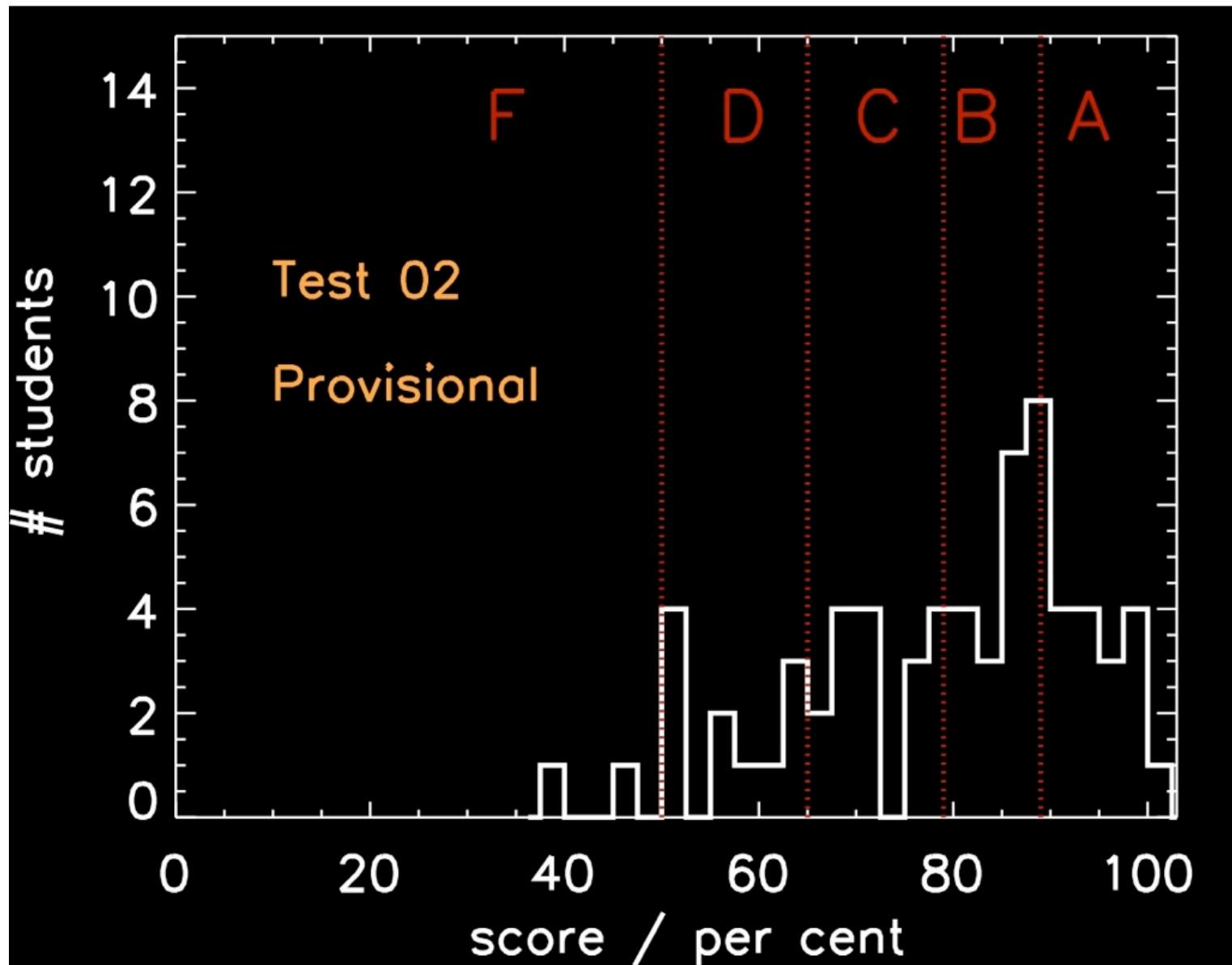


Lecture 14 – 17 March 2009



HOMEWORK 5: out now, due next Tuesday, 24th March 2009, 11:59pm
TEST 3: results are out

- **SCIENCE TOPICS:**
Outer Planets Close Up
Formation of the Sun
and Solar System
- **READING**
Ch 7, sec 7.1-7.3, 7.6
Ch 8, sec 8.1 (beware of excessive detail.)
Ch 4, sec 4.3:
- **PRACTICE: Ch 7**
Review: 1,2,8,9
Self-test: 2,4,6,9,11,15



mean = 77.7% Std. Dev= 14.7%

2nd half of the Semester...

- Formation of the Solar System, Extra-solar Planets
- The Sun and how it shines
- Stars
 - Properties and Classification
 - Evolution and stellar death
 - Supernovae and Black Holes
- Galaxies
- The Hubble Law and the Expanding Universe
- Dark Matter, Dark Energy and The Fate of the Universe

Remember!!

