

Chapter 4 Lesson 2 Notes: Convection and the Mantle

1. **Heat Transfer:** heat always moves from a warmer substance to a cooler substance. Cold is the absence of heat.
 - a. **Radiation:** transfer of energy through space
 - Heat transfer does not require direct contact
 - b. **Conduction:** heat transfer within a material or between materials that are touching.
 - Requires a medium (matter) to transfer the heat
 - This is how heat transfers inside Earth
 - c. **Convection:** heat transfer by the movement of currents within a fluid or gas.
 - During this process, heated particles of fluid flow
 - This flow transfers heat from one part of the fluid to another
 - Heat transfer is caused by differences in temperature and density
 - **Density:** a measure of how much mass there is in a volume of a substance
 1. When an object is heated, particles move fast and apart, decreasing the density.
2. **Convection Current:** the flow that transfers heat within a fluid
 - a. Heating and cooling of the fluid, changes in the fluid's density, and the force of gravity combine to set convection currents in motion
 - b. Convection currents continues as long as heat is added
 - c. Heat from the core and the mantle itself causes convection currents in the mantle