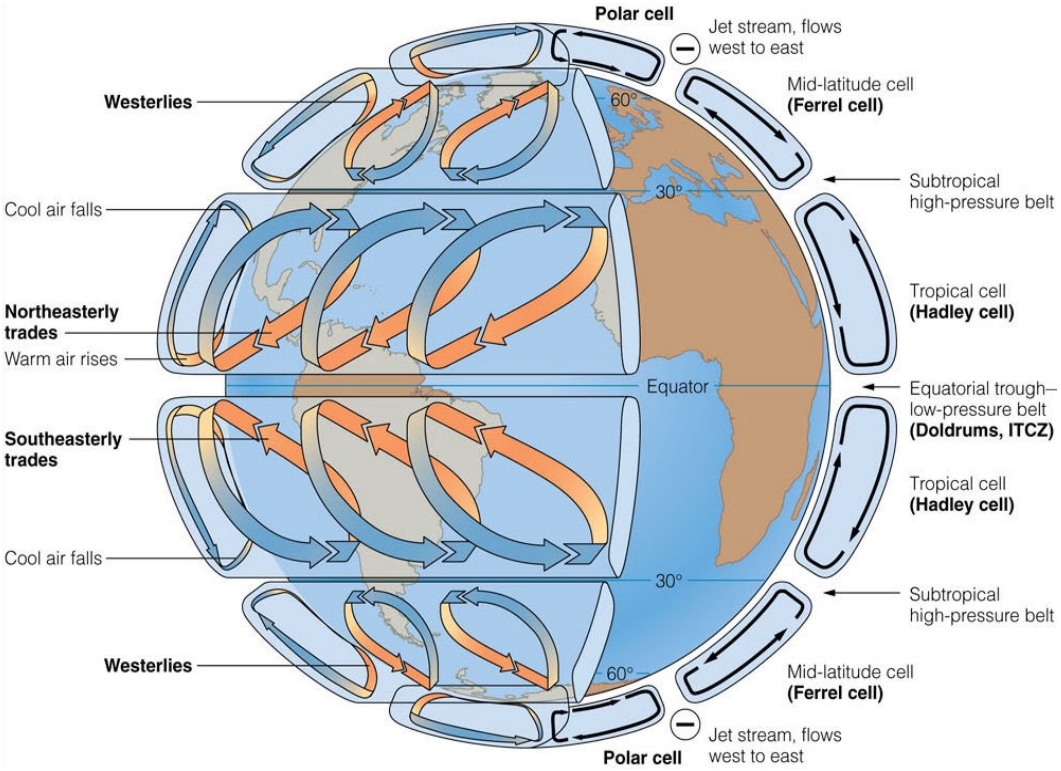
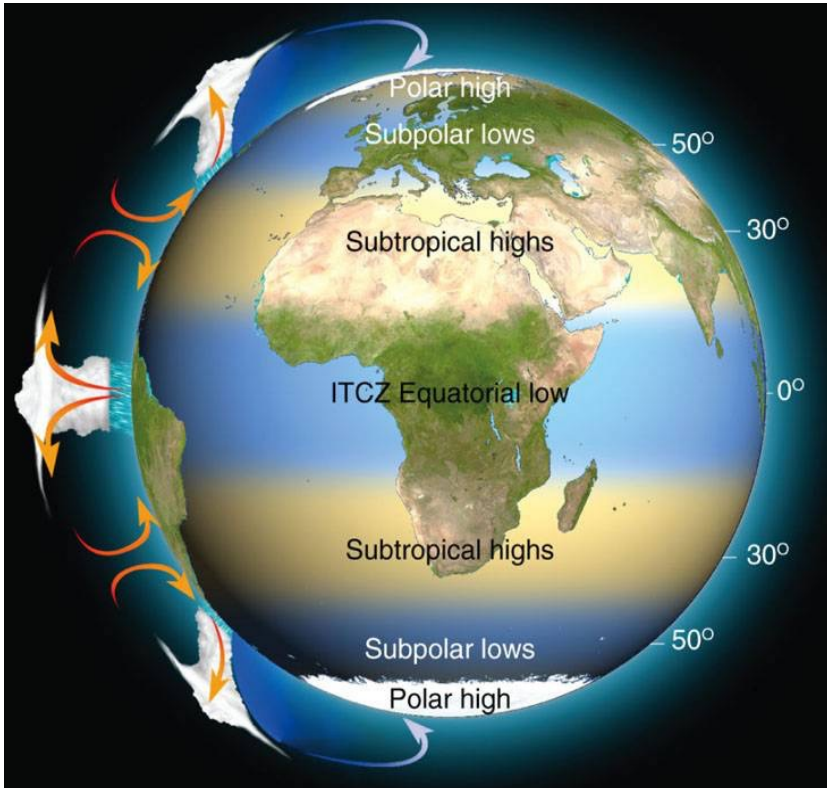
