"The Planets"

Astro/EPS C12 (CCN 17045 or 32505)

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LEC: 2 LeConte TWTh, 2:40–5:00pm
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Mon 3–4 and Tue 5–6

PLUTO'S LIGHTCURVES

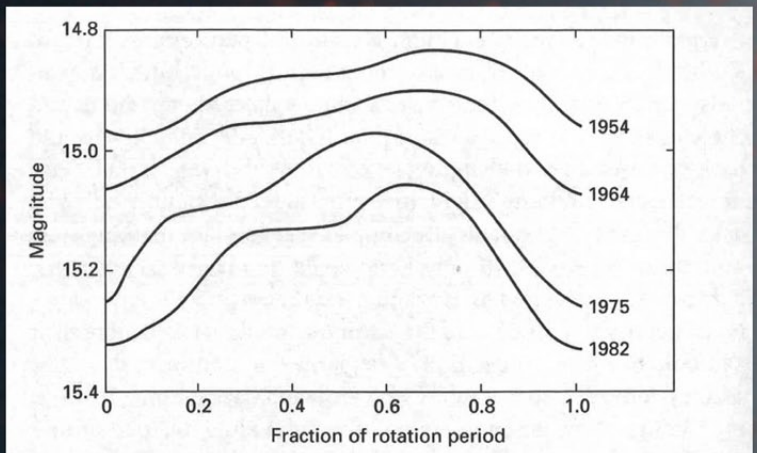
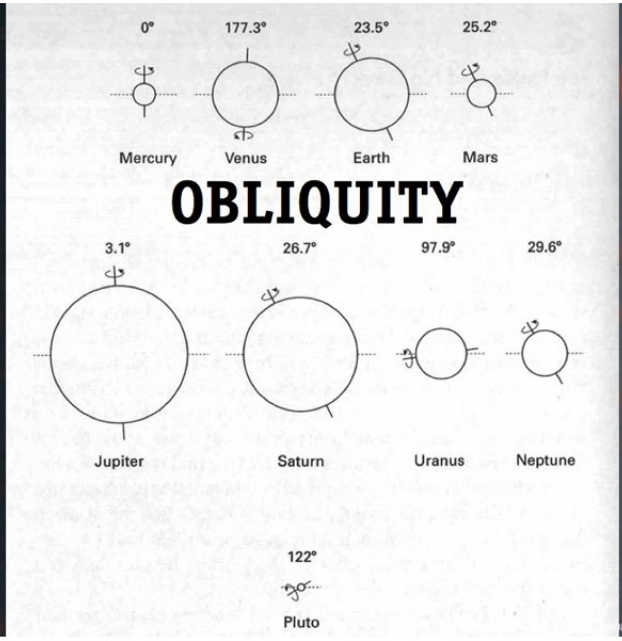
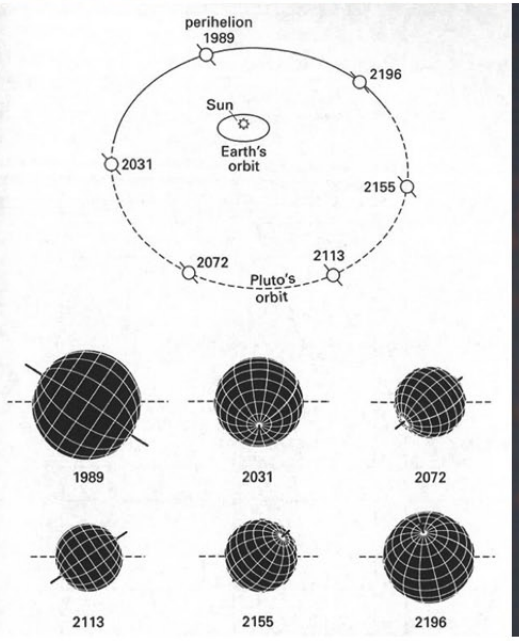


Fig. 2.2: The change in Pluto's lightcurve over almost 30 years, from 1954 to 1982.

