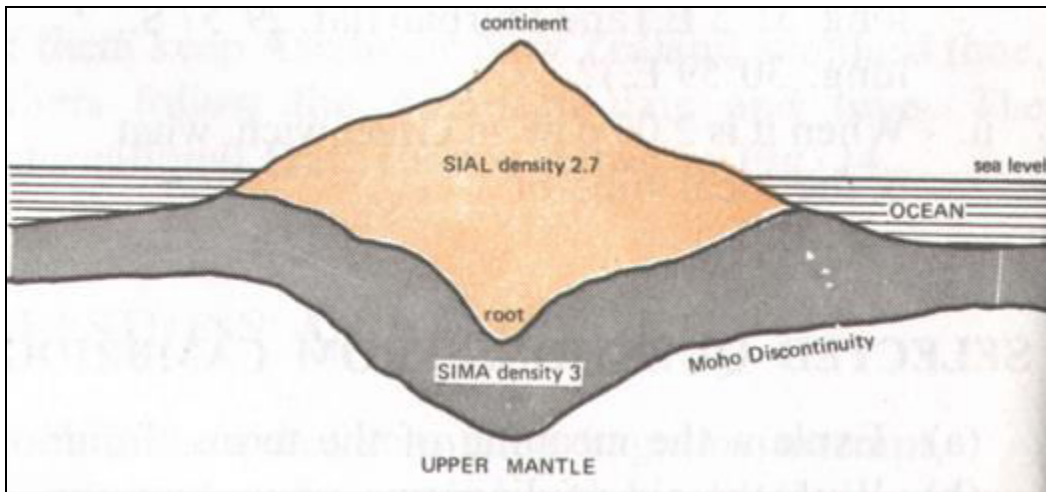


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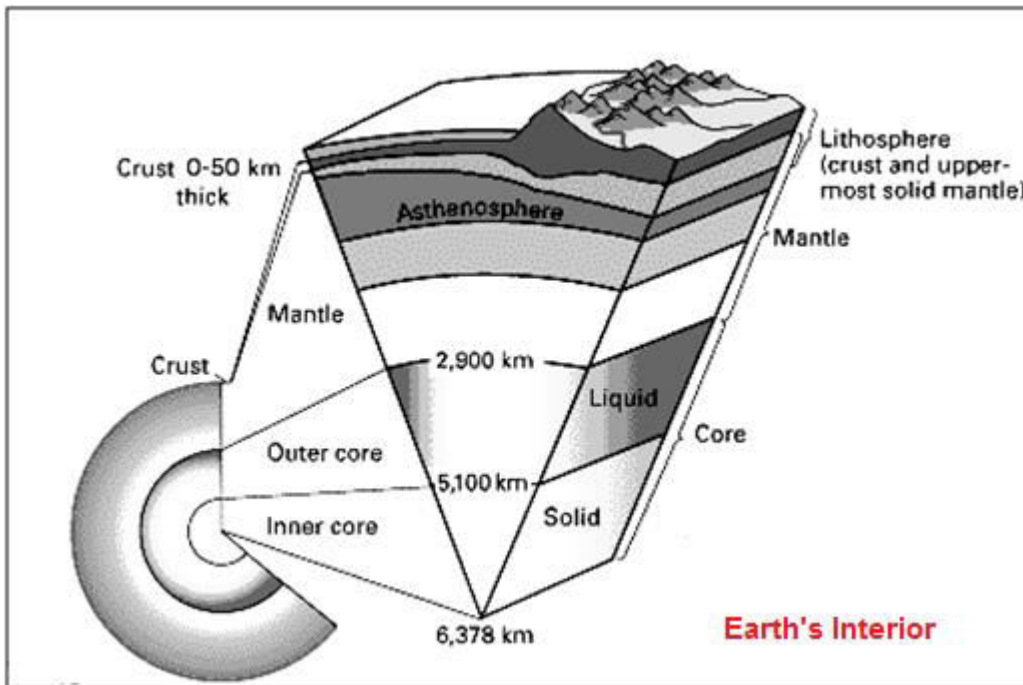
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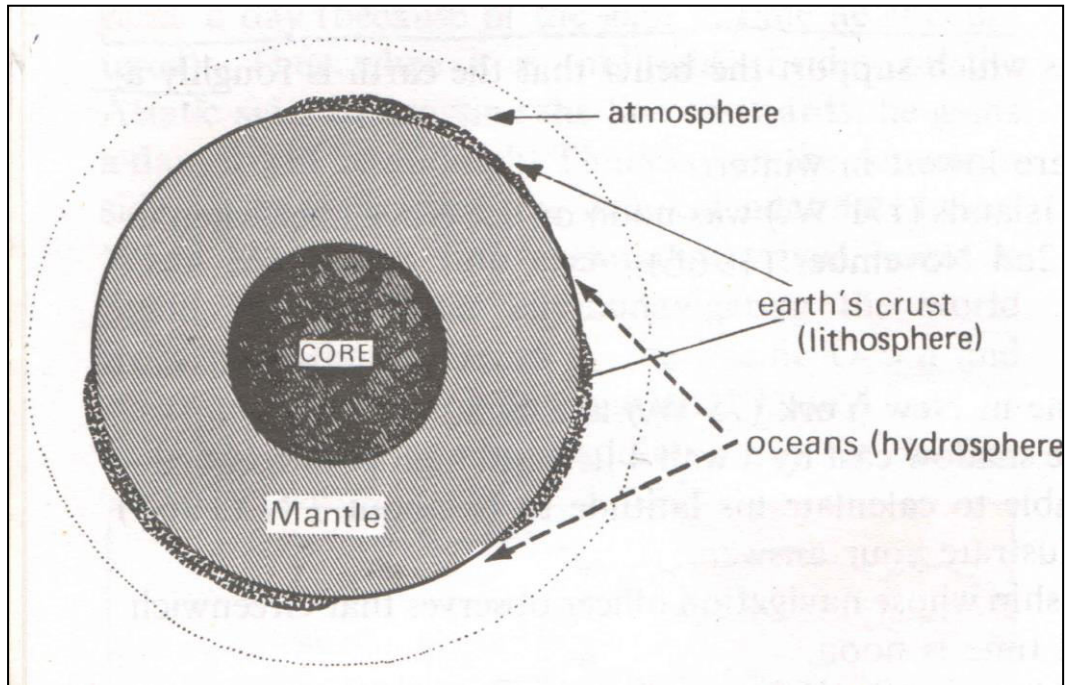
CHAPTER – 1 INTERIOR OF THE EARTH