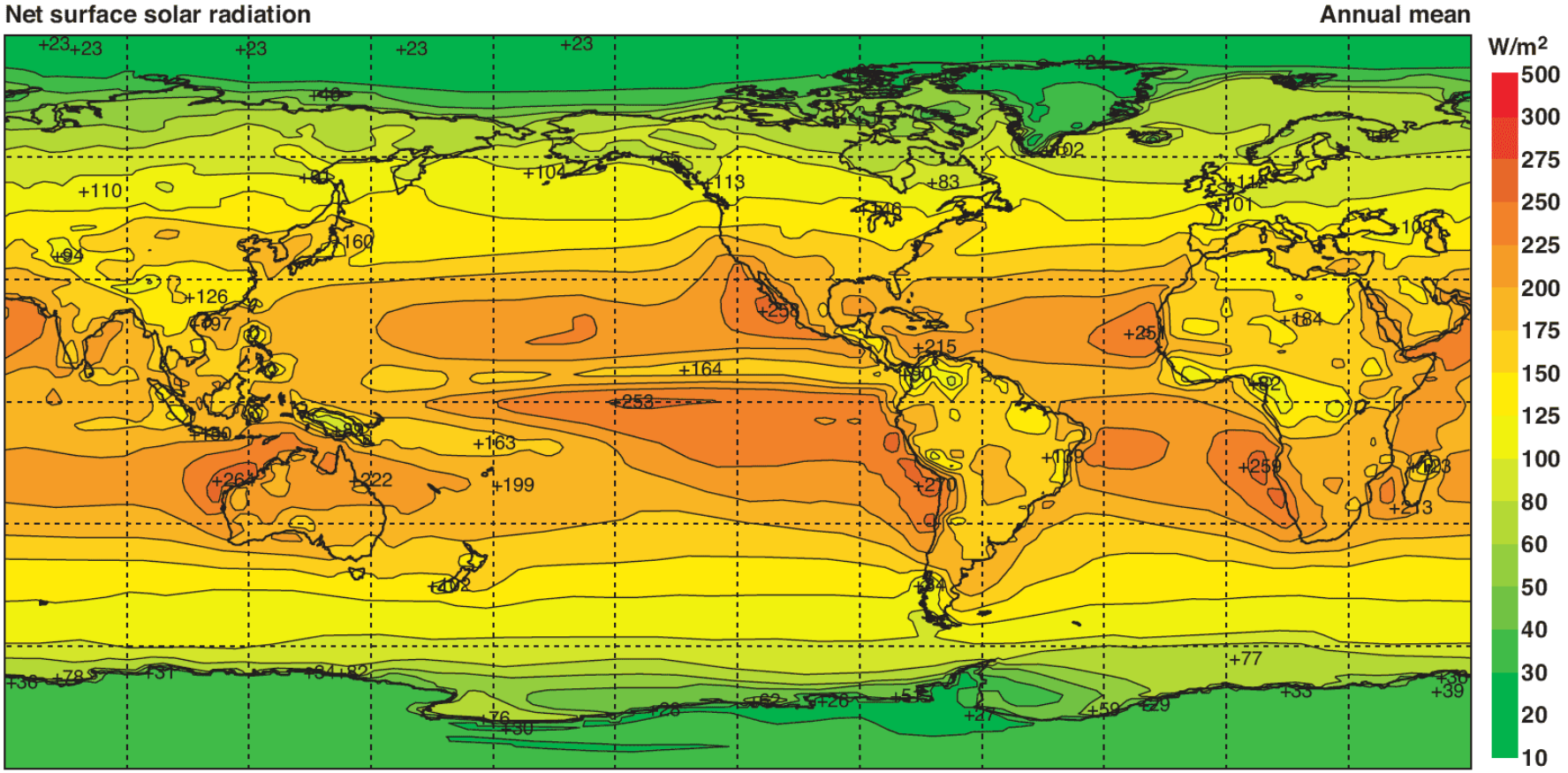
What causes the time mean circulation pattern?

