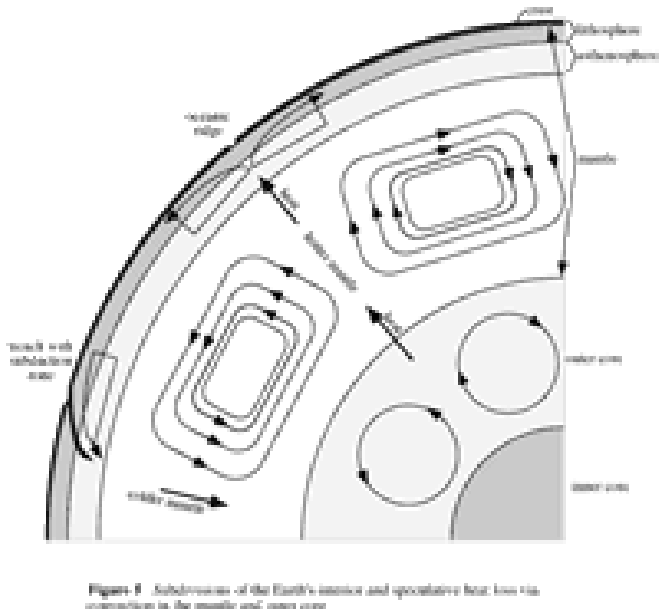
The Earth's Structure, the Plates, and the age of rocks

Why do the plates move?

Earth's interior is subdivided in two different classifications (**Fig. 5,** right and blown up on the next page):



Based on differences in composition:

Core: mostly iron
Mantle: mostly olivine
Crust: mostly silicate; solid, separated from mantle by Moho

oceanic crust: 5-6 km thick, basaltic, relatively dense
continental: 20-70 km thick, granitic; lighter than basalt

Based on differences in rock behavior:

Inner core: solid
Outer core: molten (source of Earth's magnetic field)
Inner mantle: mostly solid, but flows over millions of years
Asthenosphere: behaves like soft butter; part of mantle; present to about 350 km depth
Lithosphere: solid, cold; includes crust and outermost mantle; about 100 km thick;

Plates -- part of the lithosphere -- are carried along on top of the asthenosphere as the asthenosphere flows due to convection in the mantle. Convection, in turn, is driven by Earth's loss of heat and radioactive decay from radioactive elements emitting heat from the core.

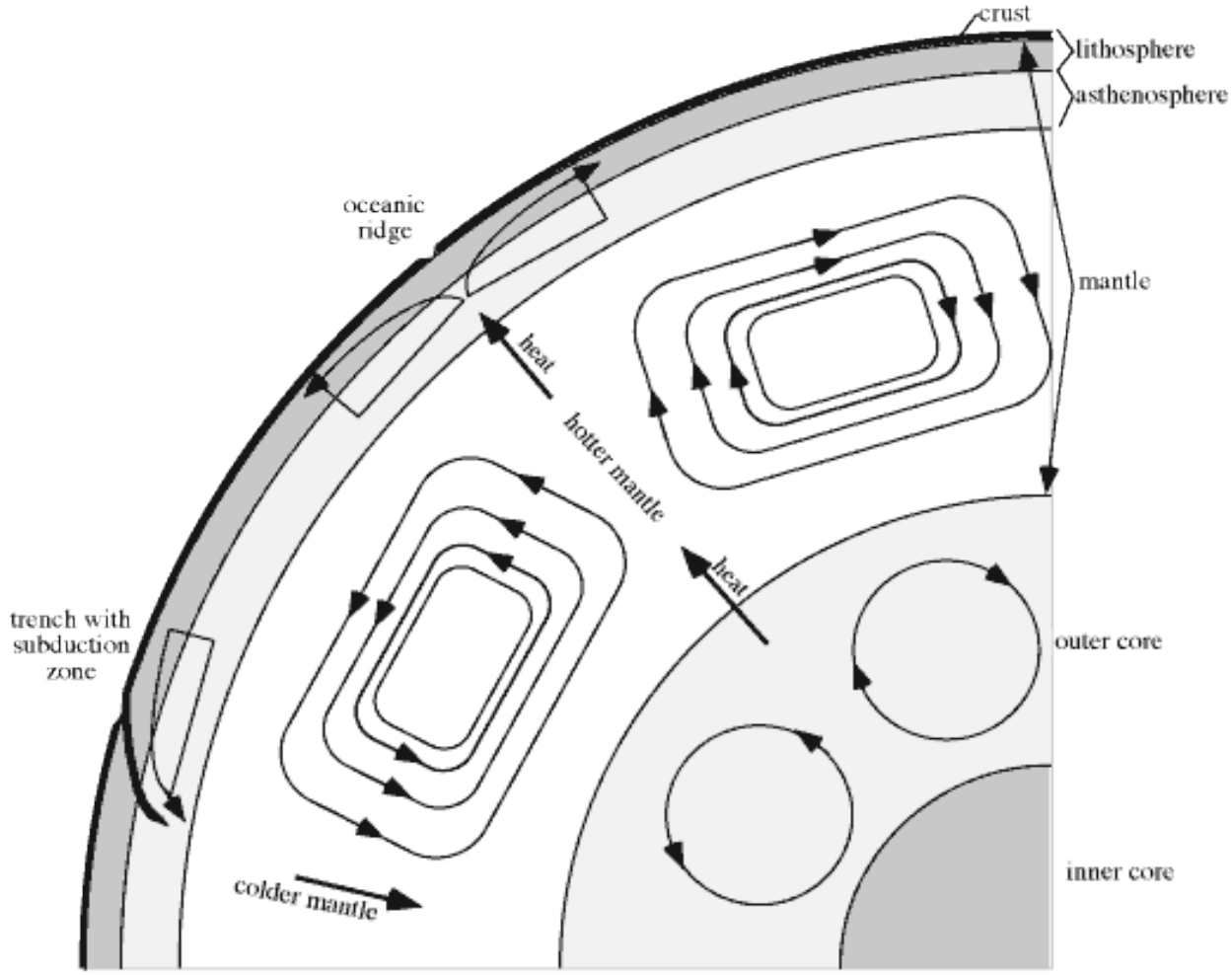


Figure 5. Subdivisions of the Earth's interior and speculative heat loss via convection in the mantle and outer core.

Radioactive elements in the core emit heat as the break down.

Make sure to add the following to your diagram:

Draw in the P waves and S waves to show P waves going through the outer and inner core and S waves bouncing off the outer core.

Also show where the oldest and youngest rocks would be.