One of the earliest structuring of the earth's interior was suggested by Edward Suess who considered the interior to be differentiated into **SIAL**, **SIMA** and **NIFE**. SIAL is composed of granite and dominated by Silica and Aluminum. It floats over SIMA which is denser and has Silica and Magnesium as main constituents.



However this is now replaced by more sophisticated detailed structuring. Based on seismic studies, the earth's interior has been divided into three layers – crust, mantle and core.





The Crust

It is the outermost solid part of the earth. It is brittle in nature. The thickness of the crust varies under the oceanic and continental areas. Oceanic crust is thinner as compared to the continental crust. The continental crust is thicker in the areas of major mountain systems. It is as much as 70 km thick in the Himalayan region. It is made up of heavier rocks like granite having density of 3 g/cm^3 . This type of rock found in the oceanic crust is basalt. The mean density of material in oceanic crust is 2.7 g/cm^3 .

The Mantle

The portion of the interior below the crust is called the mantle. The dividing line which separates the crust above from the mantle below is called as Mohorovicic or Moho discontinuity. The crust and the uppermost part of the mantle are called lithosphere. Its thickness ranges from 10-200 km. The upper portion of the mantle is called asthenosphere. It is the main source of magma that finds its way to the surface during volcanic eruptions. It has a density higher than the crust's (3.4 g/cm^3). The lower mantle extends beyond the asthenosphere. The mantle is in solid state. Mantle is believed to be made up of silicate minerals rich in iron and magnesium.

The Core

The outer core is in liquid state while the inner core is in solid state. The core is made up of very heavy material mostly constituted by nickel and iron. It is sometimes referred to as the **nife** layer. The core-mantle boundary is located at the depth of 2,900 km. At this boundary called as Weichert-Gutenberg discontinuity, there is sudden change of density from 5.5 gm/cm^3 of mantle to 10 gm/cm^3 .