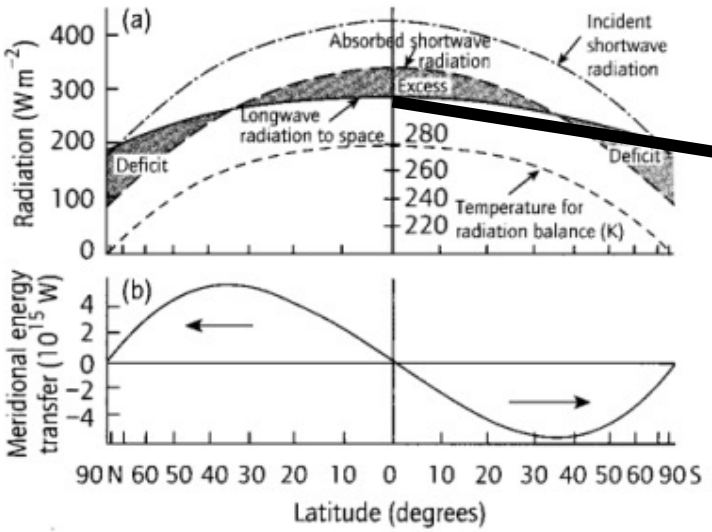


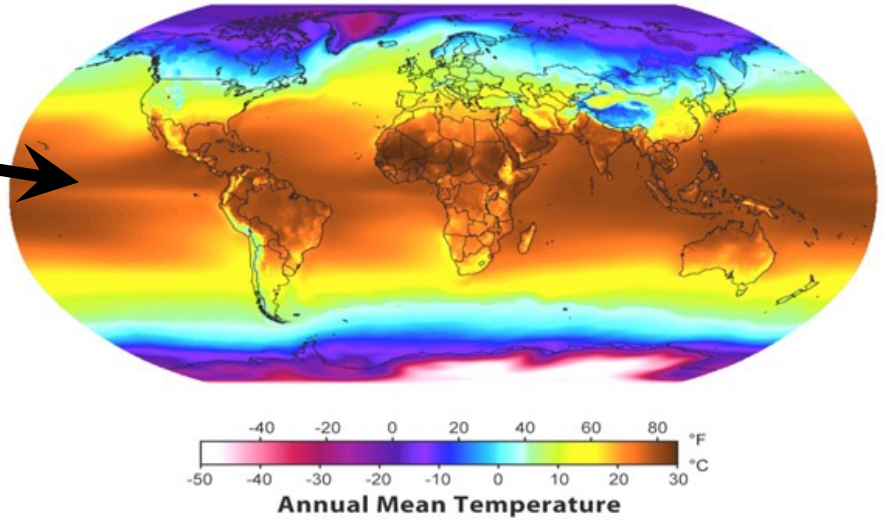


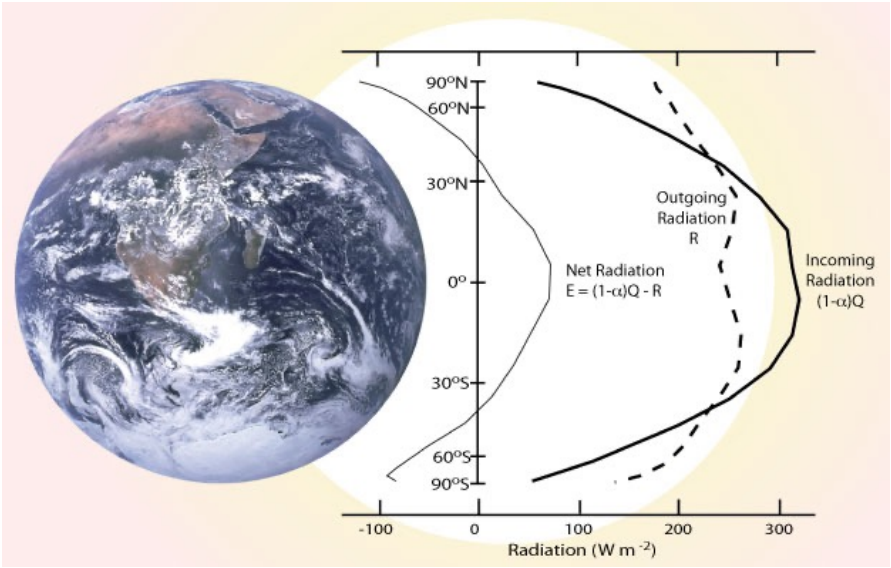
Average annual surface solar radiation



