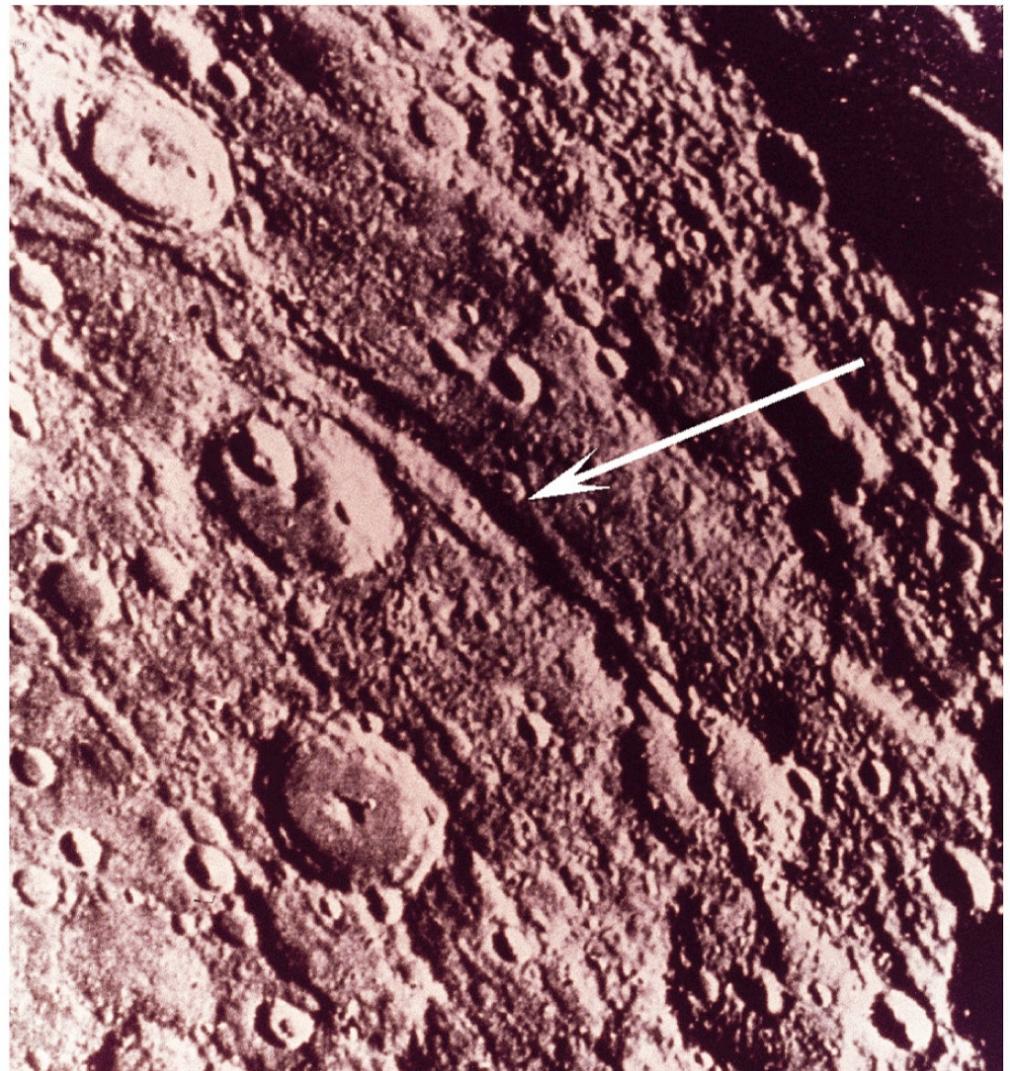
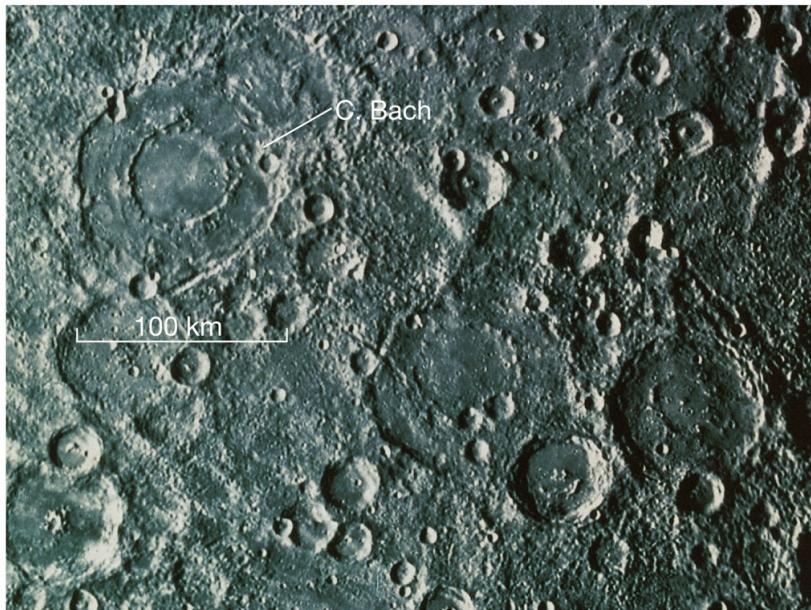
Pioneer

As seen close up

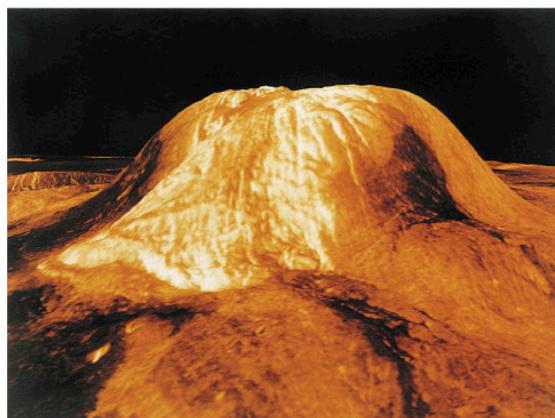
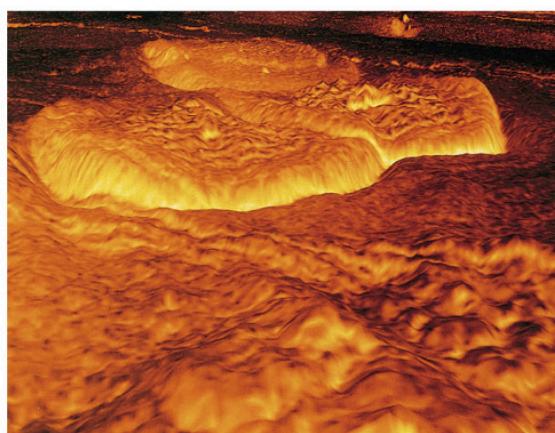


