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)