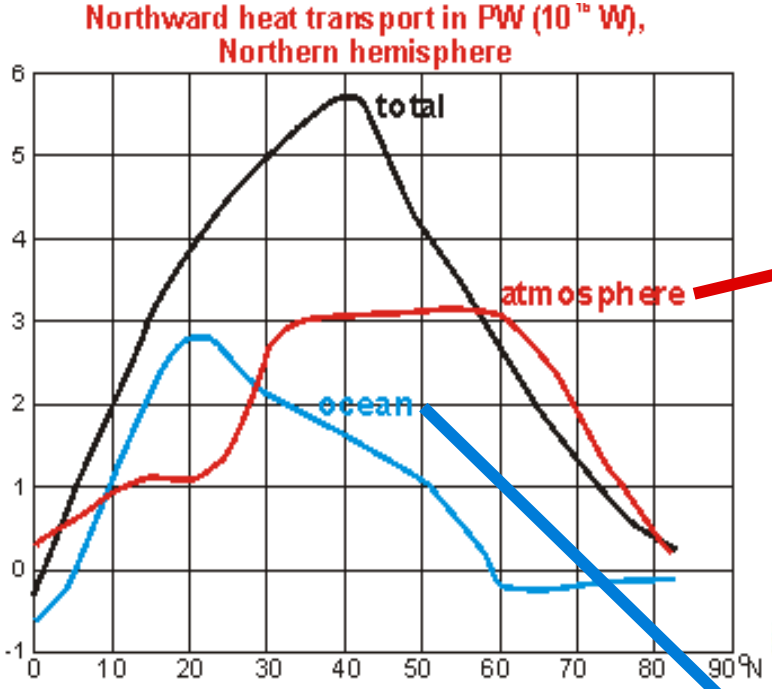
Earth's energy balance

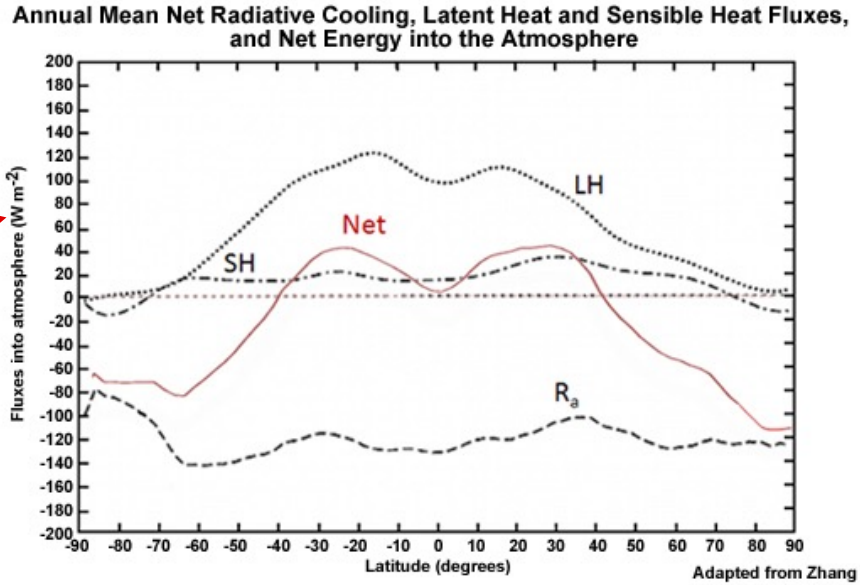


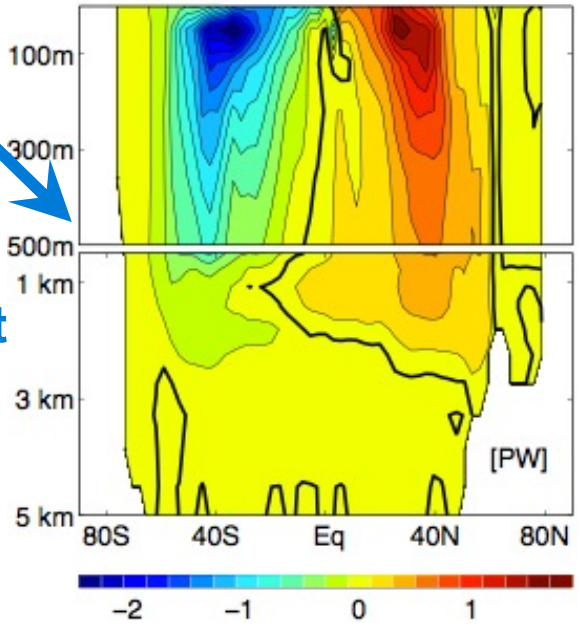