Viking

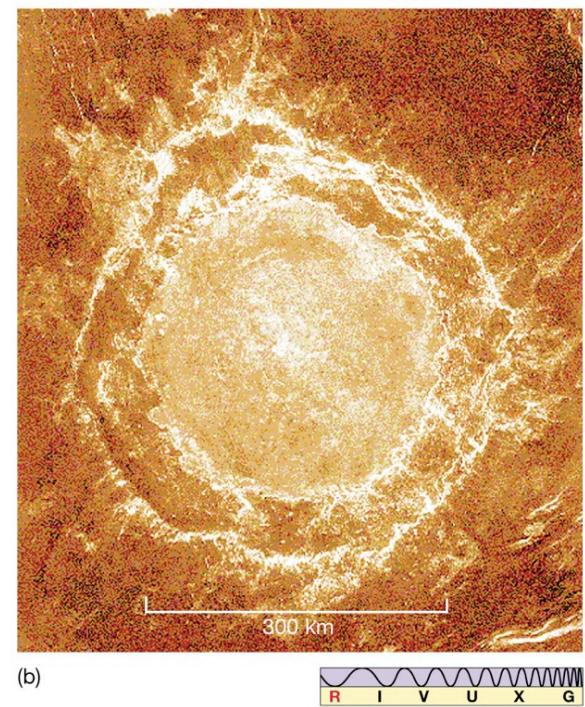
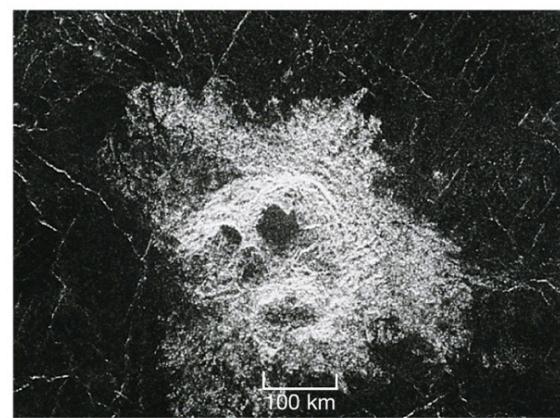
Mercury



Venus



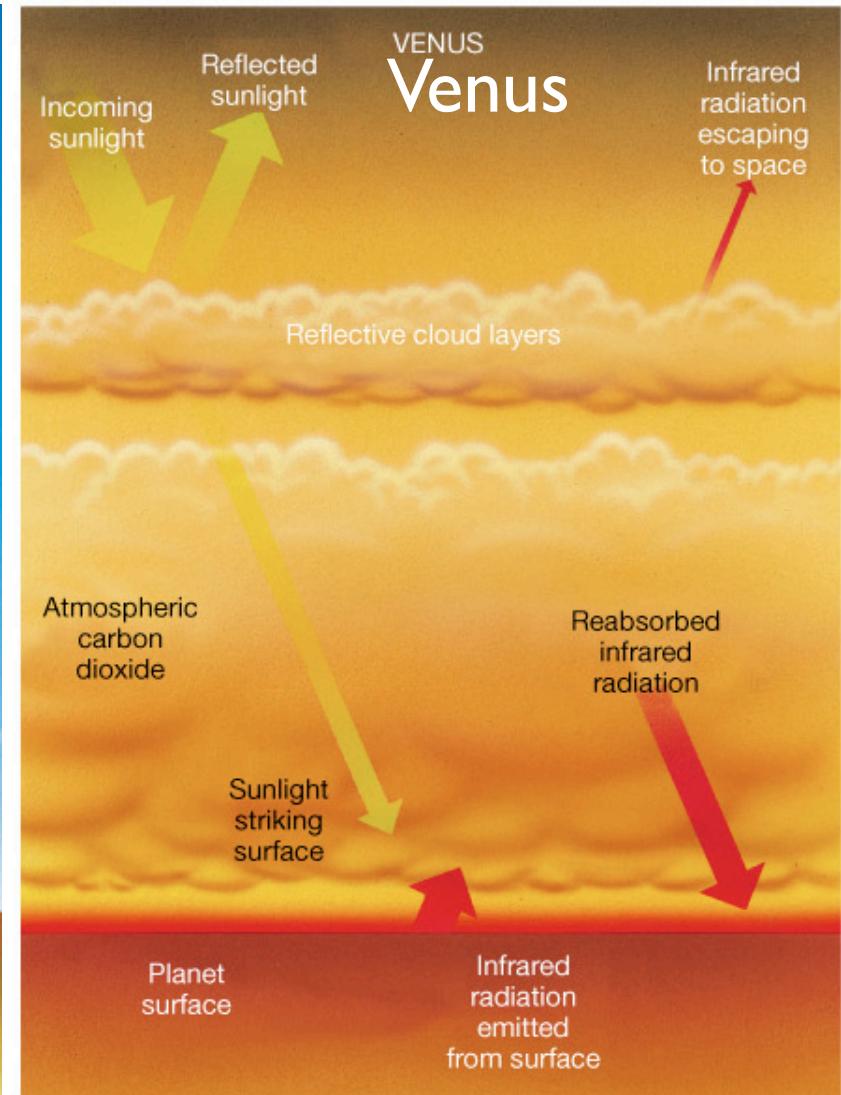
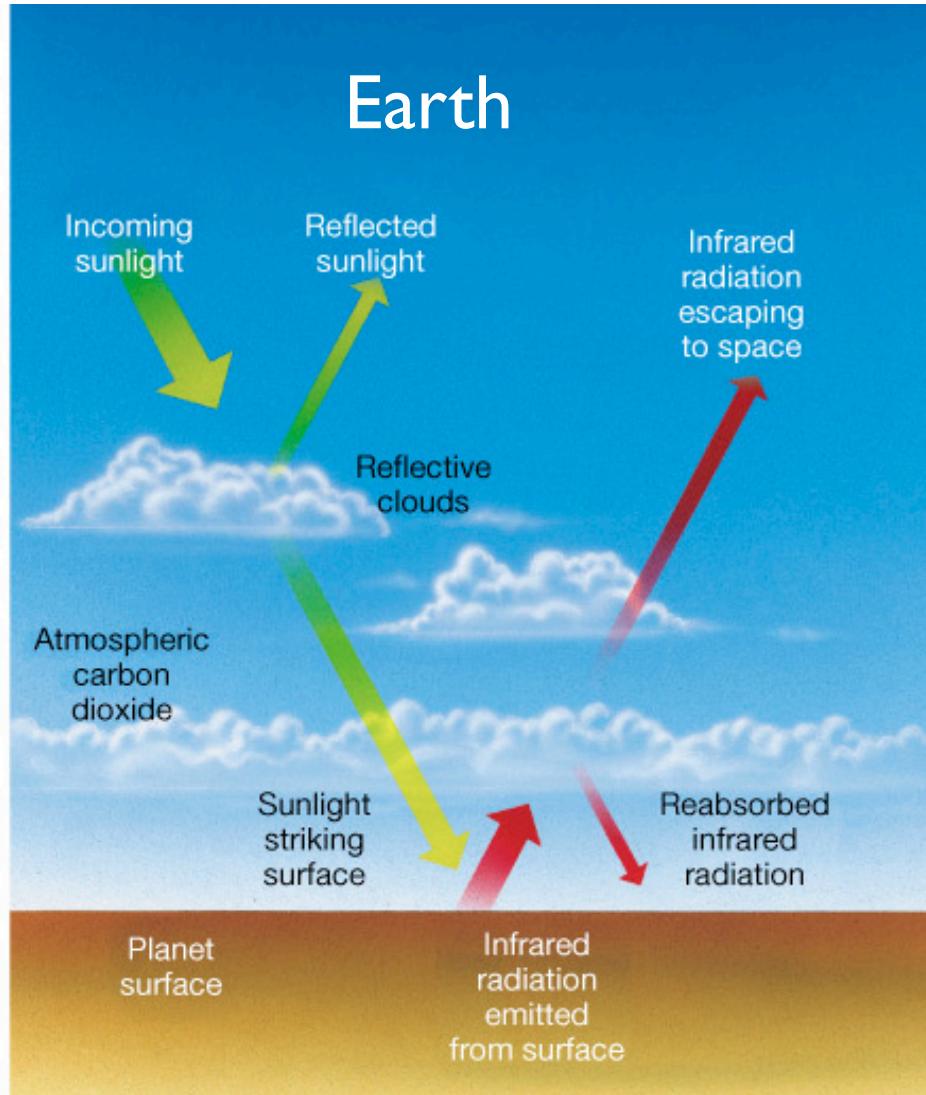
R I V U X G