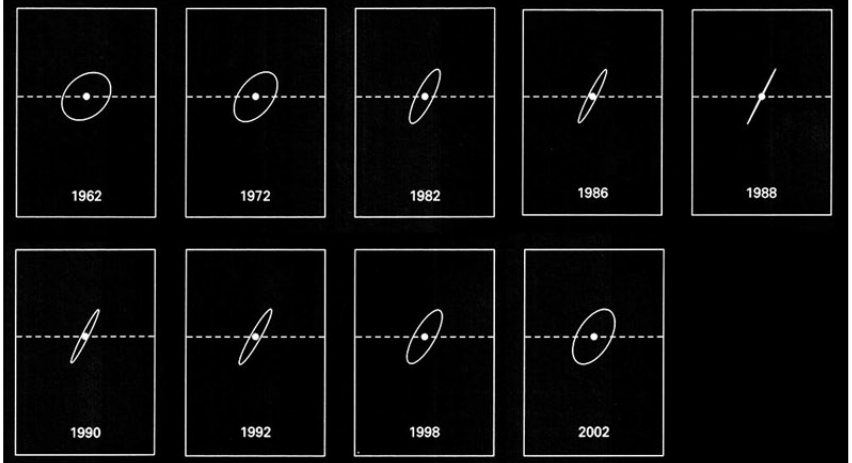




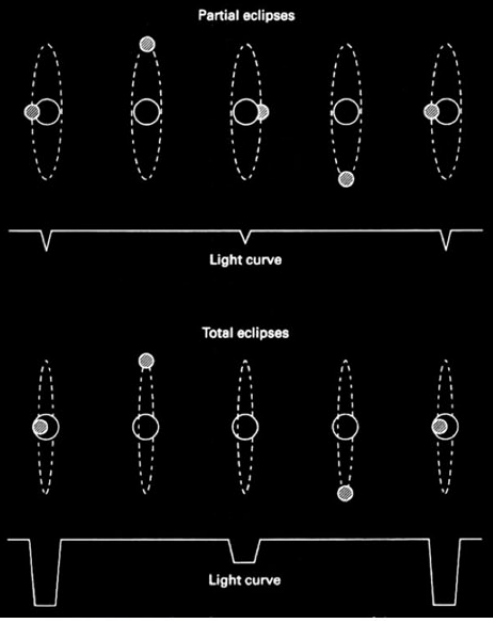
PLUTO'S OBLIQUITY

- first estimated using the changes in Pluto's lightcurve

ECLIPSE SEASON



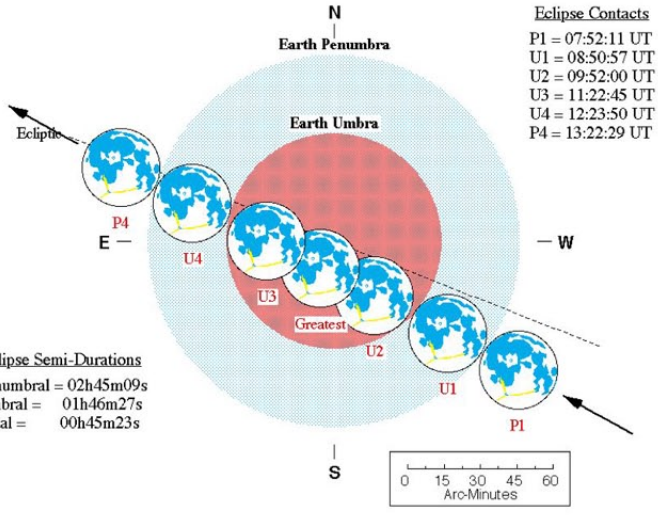
...is when system is seen edge-on



- what would eclipses look like from Pluto's surface?