- The Homeworks are only, at most, 5% of the course grade. They are primarily practice for your understanding and the tests.
- Best 4 out of 5 sections taken in Final Grade (best 2/3 Comprehensions).
- FINAL: Friday, 8th May 2009, 08:00-09:50 here.
NO MAKE-UP WILL BE GIVEN.
- Office Hours.
 - Dr. Ross: Mondays and Tuesdays 3-5pm (note Monday!!)
 - Course TA: Sharon, Tuesdays 1-3pm, Room 445 Davey

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)



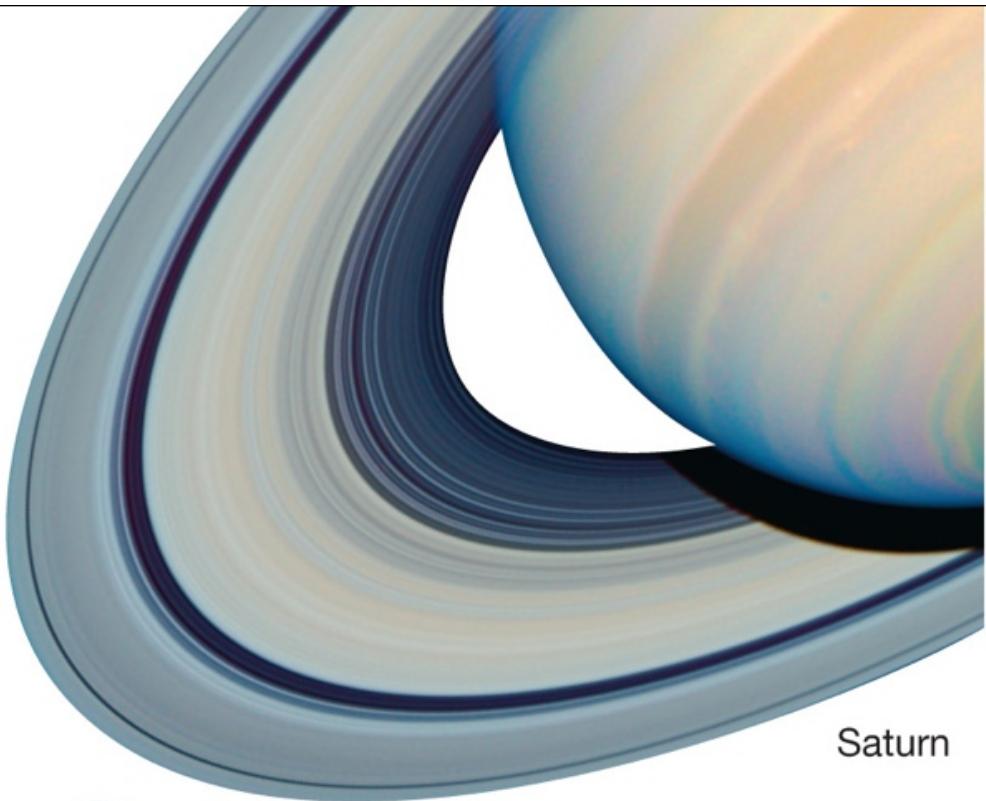
Uranus
(Ouranos)



Neptune
(Poseidon)



