

GEOMORPHOLOGY

BY SAVINDER SINGH

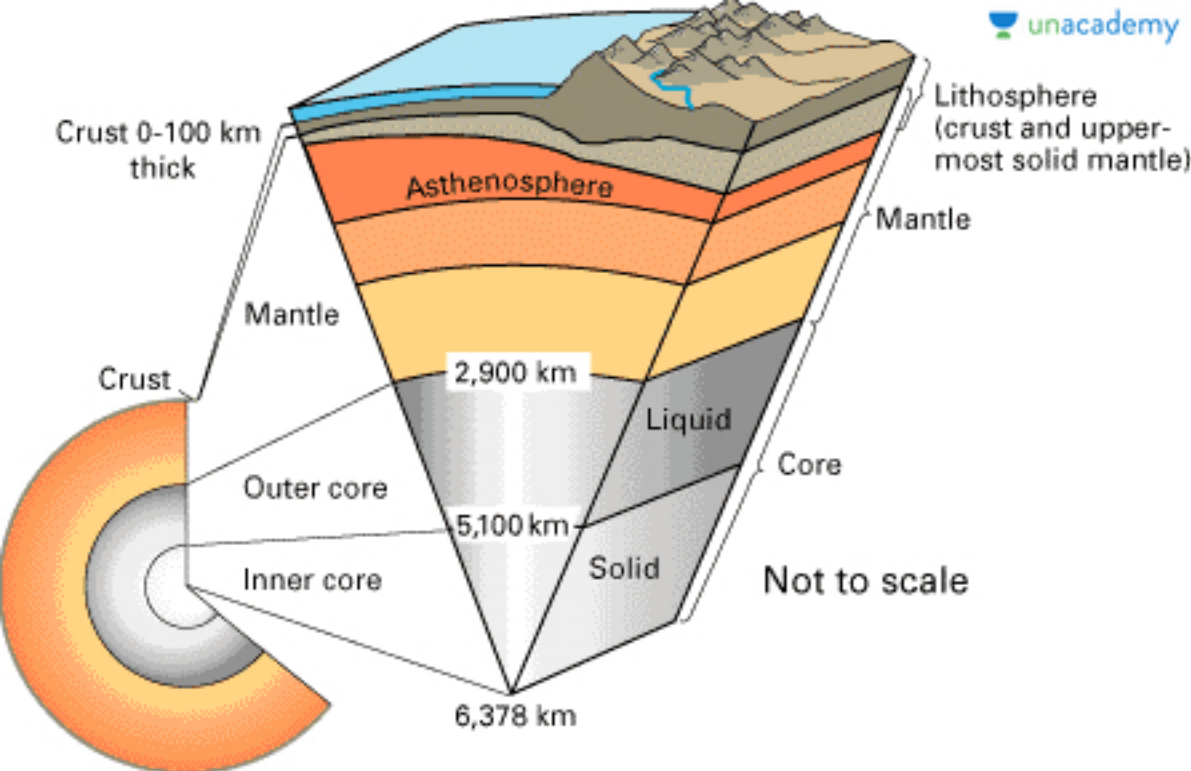
GEOGRAPHY OPTIONAL

Represented by:Rishika



▶ ***The Crust***

- ▶ • 0.5-1.0 per cent of the earth's volume and less than 1 per cent of Earth's mass.
- ▶ • The continents have lighter silicates – silica + aluminium (also called sial)•
- ▶ The oceans have the heavier silicates – silica + magnesium (also called sima).
- ▶ • The continental crust is composed of lighter (felsic) sodium potassium aluminium silicate rocks, like granite.8
- ▶ • The oceanic crust is composed of dense (mafic) iron magnesium silicate igneous rocks, like basalt



▶ ***Lithosphere***

- ▶ • Thickness varying between 10-200 km (crust and the upper part of the mantle)
- ▶ .• The lithosphere is broken into tectonic plates (lithospheric plates).
- ▶ • The source of heat that drives plate tectonics is the radioactive decay of uranium, thorium, and potassium in Earth's crust and mantle.

▶ ***The Mantle***

- ▶ • 83 per cent of the earth's volume and holds 67% of the earth's mass
- ▶ .• The mantle is made up of 45% oxygen, 21% silicon, and 23% magnesium (OSM).