Total Lunar Eclipse of 2007 Aug 28

Greatest Eclipse = 10:37:22.3 UT J.D. = 2454340.94262



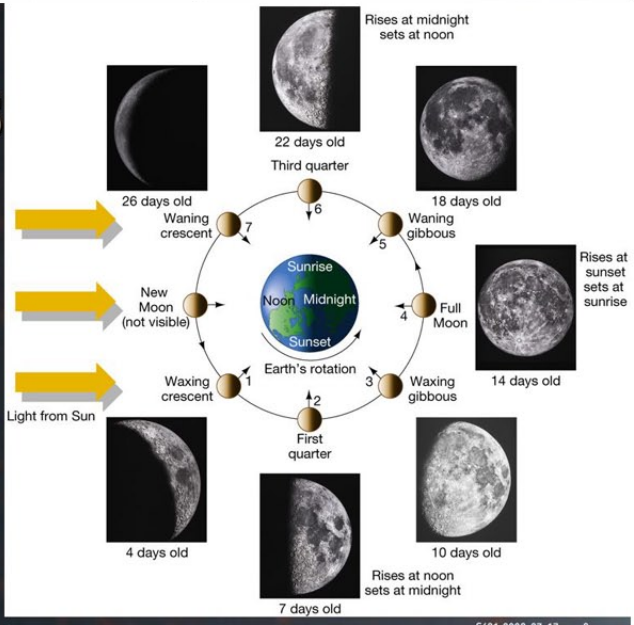
Eclipse Contacts

P1 = 07:52:11 UT
U1 = 08:50:57 UT
U2 = 09:52:00 UT
U3 = 11:22:45 UT
U4 = 12:23:50 UT
P4 = 13:22:29 UT

Eclipse Semi-Durations

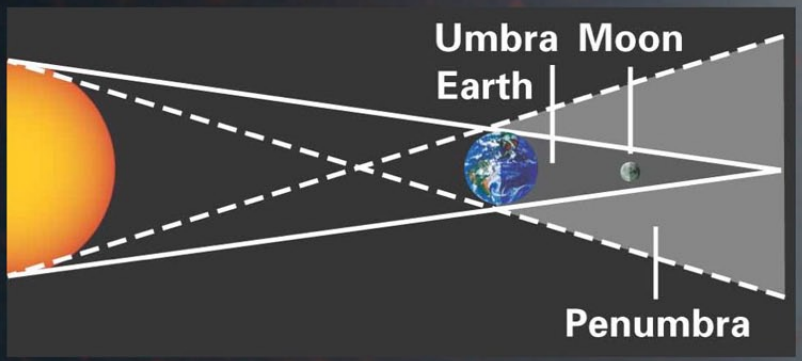
Penumbral = 02h45m09s
Umbral = 01h46m27s
Total = 00h45m23s