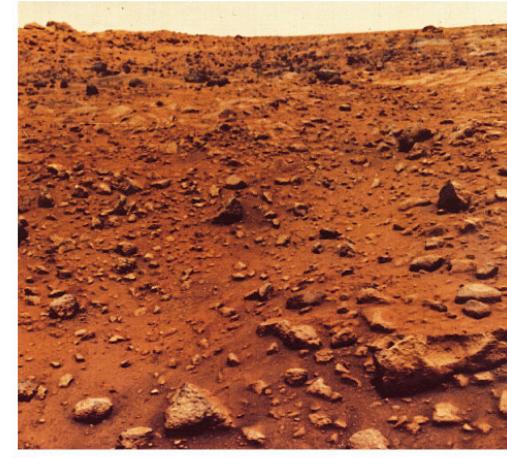
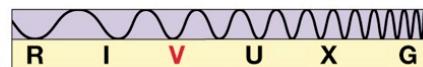
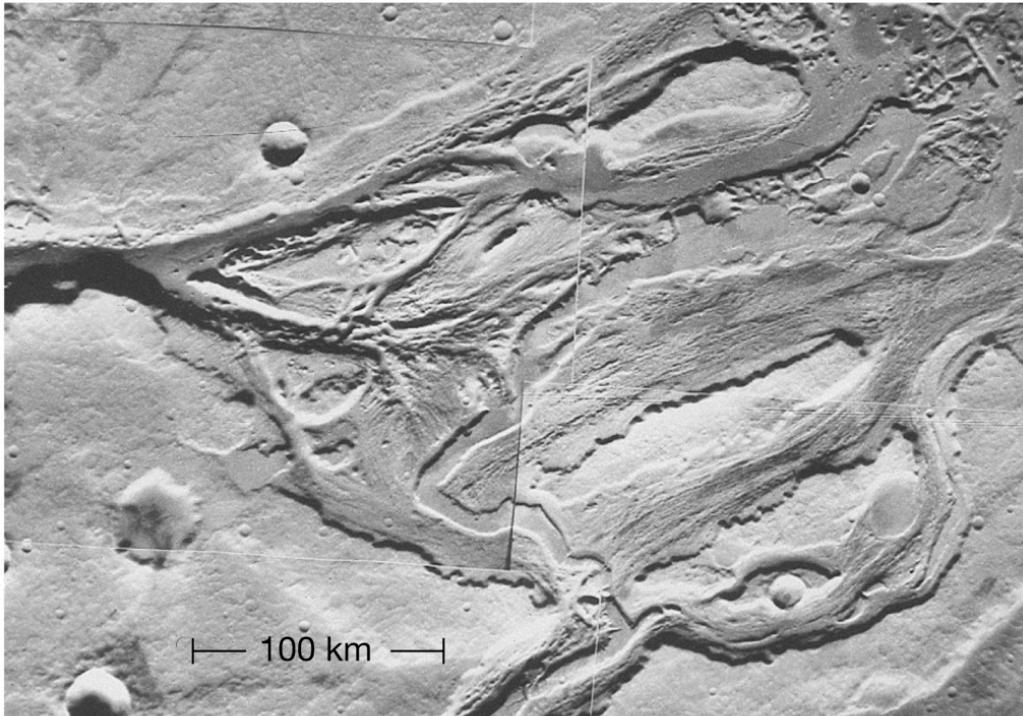
300 Km

R I V U X G

The Greenhouse Effect



Mars



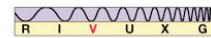
(a)



(b)



(c)



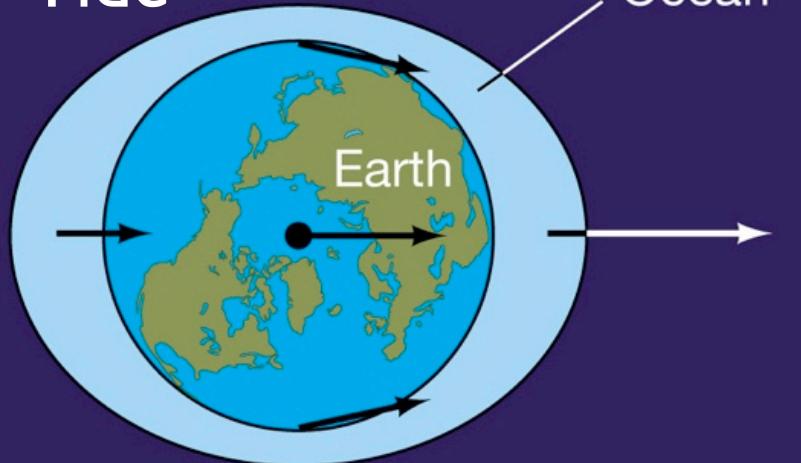
- No one would have believed in the last years of the 19th century that human affairs were being watched from the timeless worlds of space. No one could have dreamed that we were being scrutinized like someone with a microscope studies creatures that swarm and multiply in a drop of water. Few men even considered the possibility of life on other planets. Yet, across the gulf of space, minds immeasurably superior to ours regarded this Earth with envious eyes and slowly but surely they drew their plans against us.
- — H. G. Wells, “War of the Worlds”

- The next day the dawn as a brilliant fiery red for the vegetation that gives Mars its red appearance had taken root on Earth. As Man had succumb to the Martians, our land now succumb to the red weed.