Heat transport in the atmosphere and ocean

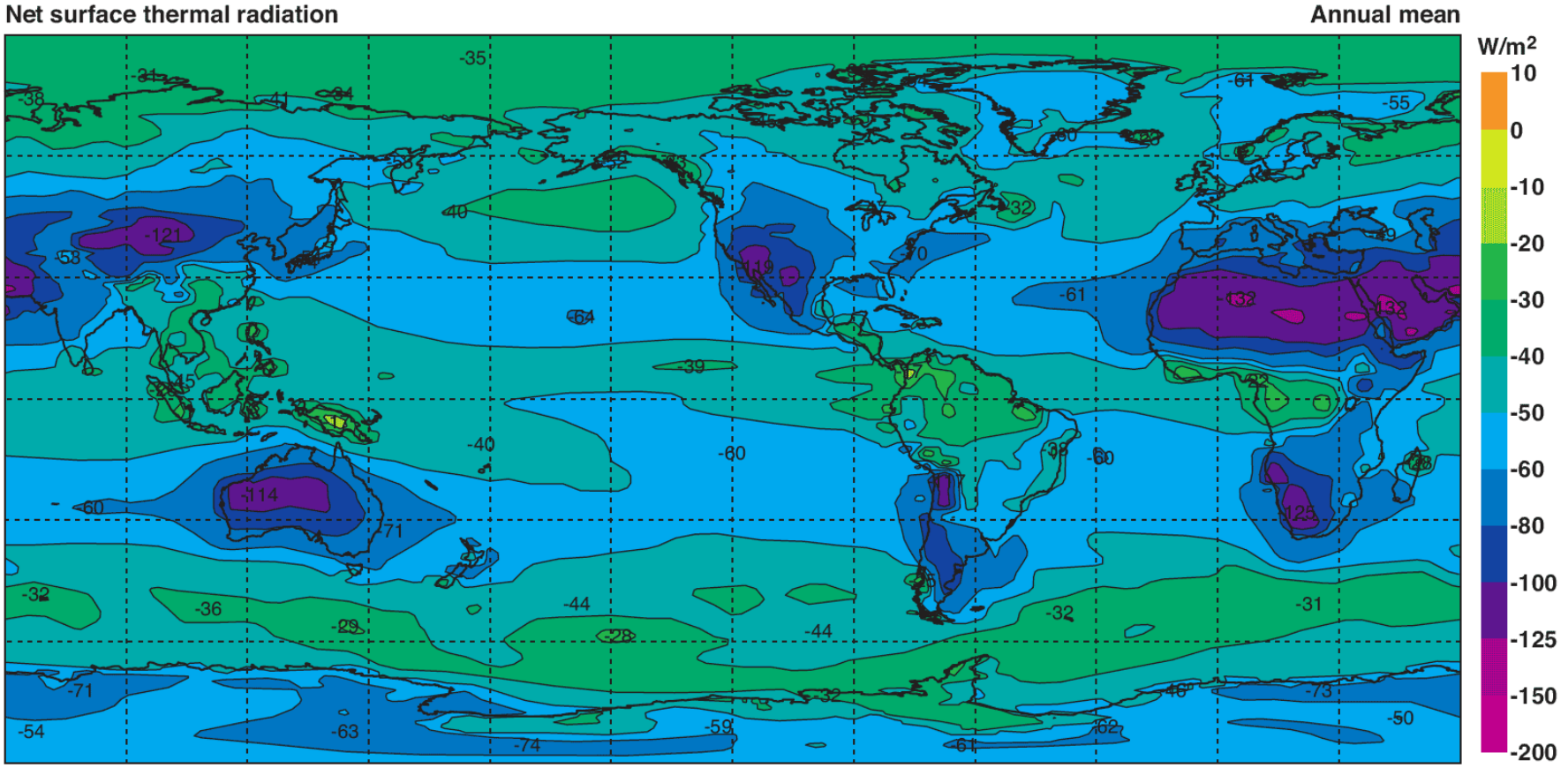






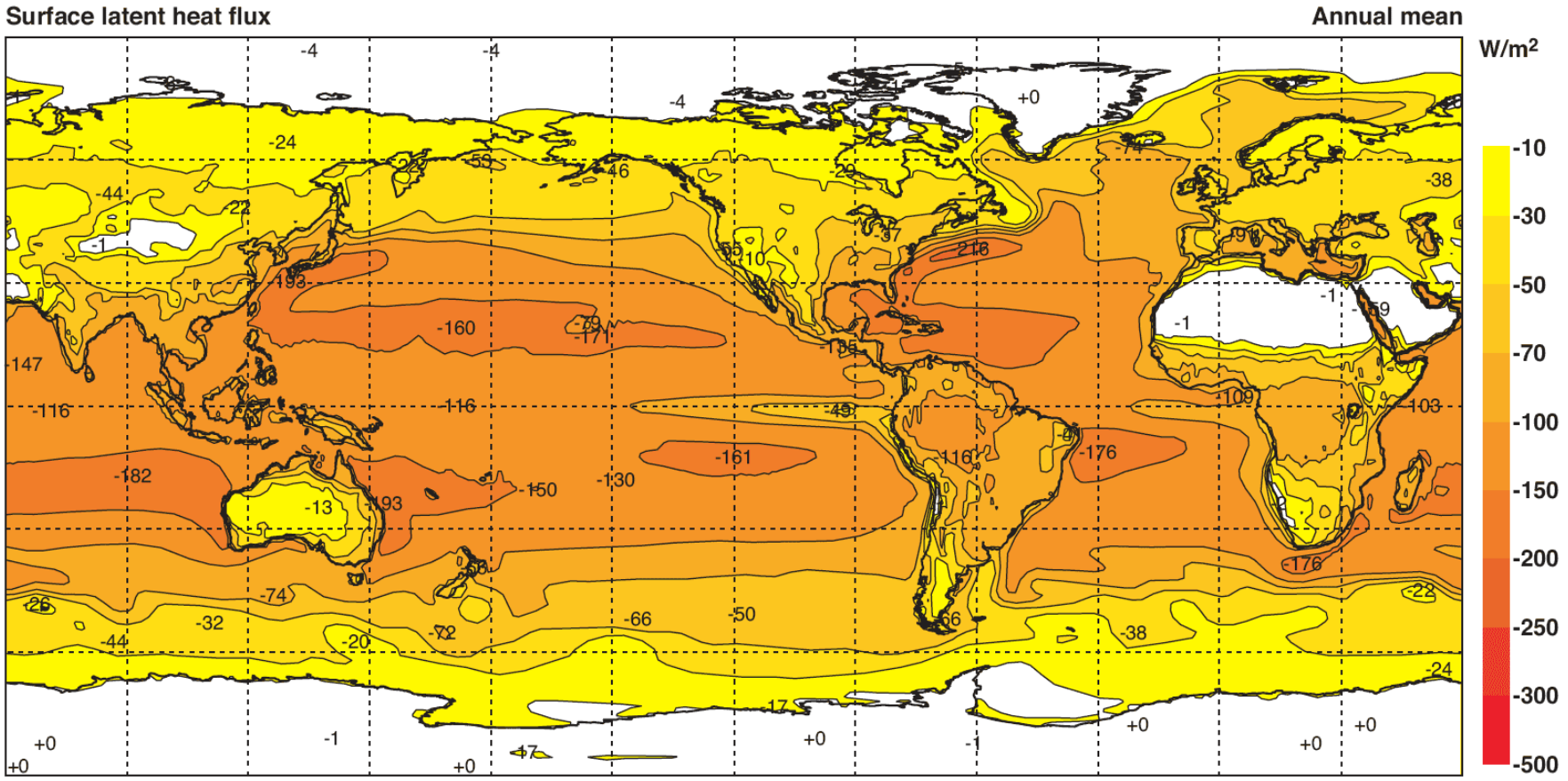
Meridional ocean heat transport