Jupiter



Saturn



Uranus

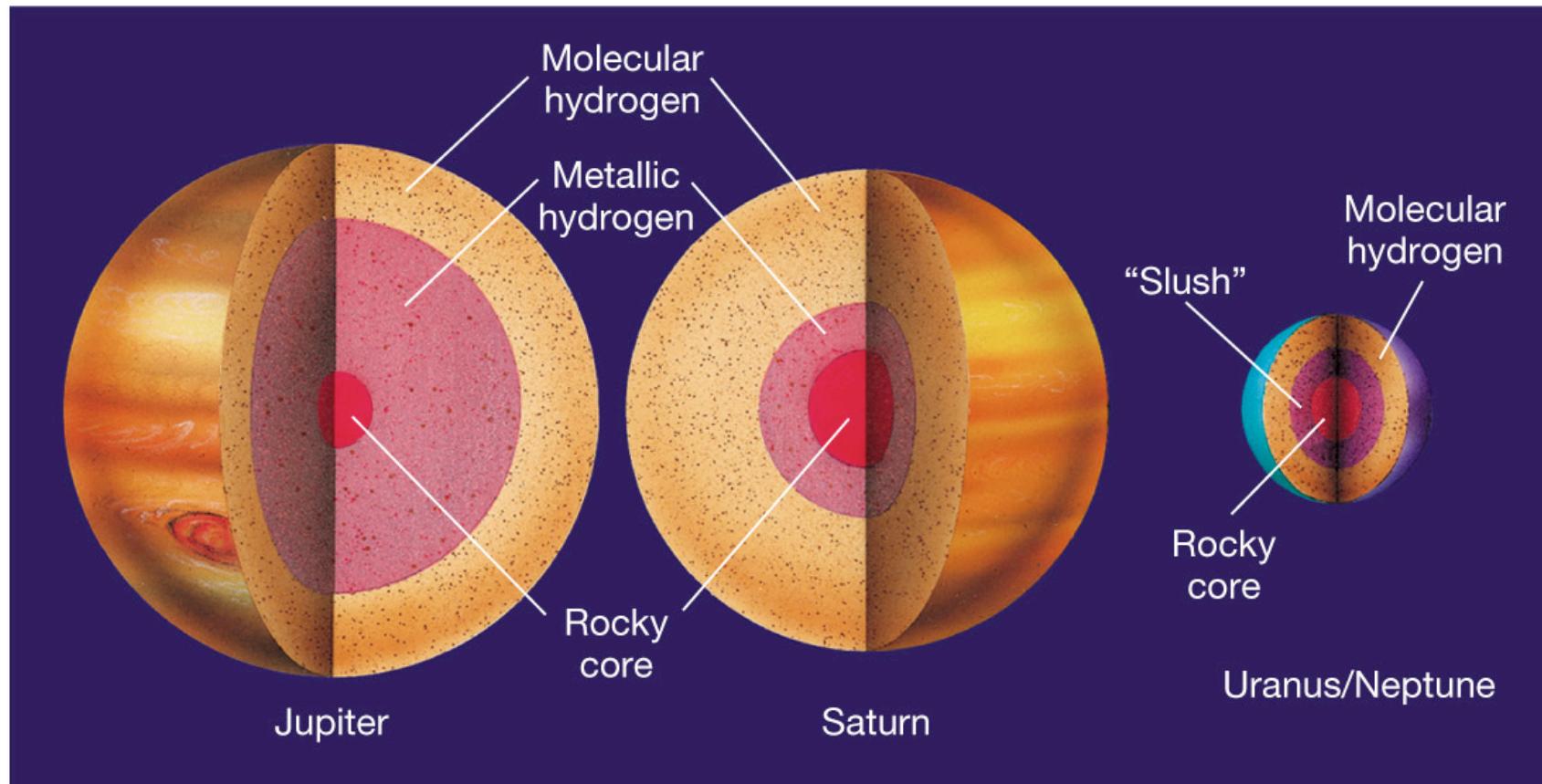


Earth

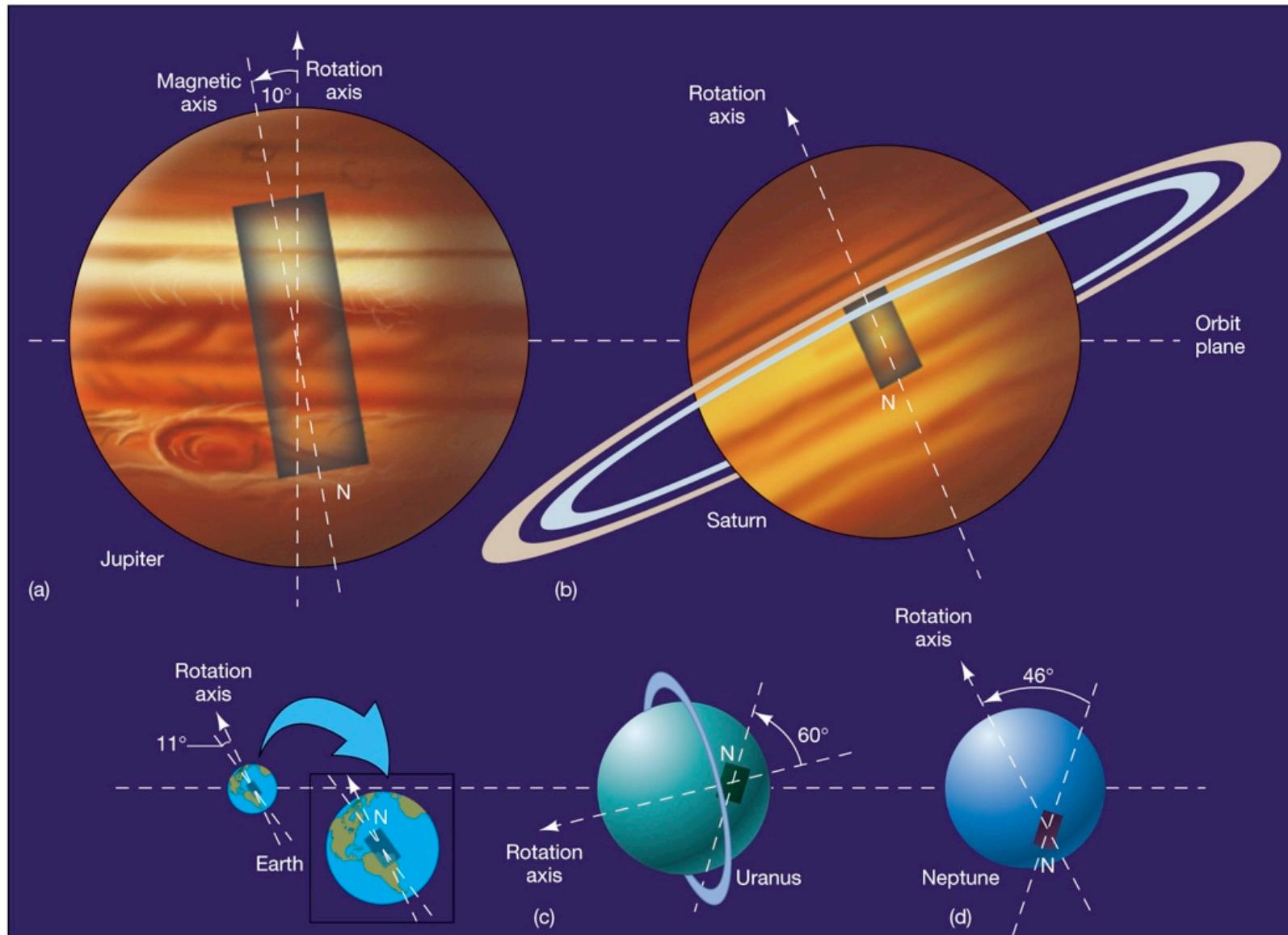


Neptune