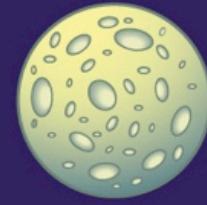


Lunar and Solar Tides on the Earth

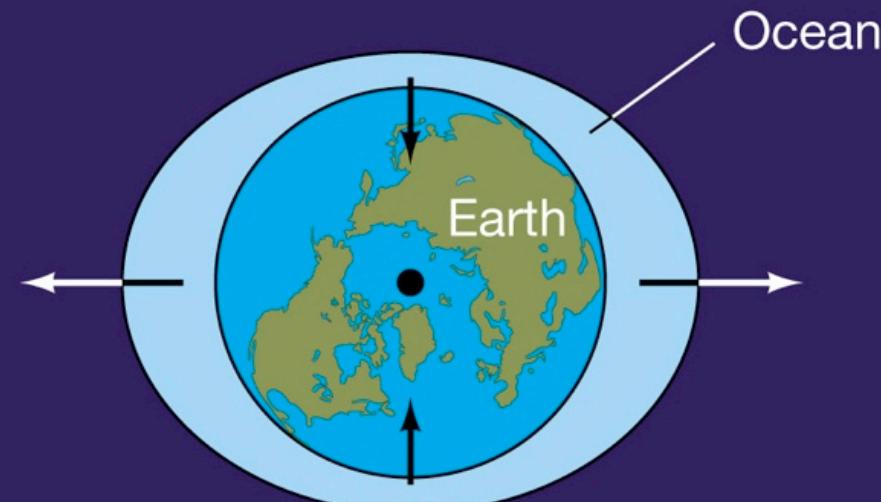
Lunar Tide



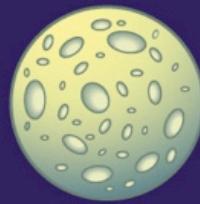
(a)



Moon

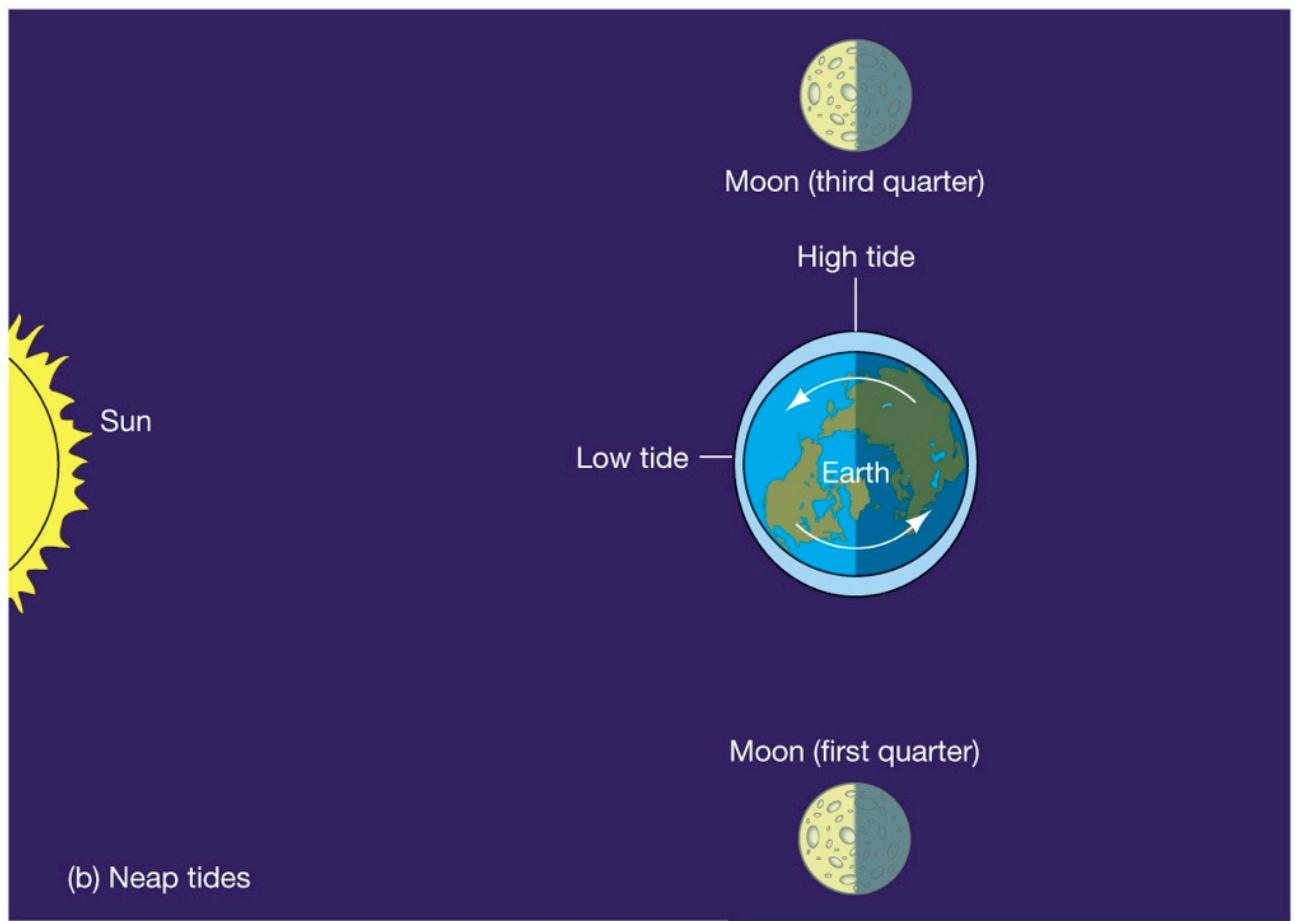


(b)