▶ ***Asthenosphere***

- ▶ • The upper portion of the mantle just below the lithosphere extending up to 80-200 km
- ▶ • It is highly viscous, mechanically weak and ductile and its density is higher than that of the crust.
- ▶ • These properties of the asthenosphere aid in plate tectonic movement and isostatic adjustments
- ▶ • It is the main source of magma that finds its way to the surface during volcanic eruptions

▶ ***The Outer Core***

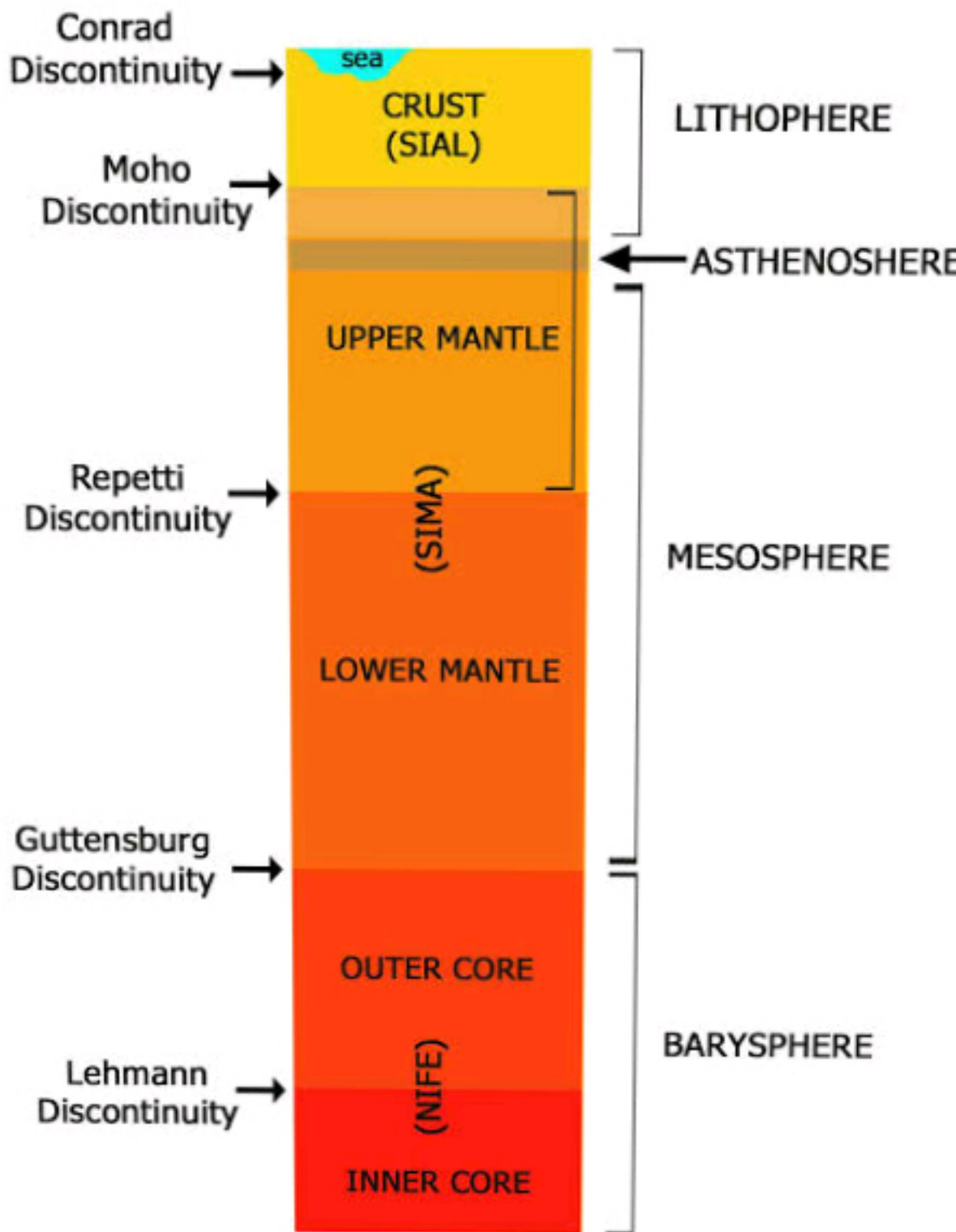
- ▶ • The outer core is composed of iron mixed with nickel (nife).
- ▶ • The outer core is not under enough pressure to be solid, so it is liquid.

▶ ***The Inner Core***

- ▶ • Composed primarily of iron (80%) and some nickel (nife). • It is solid even at 6000 °C (crushing pressure caused by gravity prevents it from becoming liquid).
- ▶ • Earth's inner core rotates slightly faster relative to the rotation of the surface.
- ▶ • The core (inner core and the outer core) accounts for just about 16 per cent of the earth's volume but 33% of earth's mass.

▶ ***Seismic Discontinuities***

- ▶ • Seismic discontinuities are the regions in the earth where seismic waves behave a lot different.
- ▶ 1. Mohorovicic Discontinuity (Moho): separates the crust from the asthenosphere (upper mantle).
- ▶ 2. Asthenosphere: highly viscous, mechanically weak and ductile part of mantle.
- ▶ 3. Gutenberg Discontinuity: lies between the mantle and the outer core.



2. Earth's Magnetic Field

- ▶ Magnetic fields determine how electric currents that contain moving electric charges exert a force on other electric currents.
- ▶ 2.1 Dynamo theory: Generation of Earth's Magnetic Field and Sustaining it•
Dynamo theory suggests that convection in the outer core, combined with the Coriolis effect (caused due to the rotation of the earth), gives rise to self-sustaining (geodynamo) Earth's magnetic field.