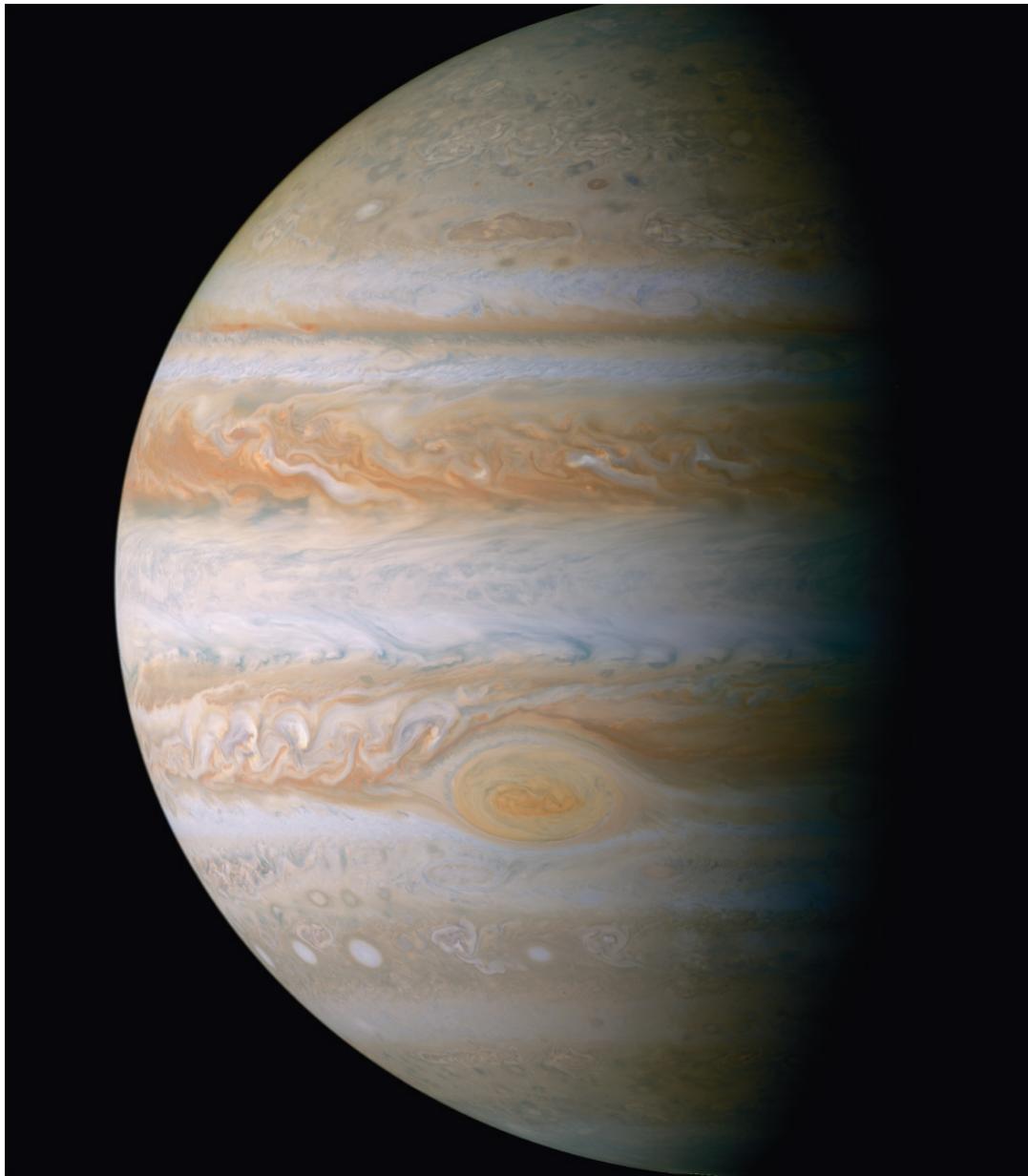
Internal Structure

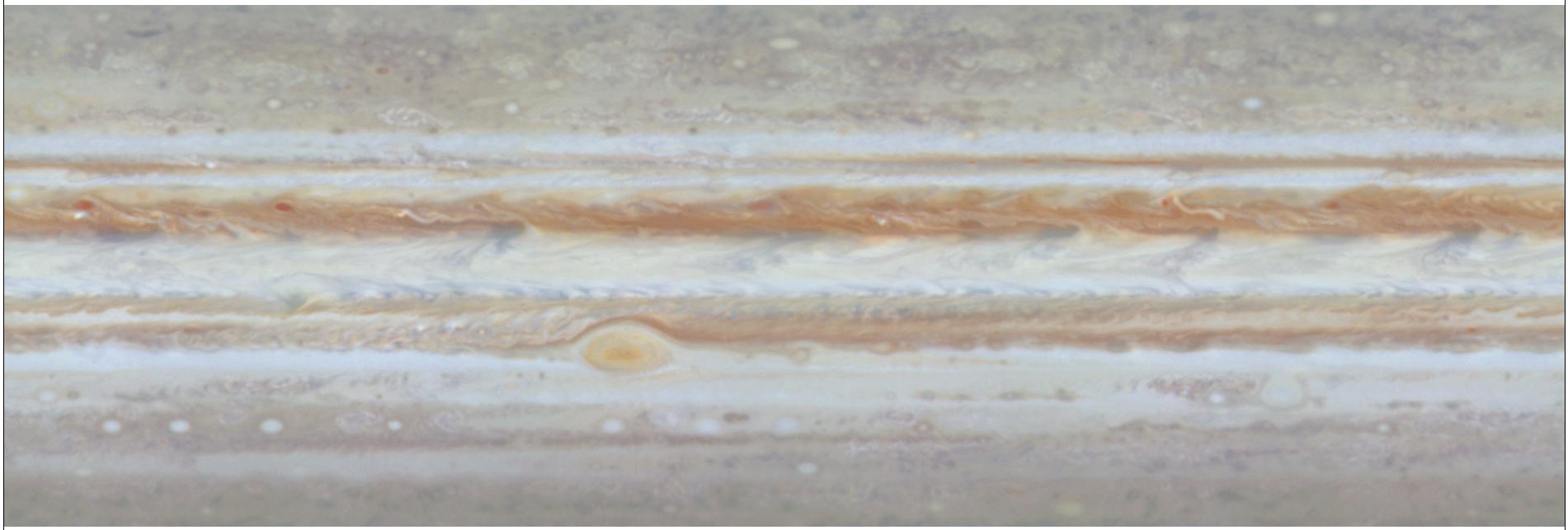


Rotation and Magnetic Fields