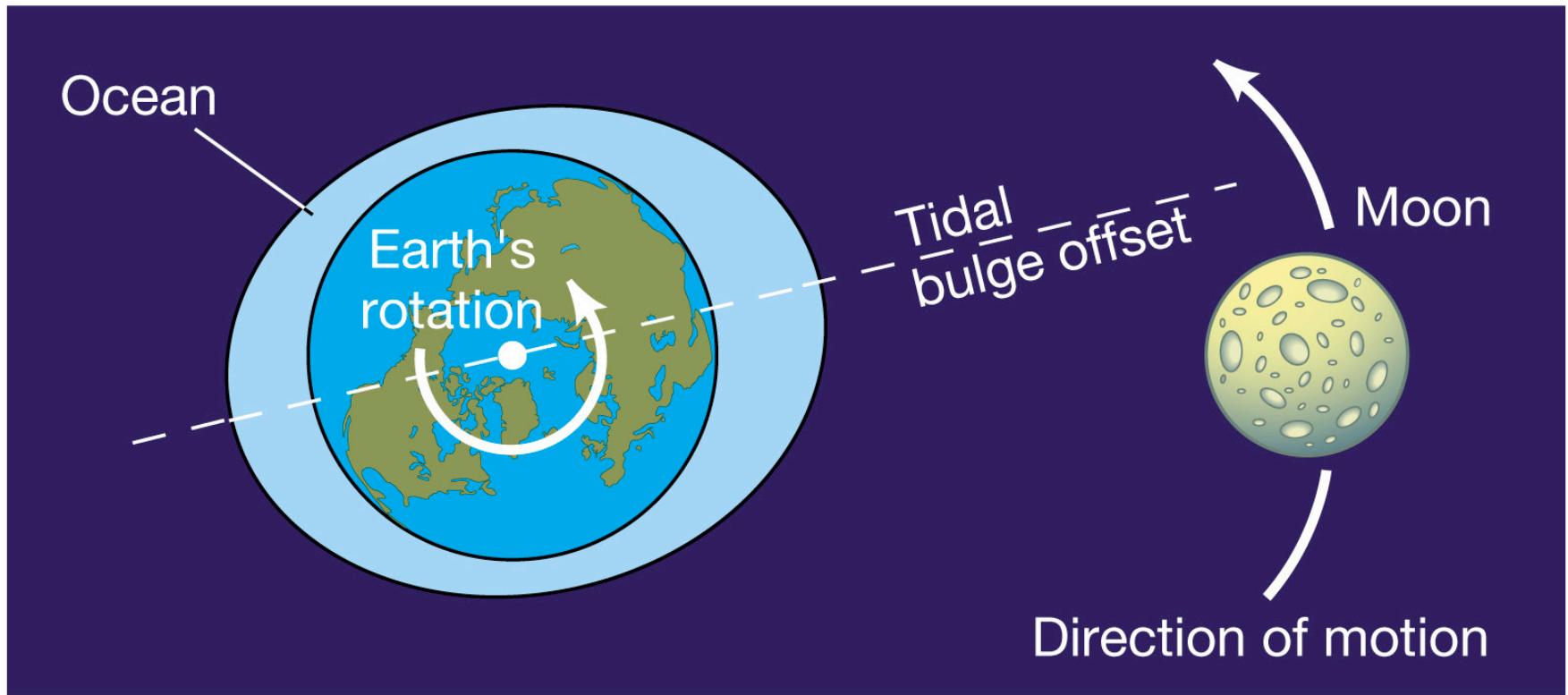


Moon

Spring and Neap Tides



Friction between oceans and Earth's surface.



The Outer Planets Close Up

Jupiter

- Named after Zeus, father of all gods

Saturn

- Named after Kronos (one of the 2nd-generation Titans), father of Zeus
- Its moons are named after titans (Hyperion, Tethys, Rhea, Enceladus, Iapetus). Largest moon is called Titan

Uranus

- Named after the father of the 1st-generation Titans

Neptune

- Named after Poseidon, god of the sea

NOT TO SCALE



Jupiter
(Zeus)



Saturn
(Kronos)



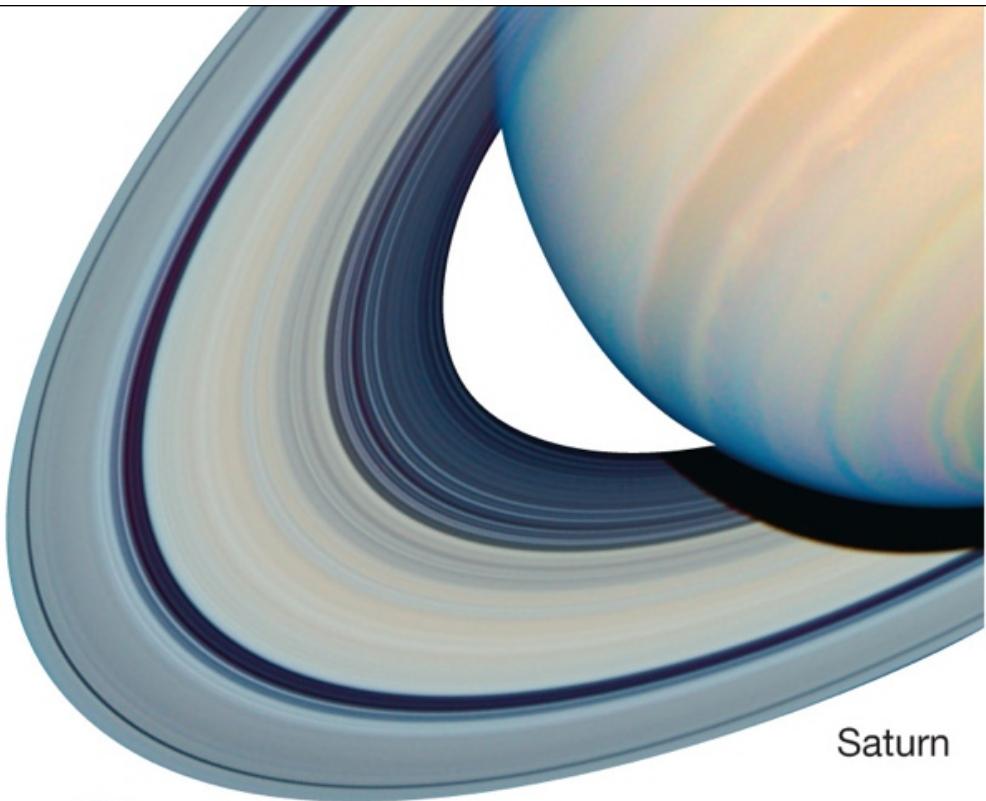
Uranus
(Ouranos)



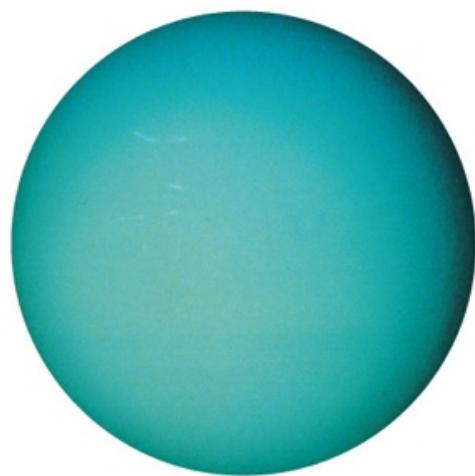
Neptune
(Poseidon)



