Solar Structure

Core - Inner region from 0 to 0.25R
- Site for Hydrogen fusion reactions
- Temperature = 15 million K

Radiative Zone - from 0.25 to 0.7R
- Core energy transported by radiation
- Temperature decreases to 1.5 million K

Convective Zone - from 0.7R to surface
- Efficient convective energy transport

Photosphere - the "surface" of the sun
- Temperature = 5,700 K

Sunspots - well known photosphere feature.
- Regions of localized magnetic field variations.
- Appear dark only because of their lower relative temperature, 3800 K.
- Sunspot number peaks in 11 year cycles, caused by global polarity changes. Next max in 2011.

Chromosphere - thin gas layer above photosphere. Thickness ~0.02R
- T~8000K, heated magnetically?

Corona - outermost layer extending out to interplanetary space. T ~1 million K.
- Magnetohydrodynamic heating?

Solar Wind - extension of the Corona.
- Ions and electrons flowing out from Sun.
- Velocity ~400 km/sec

Solar Flare - an especially dense burst of solar wind particles.
- What are the terrestrial effects?
  - Aurorae
  - Disruption of radio communication (ionosphere)