LUNAR PHASES

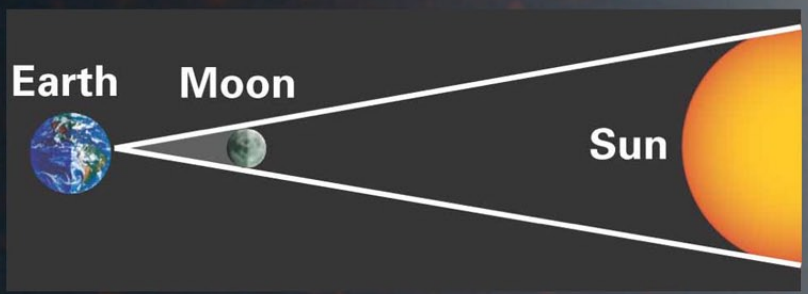


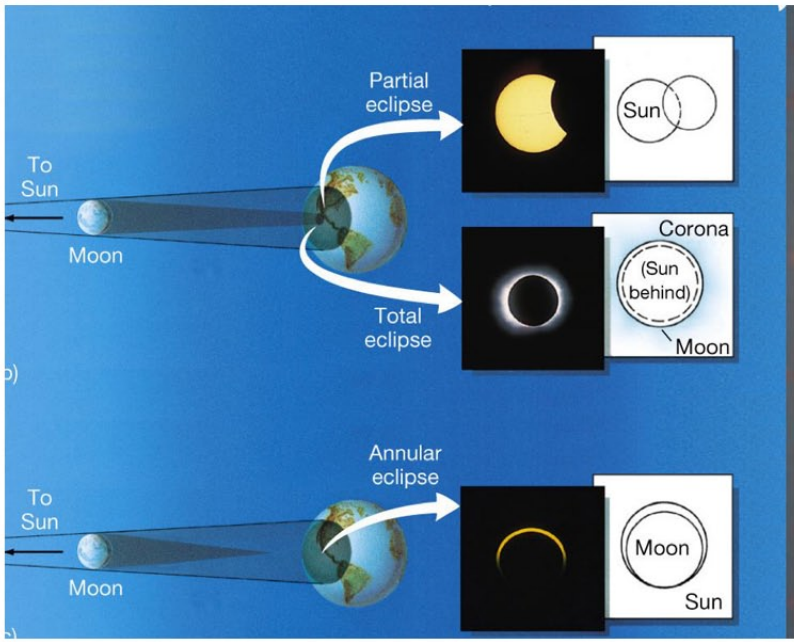
LUNAR ECLIPSE

LUNAR ECLIPSE

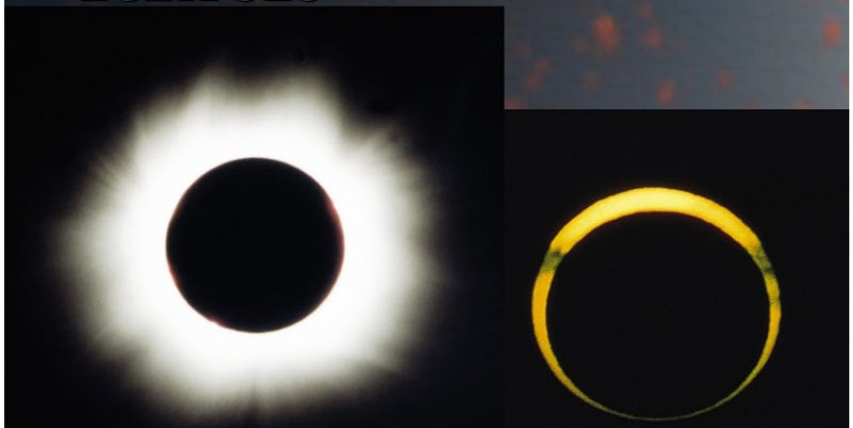


SOLAR ECLIPSE

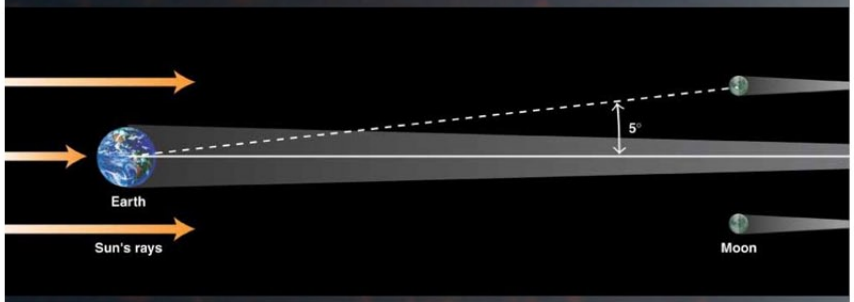




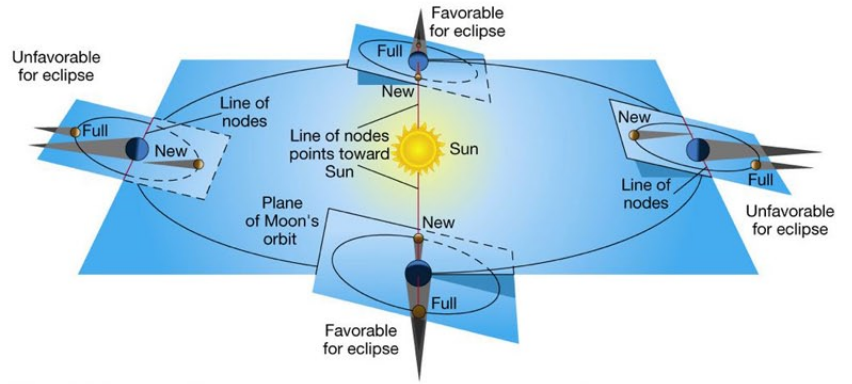
ECLIPSES



THE 5° INCLINATION of the LUNAR ORBIT



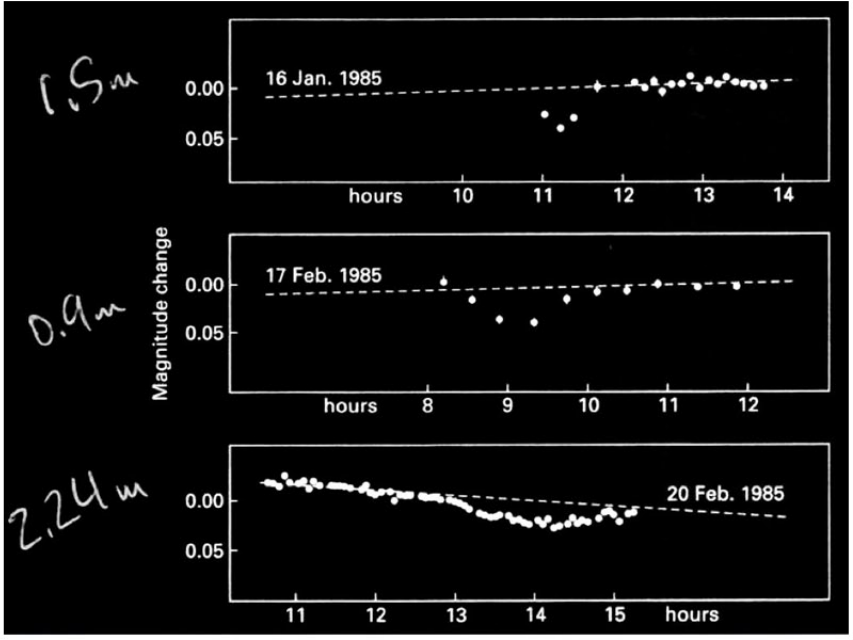
ECLIPSES



MENTAL EXERCISE

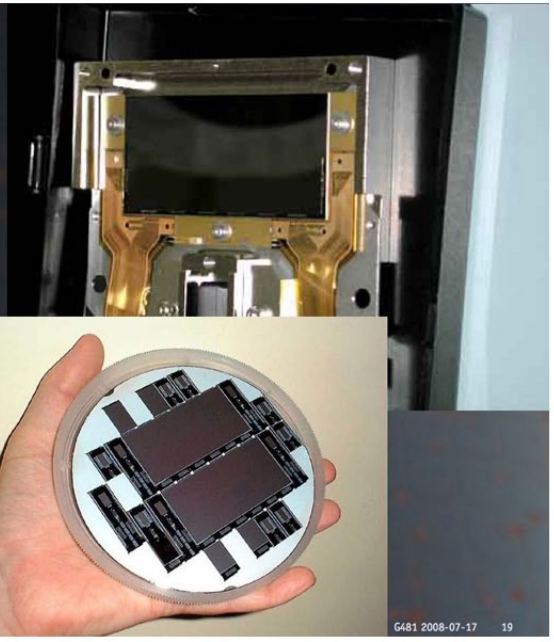