Jupiter



Saturn



Uranus

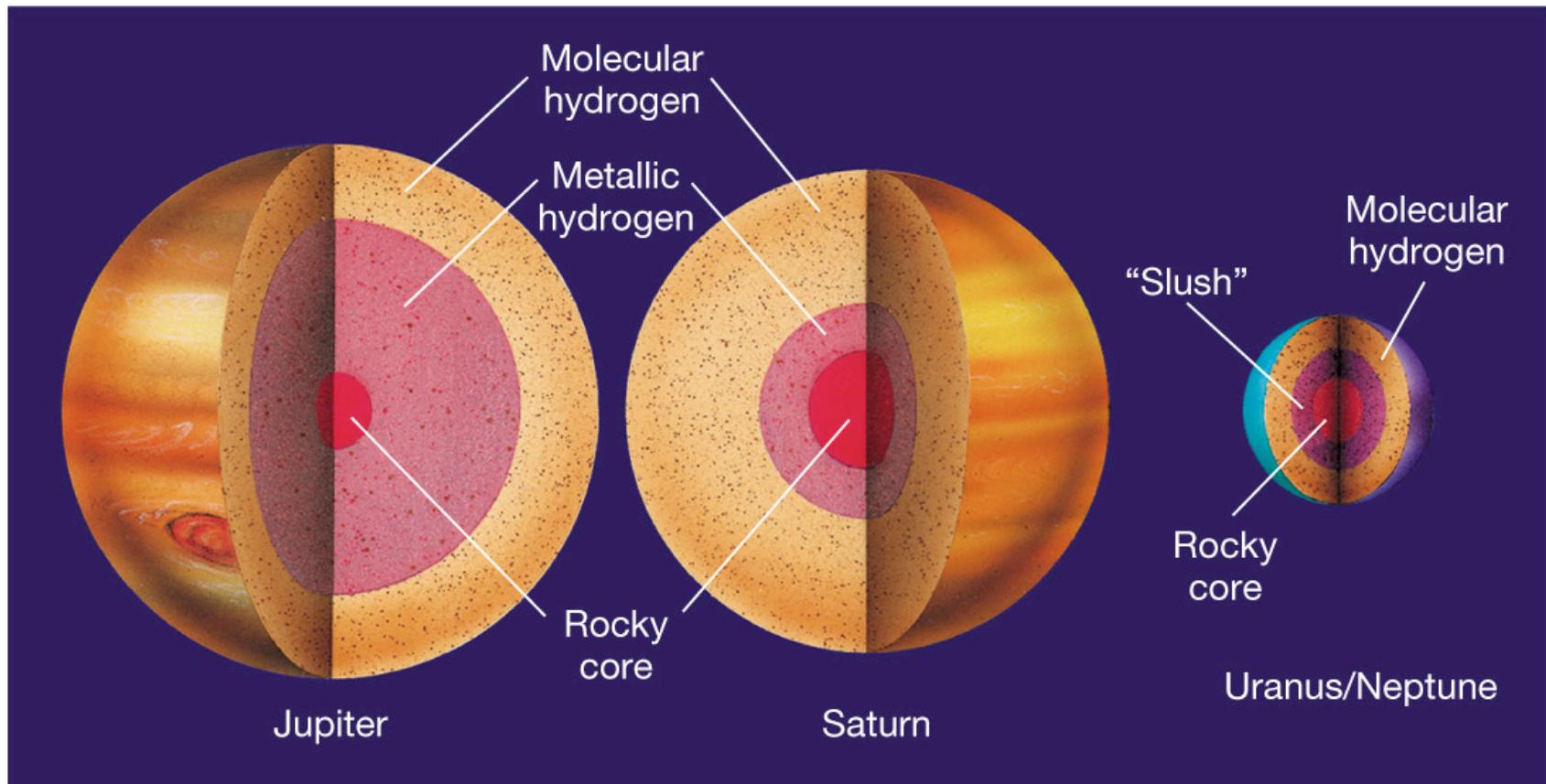


Earth

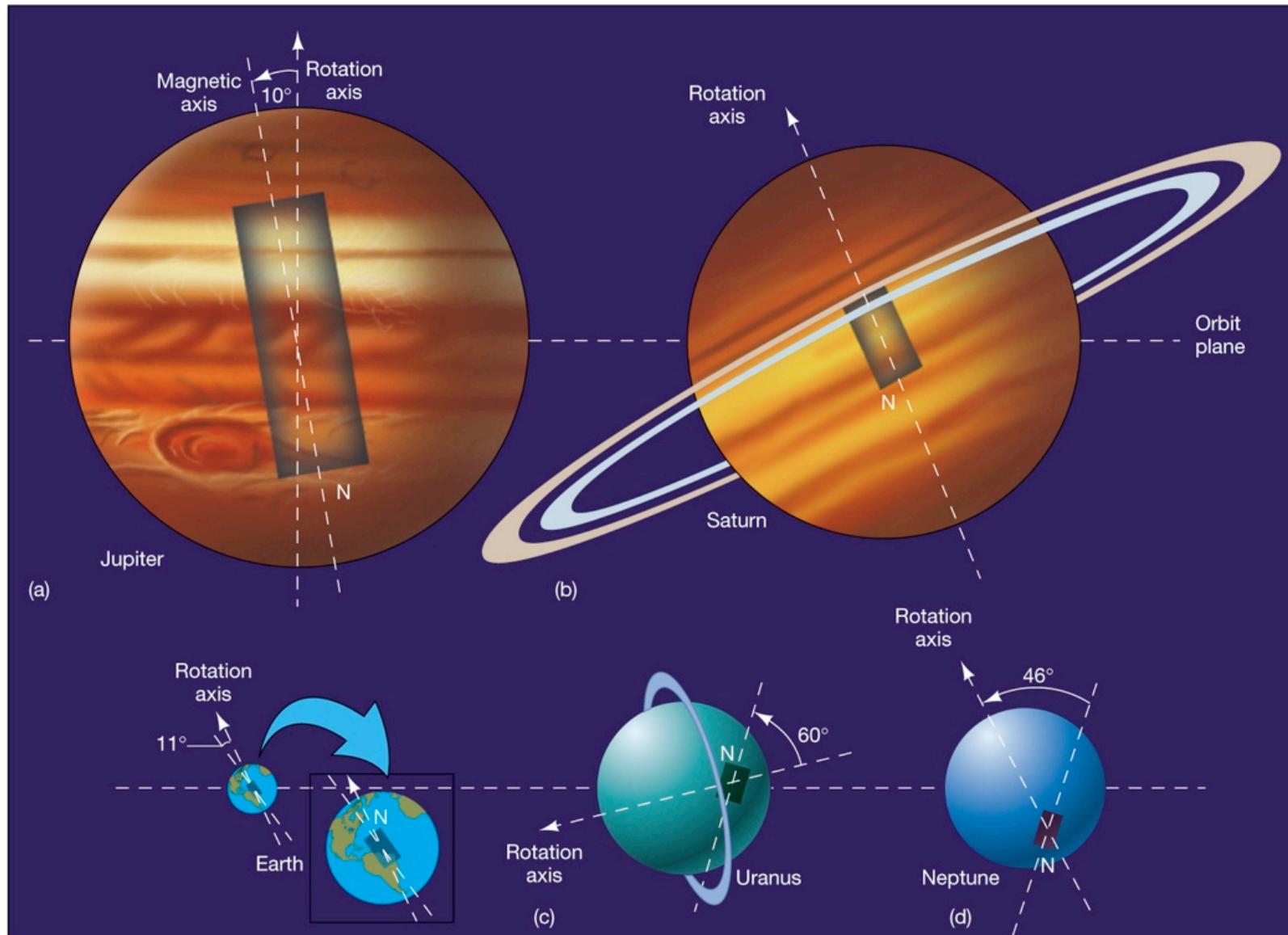


Neptune

Internal Structure



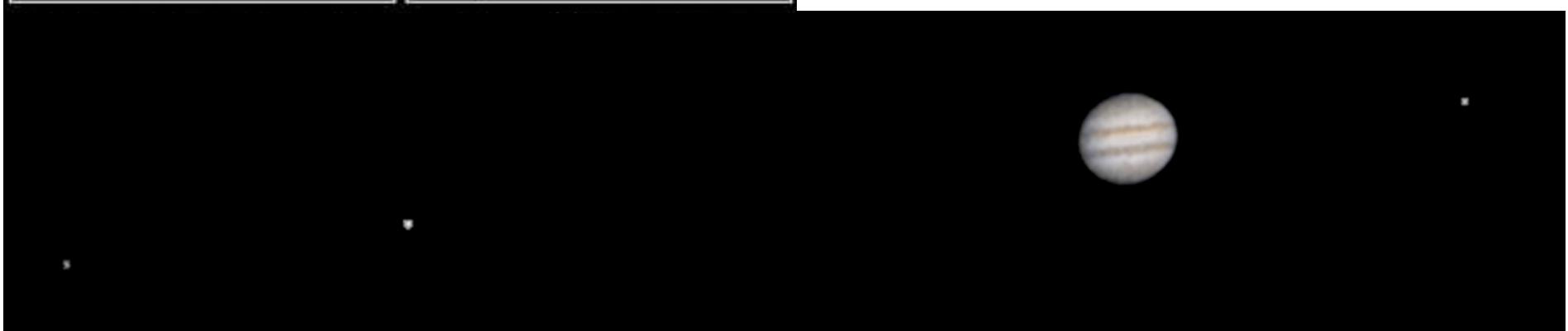
Rotation and Magnetic Fields



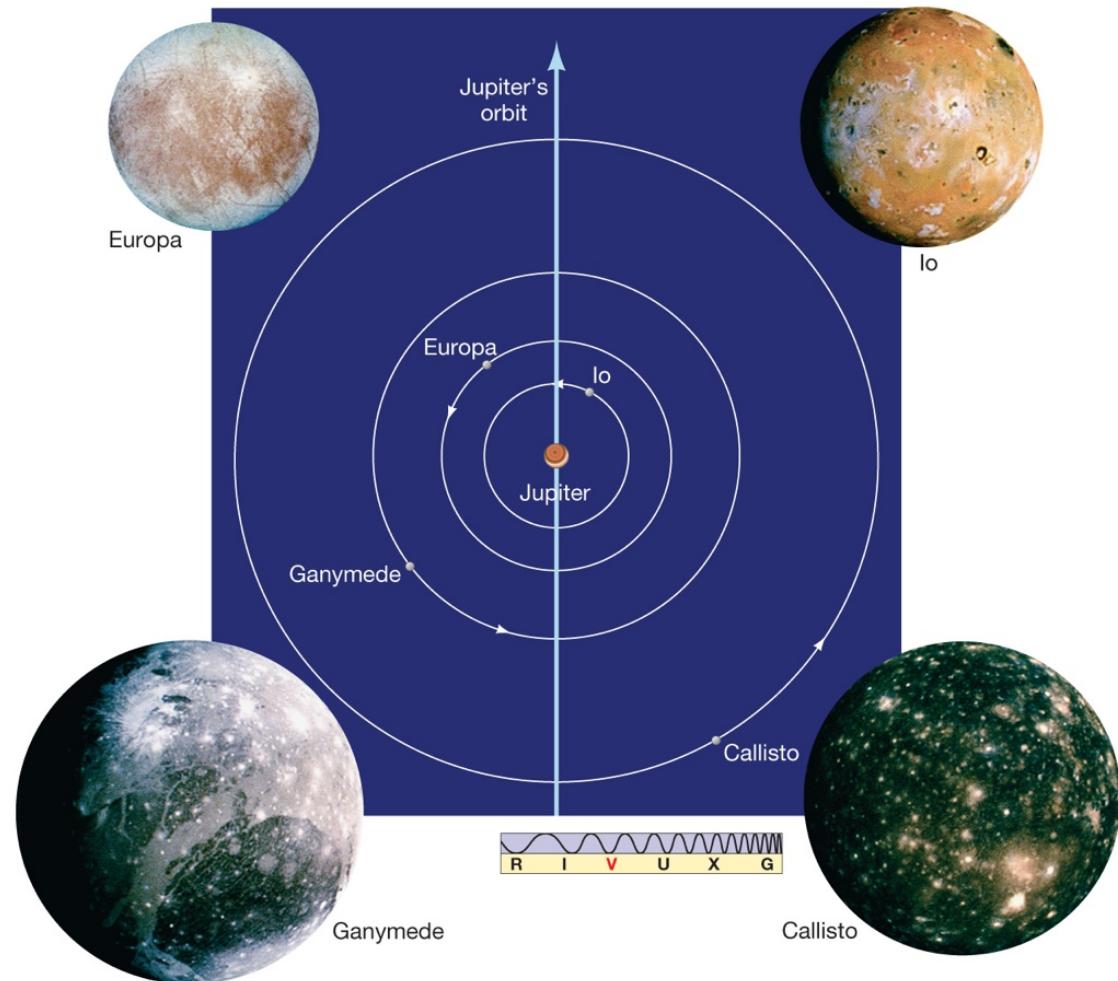
Jupiter



