Seasons and Time
Lecture outline -- 1

Reading: ***Astronomy Notes*** section 3.6

Vocabulary terms used:
solar day—time between successive meridian crossings of *the Sun*. Our clocks are based on this interval of time (on Earth, one solar day = 24 hours *on average*).
sidereal day—time between successive meridian crossings of *a star*. It is the true rotation period of a planet (on Earth, one sidereal day = 23 hours 56 minutes).
time zone—interval of longitudes 15 degrees wide in which every clock is set to the same time (e.g., every clock in the Pacific time zone will give the same time).

mean Sun—imaginary object that moves uniformily eastward along the celestial equator such that it completes one 360˚ circuit of the sky in one year. The average solar day is the time between successive meridian crossings of the *mean Sun.*
perihelion—closest point of an orbit around the Sun.
aphelion—farthest point of an orbit around the Sun.
Equation of time—a relation that describes the difference in time between the meridian crossings of the mean Sun and the actual Sun.

Outline

Seasons

Tilt model explanation for seasonal temperature changes.

Two effects _____ + _____

Why popular Sun distance model does not work

Three predictions that are proven wrong _____

Sidereal day vs. solar day

Why there is a difference between the two "days" _____

Figuring out how much difference there should be:

The Earth *revolves* in its orbit _____ per day on average, so the Sun drifts eastward _____ per day on average.

The Earth *rotates* on its axis _____ per day or _____ per hour = _____ degrees per minute.

[Figure on page 45 of textbook is key for this concept]

A star (constellation) will rise _____ on the next night = _____ in 30 days (one month).

Mean Sun vs. the actual Sun [may not be covered in lecture—read in textbook]

Two processes at work to make actual Sun "fast" or "slow" _____