If the lunar orbit had an eccentricity of exactly zero, what would be true?

A. Annular OR total solar eclipses would occur, but not both.
B. Solar eclipses would never happen.
C. Solar eclipses would happen during every new moon phase.
D. Solar eclipses would happen during every full moon phase.



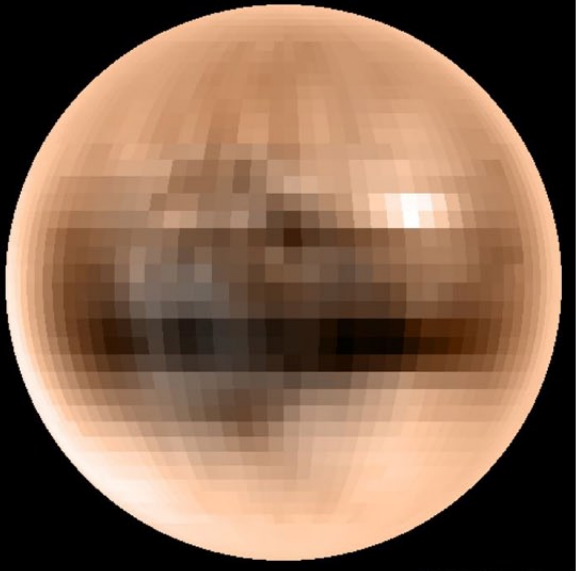
CCDs

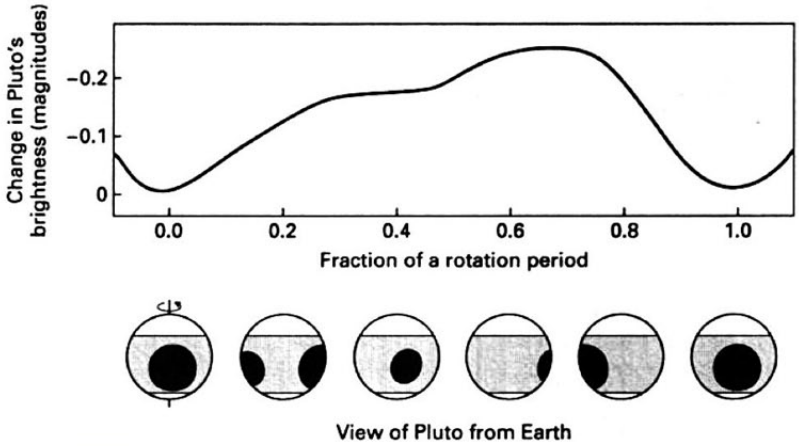
- charge-coupled device
- used in digital cameras
- this one destined for WFC3 on HST

