GEOMORPHOLOGY - 18BGE13C

Unit I:

Geomorphology – Scope and content – Interior of the earth – Diatrophism – Earthquakes – Volcanos – Distributions – Classifications of Folds and Faults

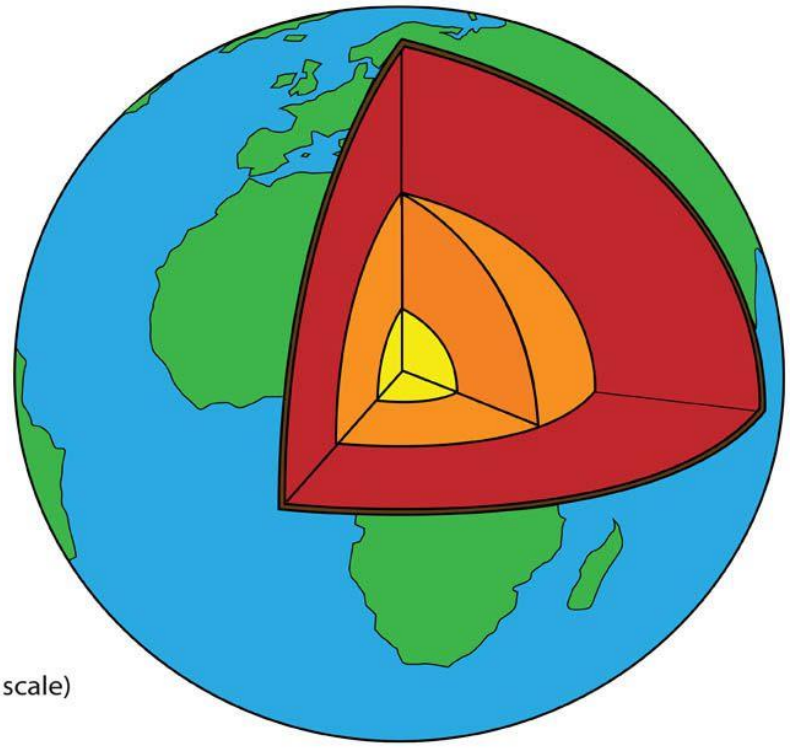
Geomorphology – Scope and content:

Geomorphology is the study of landforms, their processes, form and sediments at the surface of the Earth. Study includes looking at landscapes to work out how the earth surface processes, such as air, water and ice, can mould the landscape. Landforms are produced by erosion or deposition, as rock and sediment is worn away by these earth-surface processes and transported and deposited to different localities. The different climatic environments produce different suites of landforms. The landforms of deserts, such as sand dunes and ergs, are a world apart from the glacial and periglacial features found in polar and sub-polar regions. Geomorphologists map the distribution of these landforms so as to understand better their occurrence.

Earth's Interior

The Earth is divided into three main layers. The dense, hot inner core (yellow), the molten outer core (orange), the mantle (red), and the thin crust (brown), which supports all life in the known universe.

Earth's Interior



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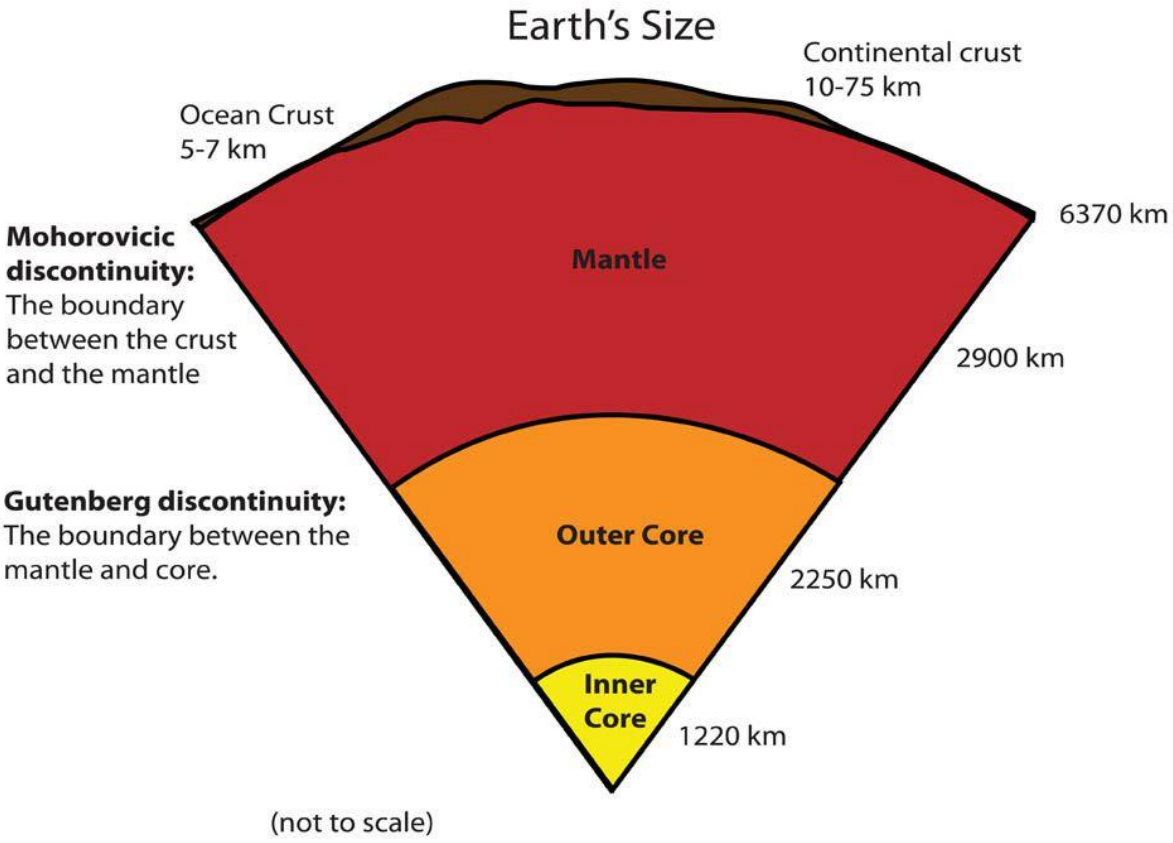