Average sensible heat fluxes are small



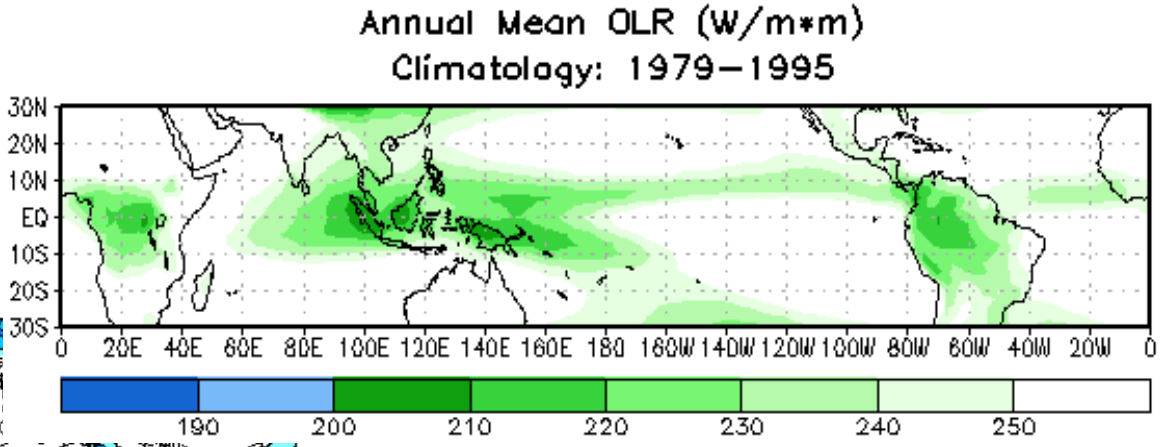
** Note sign change from last class because surface, as opposed to atmosphere*