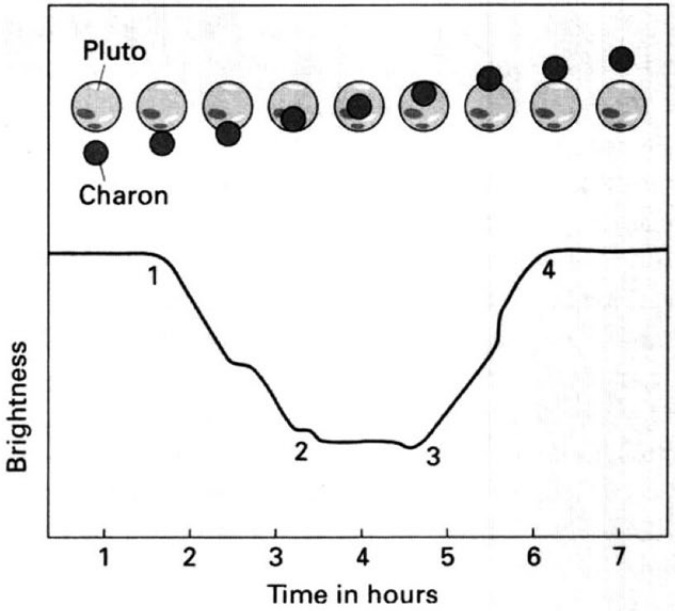


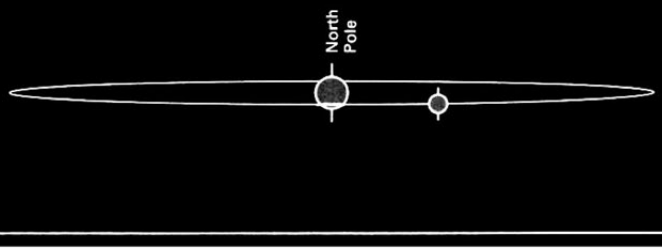
MAPS

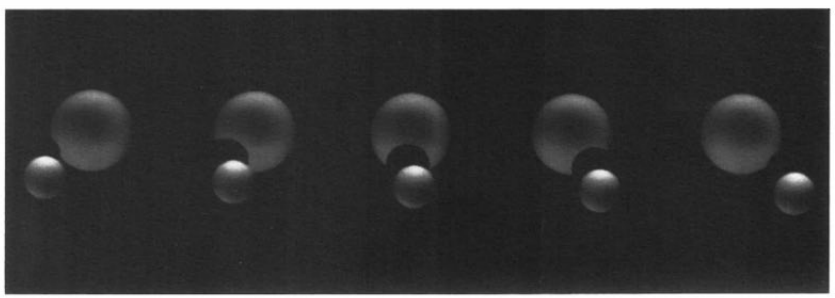
- can be created from occultation lightcurves, rotational lightcurves, and HST observations