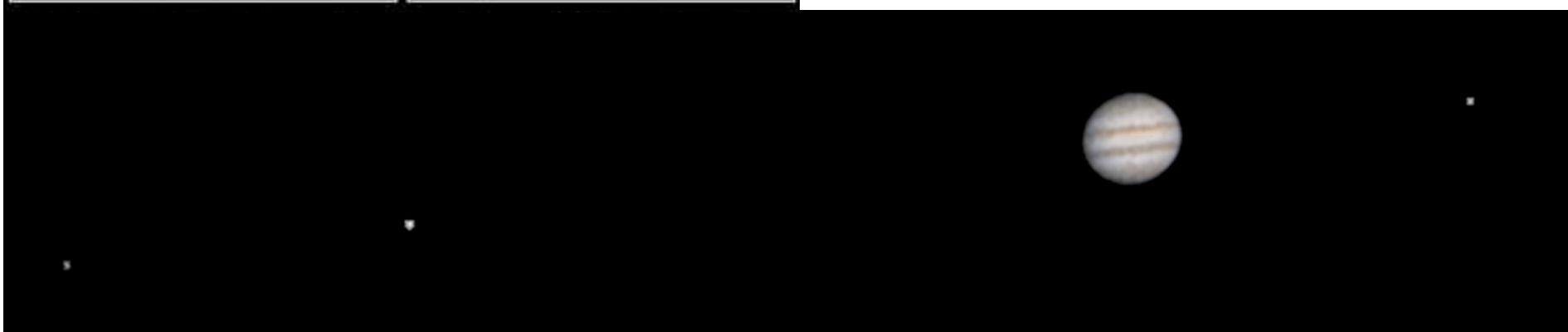


Jupiter

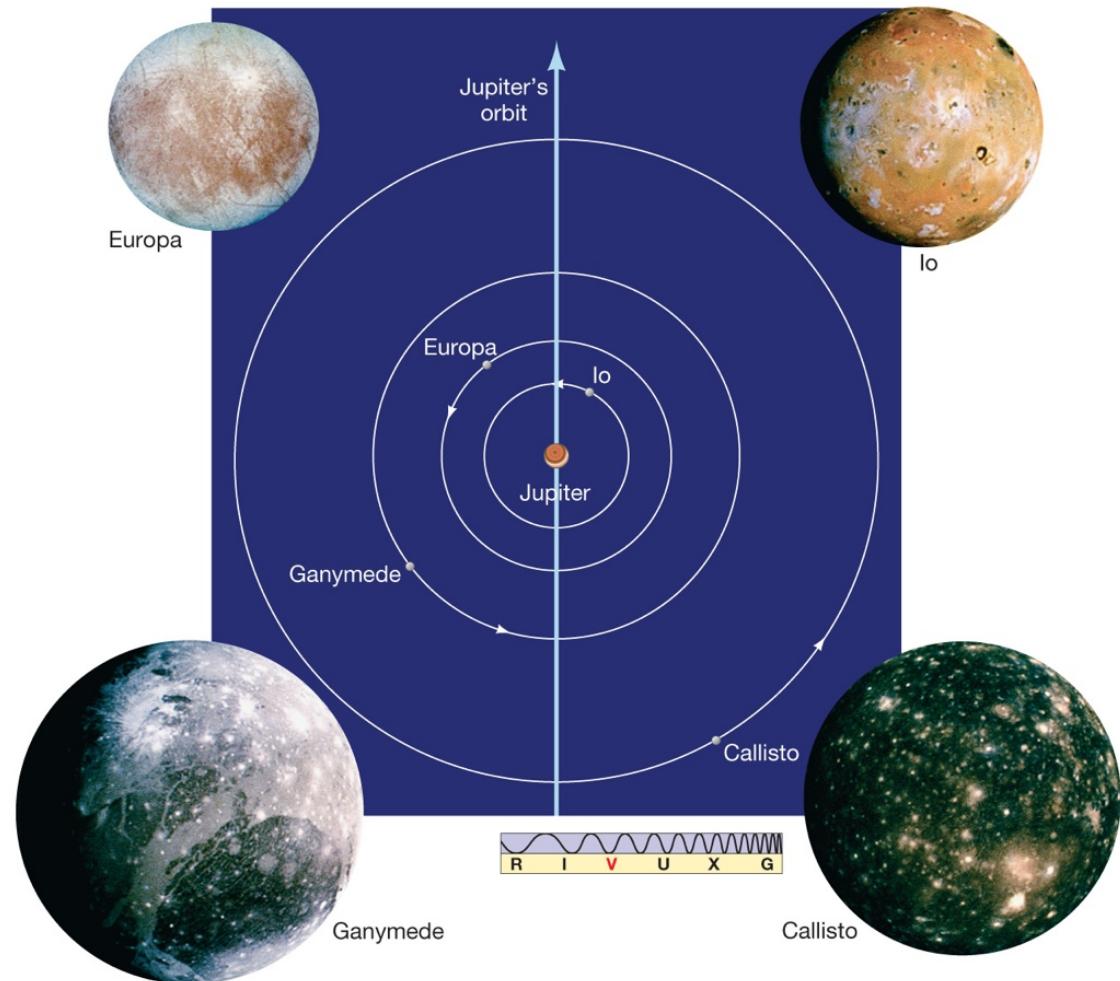




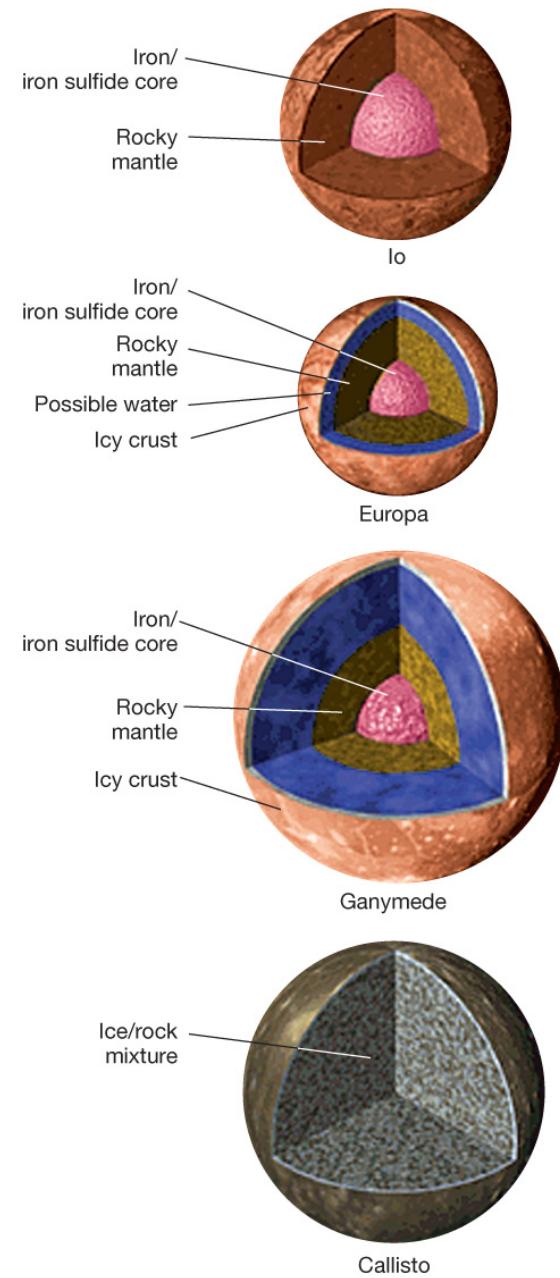
