

Summary of Lecture 3

Key points include:

1. The rising and setting of stars is only apparent, and it happens because the Earth rotates on its axis.
2. Your latitude on the Earth (angle above or below the equator) determines which stars could potentially be seen.
3. The Earth also orbits around the Sun, and we can't see other stars in the daytime, so the visible stars also depend on the time of year.
4. The seasons are caused because of Earth's tilt of its rotational axis to its orbit. When the Northern Hemisphere is tilted toward the Sun, we have summer; when it is tilted away, we have winter. The Southern Hemisphere is pointed the other way, so when it is tilted toward the Sun and the Southern Hemisphere has summer, the Northern Hemisphere has winter.
5. The seasons are **not** caused because we are closer to the Sun in summer! If that were the cause, then places in the Southern Hemisphere (such as Australia) would have summer at the same time as we do in the Northern Hemisphere, but they don't.
6. Why does this happen? Sunlight warms a spot on the Earth more when it is closer to directly overhead. When (say) the Northern Hemisphere is tilted toward the Sun then the Sun is closer to directly overhead. Note that we are saying *closer* to directly overhead; for example, in College Park, Maryland the Sun is *never* directly overhead, but it's closer at noon in summer than it is at noon in winter.