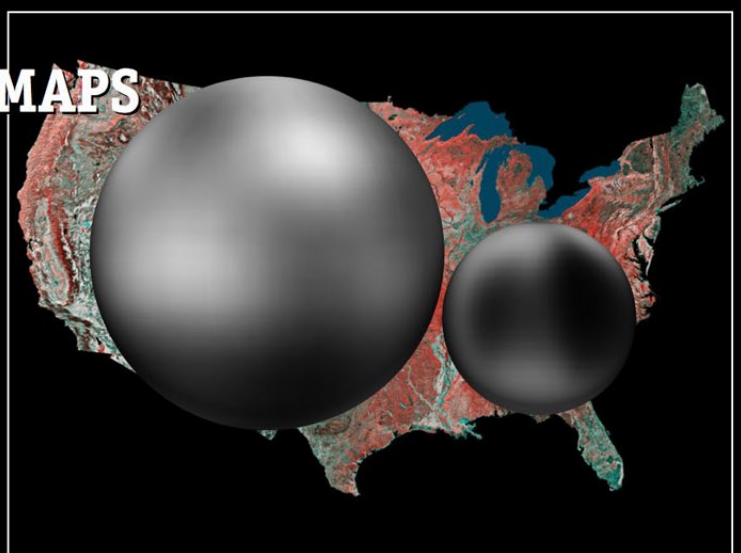




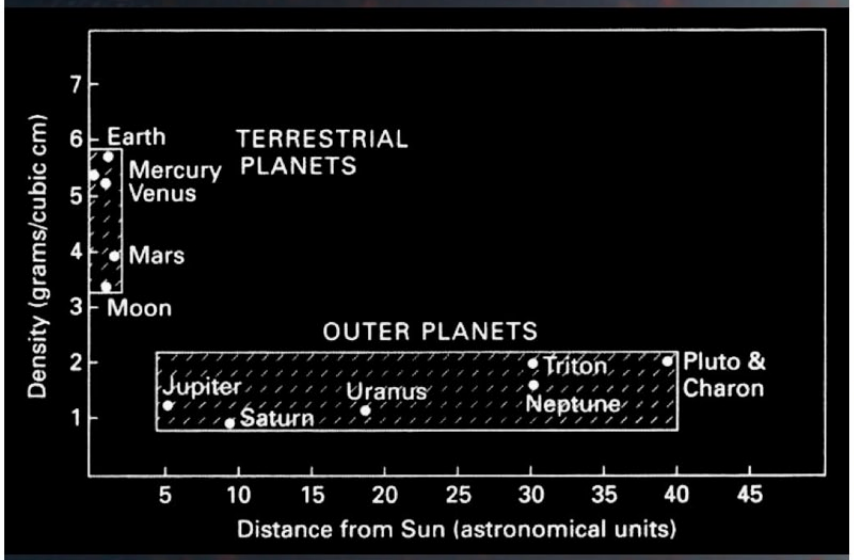




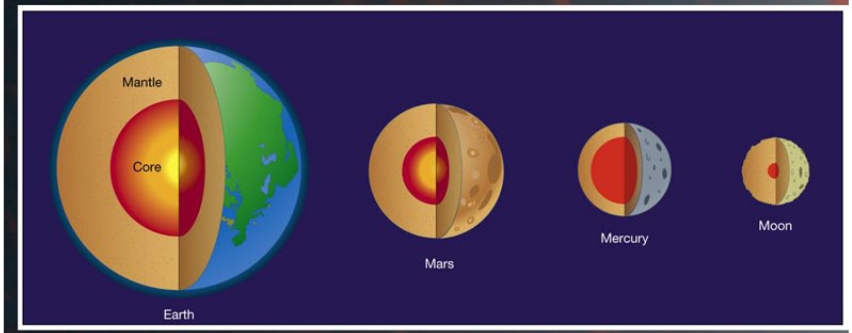




Pluto, Charon, & USA Comparison



PLANETARY INTERIORS

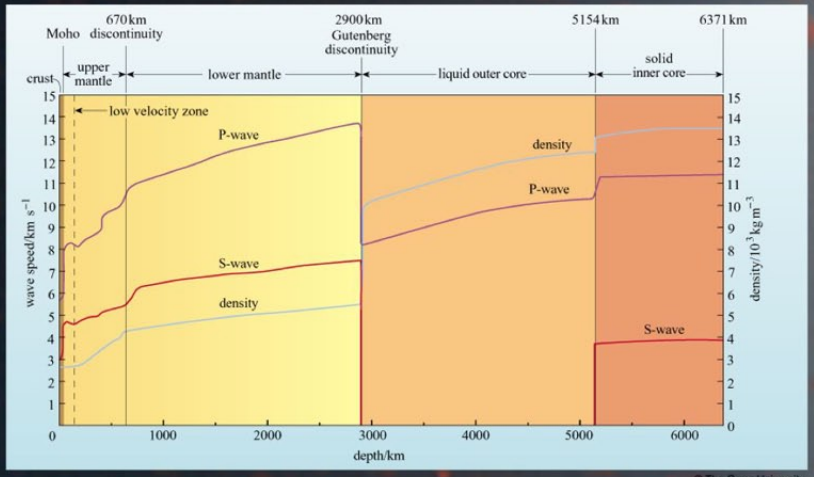


- the terrestrial planets are differentiated
- core-mantle size ratios are different for the different planets

PLANETARY DENSITIES

Planet	Observed Density (g/cm^3)	Uncompressed Density (g/cm^3)
Mercury	5.44	5.4
Venus	5.24	4.2
Earth	5.50	4.2
Mars	3.94	3.3
(Moon)	3.36	3.35

VELOCITY and DENSITY



DIFFERENTIATION