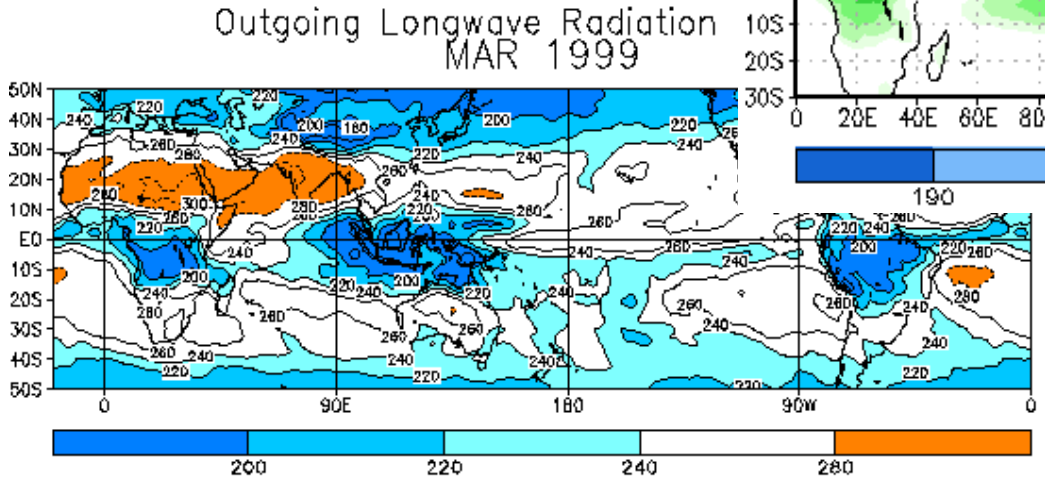
Latent heat fluxes dominate the tropics

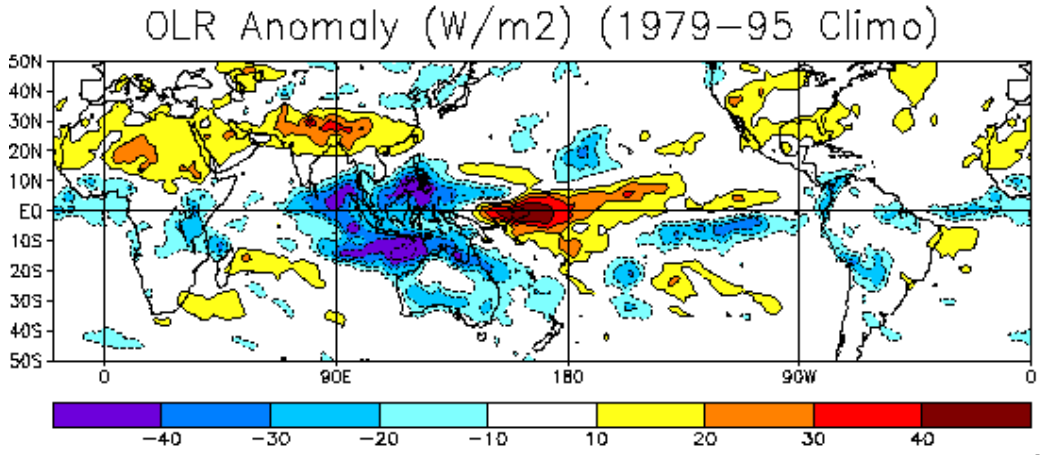


** Note sign change from last class because surface, as opposed to atmosphere*

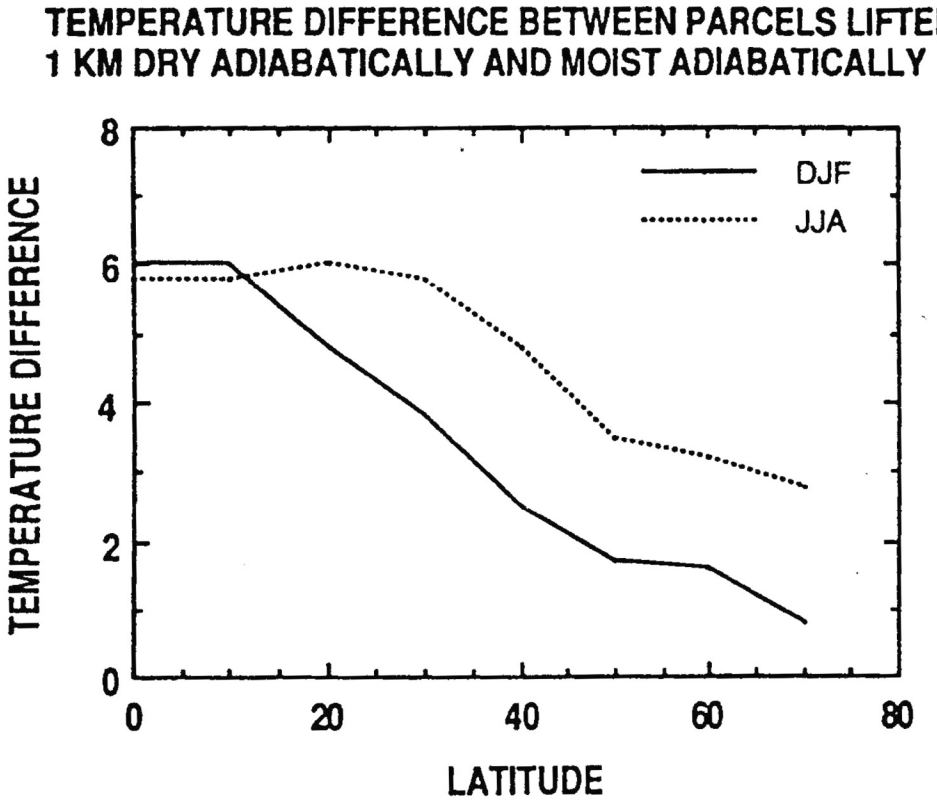
Outgoing longwave radiation (OLR)







Tropical vs. midlatitude convection



The net increase of temperature (ΔT) beyond adiabatic effects for raising a parcel 1 km. ΔT is plotted as a function of latitude for summer and winter. Note the large difference in temperature realized for the same amount of work close to the equator compared to higher latitudes. About a factor of two in ΔT also occurs between the warm pools of the western Pacific Ocean and the colder equatorial waters further east.