Jupiter's Galilean Moons



Tides of Jupiter on Its Moons

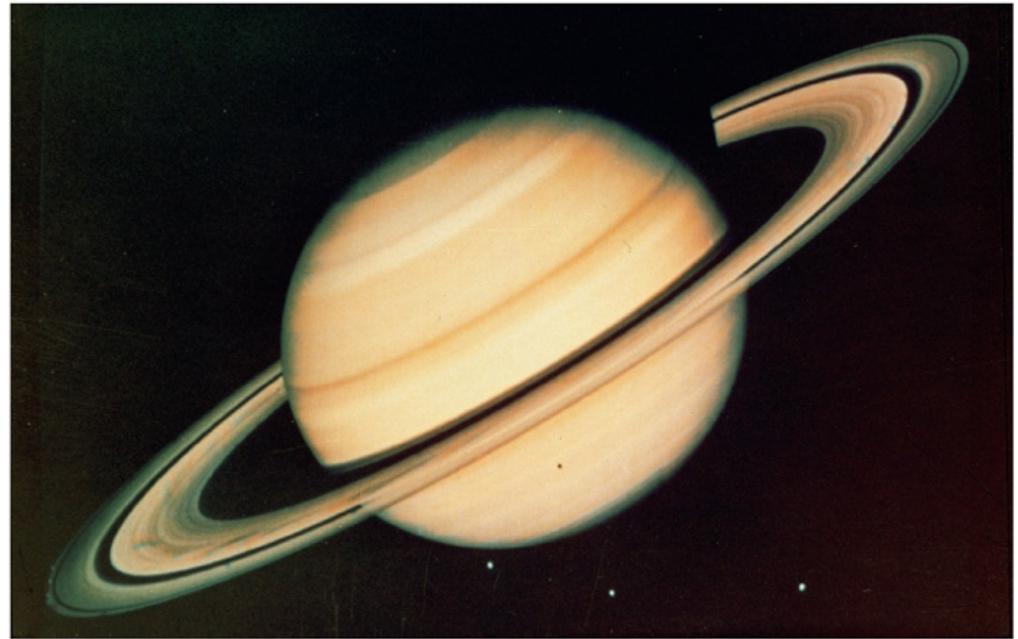
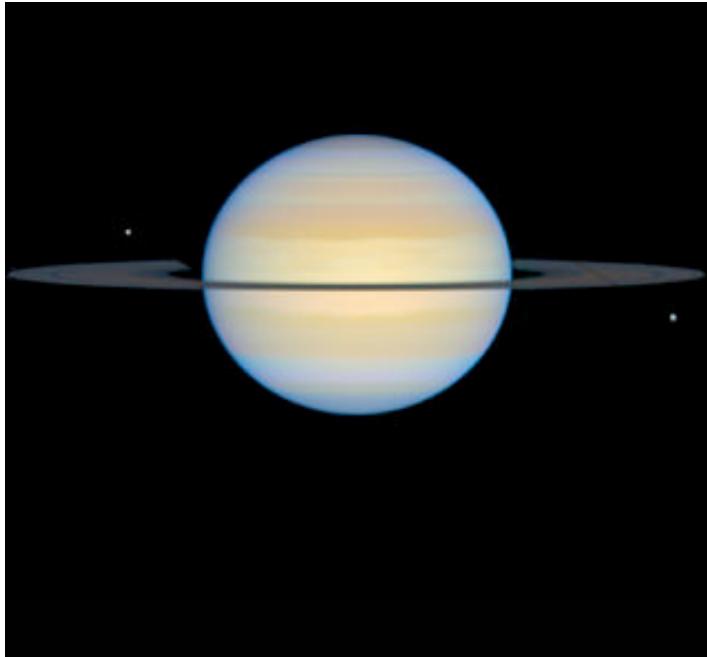


Copyright © 2007 Pearson Prentice Hall, Inc.

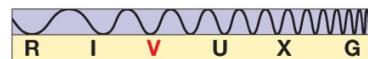


Copyright © 2007 Pearson Prentice Hall, Inc.