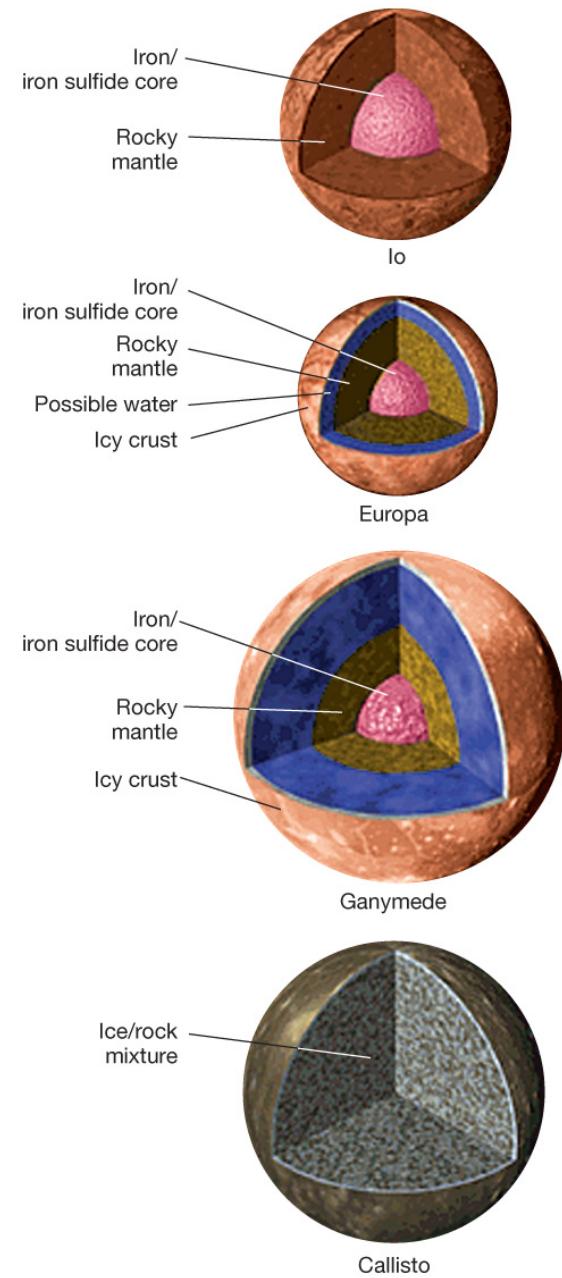
Jupiter's Galilean Moons



Tides of Jupiter on Its Moons

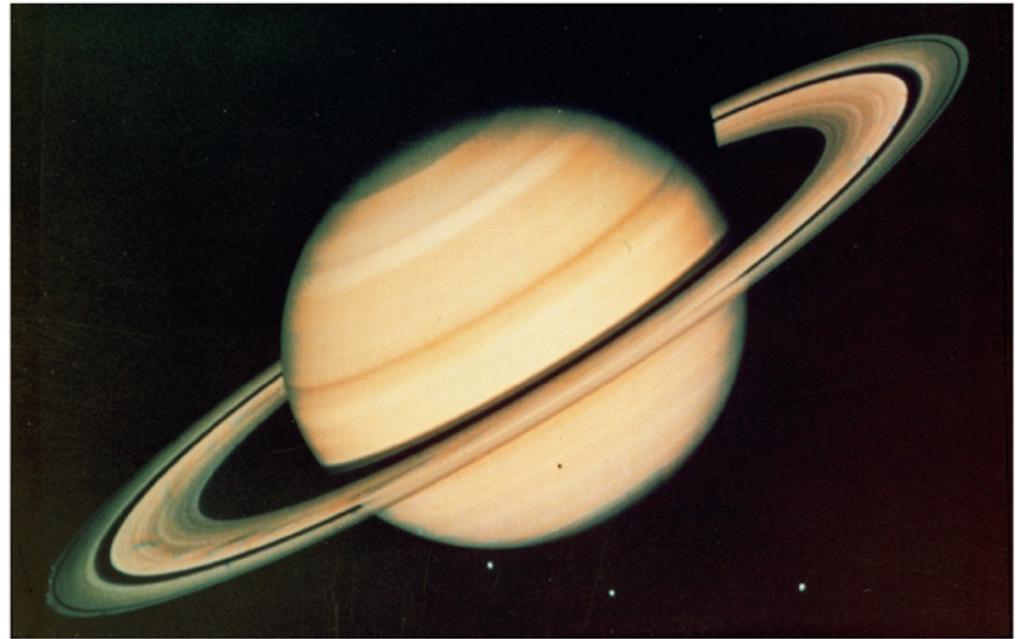
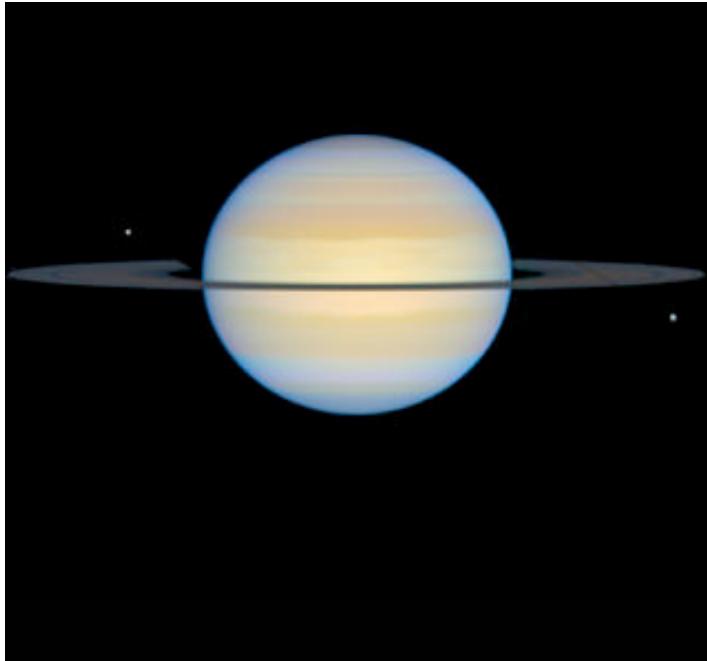


Copyright © 2007 Pearson Prentice Hall, Inc.

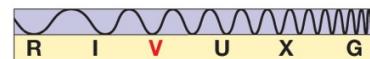


Copyright © 2007 Pearson Prentice Hall, Inc.