The hard, brittle crust extends from Earth's surface to the so-called Mohorovicic discontinuity, nicknamed the Moho. The Moho is not located at a uniform depth, but about 10 kilometers (6 miles) below the seafloor and about 35 kilometers (22 miles) beneath the surface of continents.

Beneath the Moho is the mantle, the viscous layer that makes up more than half of Earth's volume.

The mantle is divided from the core by the Gutenberg discontinuity, about 2,880 kilometers (1,798 miles) beneath Earth's surface. The outer core is molten and liquid iron and nickel, while the inner core is solid and much more dense than either iron or nickel at the surface.

Diatrophism:

Diastrophism, also called **tectonism**, large-scale deformation of Earth's crust by natural processes, which leads to the formation of continents and ocean basins, mountain systems, plateaus, rift valleys, and other features by mechanisms such as lithospheric plate movement (that is, plate tectonics), volcanic loading, or folding.

Earthquake:

An **earthquake** is the shaking and vibration of the Earth's crust due to movement of the Earth's plates (plate tectonics). Earthquakes can happen along any type of plate boundary.

Earthquakes occur when tension is released from inside the crust. Plates do not always move smoothly alongside each other and sometimes get stuck. When this happens pressure builds up. When this pressure is eventually released, an earthquake tends to occur.

The point inside the crust where the pressure is released is called the focus. The point on the Earth's surface above the **focus** is called the epicentre.

Earthquake energy is released in seismic waves. These waves spread out from the focus. The waves are felt most strongly at the epicentre, becoming less strong as they travel further away. The most severe damage caused by an earthquake will happen close to the **epicentre**.

Volcano:

A volcano is an opening in Earth's crust that allows molten rock from beneath the crust to reach the surface. This molten rock is called magma when it is beneath the surface and lava when it erupts or flows from a volcano. Along with lava, volcanoes also release gases, ash, and rock. It's a super hot mix that can be both incredibly destructive and creative.

Volcanoes form at the edges of Earth's tectonic plates. These huge slabs of Earth's crust travel atop the partly molten mantle, the layer beneath the crust

Volcanoes erupt in different ways, producing different landforms. Steep, cone-shaped volcanoes form when plates collide. All the pressure and heat of the collision make for a violent eruption. The cone forms when lava and other material eject and build up around the opening. This type of volcano is known as a stratovolcano, and Mt. Rainier is a good example. Sometimes an eruption is so violent that the top of the volcano collapses, leaving a huge pit or caldera. You can see calderas in Yellowstone National Park and Crater Lake. When plates pull apart, lava escapes through the rift. This more gentle flow creates new crust on the seafloor and wide, rounded volcanoes on the surface called shield volcanoes. Hawaii's Kilauea is a shield volcano. It is also an example of a volcano that formed over a hotspot.

Fold:

Fold, in geology, undulation or waves in the stratified rocks of Earth's crust. Stratified rocks were originally formed from sediments that were deposited in flat horizontal sheets, but in a number of places the strata are no longer horizontal but have been warped. Sometimes the warping is so gentle that the inclination of the strata is barely perceptible, or the warping may be so pronounced that the strata of the two flanks may be essentially parallel or lie nearly flat (as in the case of a recumbent fold). Folds vary widely in size; some are several kilometres or even hundreds of kilometres across, and others measure just a few centimetres or less.

An anticline is a fold that is convex upward, and a syncline is a fold that is concave upward. A symmetrical fold is one in which the axial plane is vertical. An asymmetrical fold is one in which the axial plane is inclined. An overturned fold, or overfold, has the axial plane inclined to such an extent that the strata on one limb are overturned. A recumbent fold has an essentially horizontal axial plane. When the two limbs of a fold are essentially parallel to each other and thus approximately parallel to the axial plane, the fold is called isoclinal. The long linear folds that are characteristic of mountainous regions are believed to have resulted from compressional forces acting parallel to the surface of Earth and at right angles to the fold.