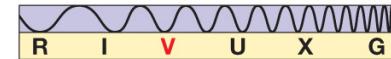
Saturn



Uranus and Neptune

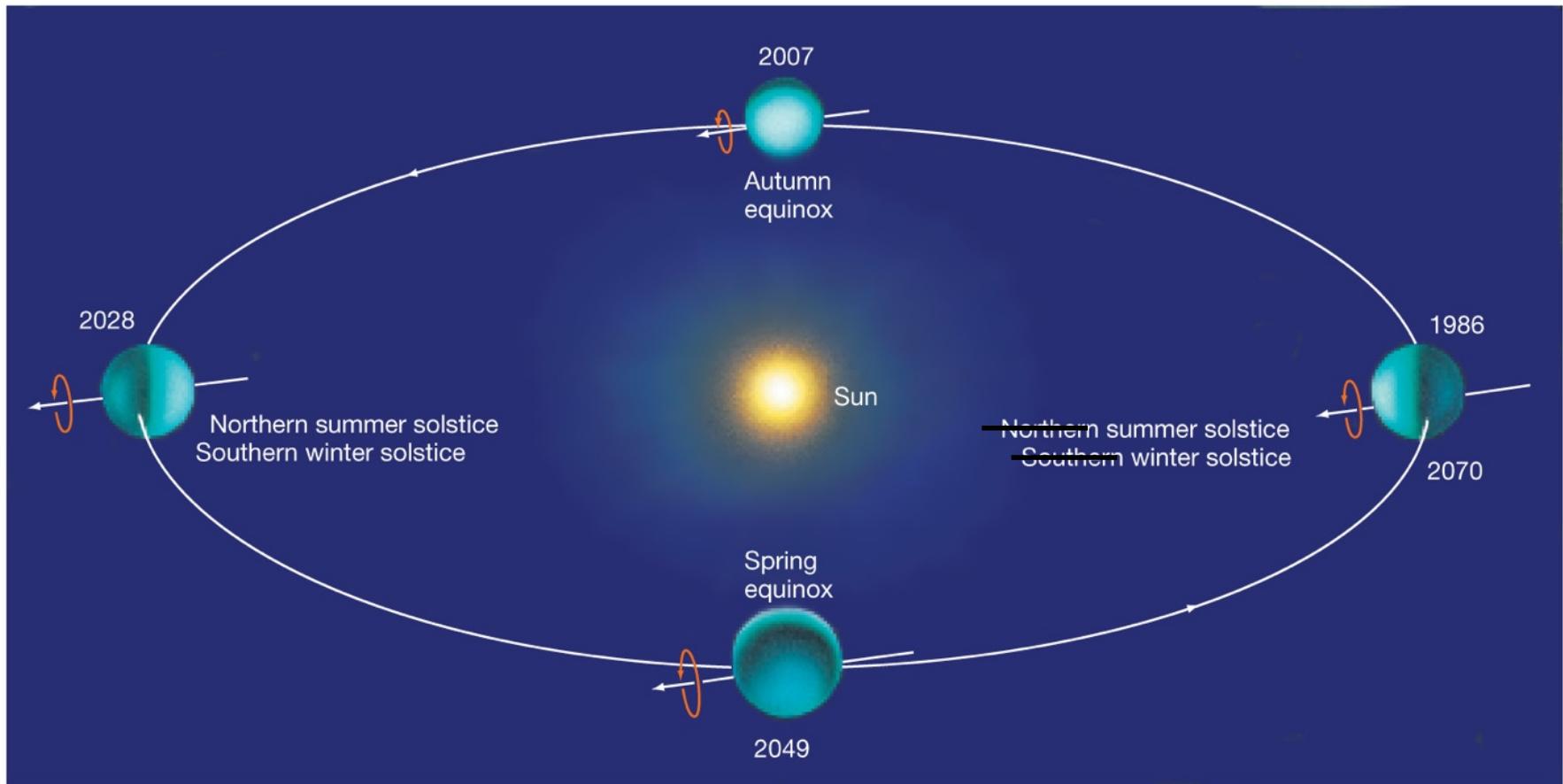


Copyright © 2007 Pearson Prentice Hall, Inc.



Copyright © 2007 Pearson Prentice Hall, Inc.

Funky Seasons on Uranus



Copyright © 2007 Pearson Prentice Hall, Inc.

Formation of the Solar System

Properties of the Solar System that we need to explain:

1. Planets are widely spaced, not clustered together.
2. All orbits are nearly circular.
3. Planets orbit in the same plane.
4. All planets orbit in the same direction as the Sun rotates.
5. Most (but not all) planets rotate in the same direction as the Sun does.
6. Most moons orbit in the same direction as their planets rotate.
7. There are pronounced differences between the inner and outer planets in many properties, such as masses, density/composition, moons, spacing, radii, presence of rings, and others ("differentiation" of the solar system).