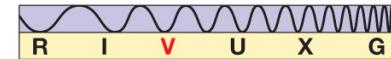
Saturn



Uranus and Neptune

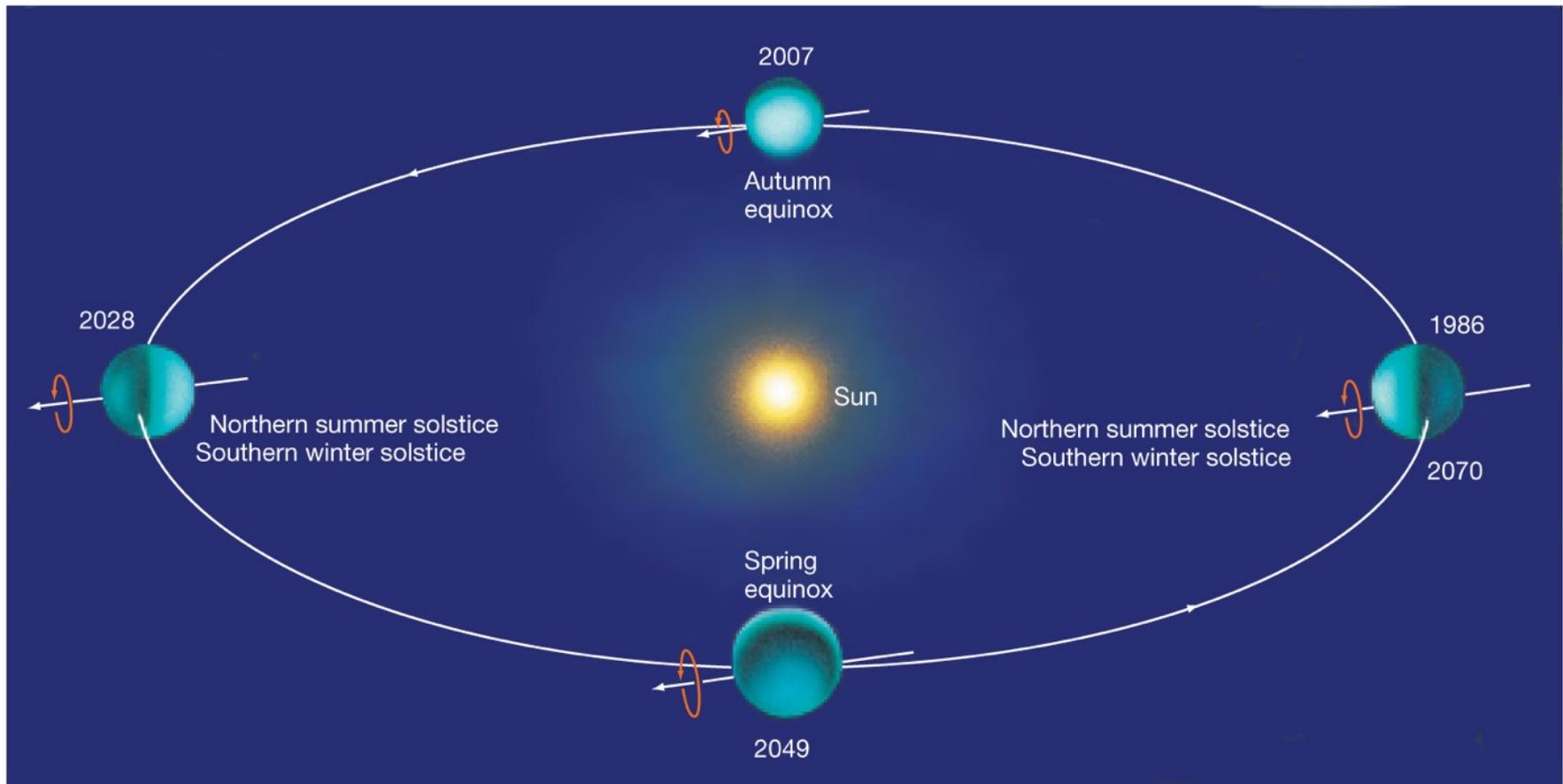


Copyright © 2007 Pearson Prentice Hall, Inc.



Copyright © 2007 Pearson Prentice Hall, Inc.

Funky Seasons on Uranus



Copyright © 2007 Pearson Prentice Hall, Inc.