

SS1 Geography

Week 6: Earth's Structure (Detailed Lesson Note)

Objectives

- Define the Earth's spheres: atmosphere, biosphere, lithosphere, and hydrosphere
 - Describe the inter-relationships among these spheres and their importance
 - Identify and describe the layers of the Earth: crust, mantle, core
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1. Earth's Spheres

a. Atmosphere

- The layer of gases surrounding the Earth
- Composed mainly of nitrogen (78%), oxygen (21%), and trace gases
- Protects Earth from harmful solar radiation and helps regulate temperature
- Responsible for weather and climate

b. Biosphere

- The zone of life on Earth, including all plants, animals, and microorganisms
- Includes land, water, and air where living things exist
- Dependent on other spheres for survival

c. Lithosphere

- The solid, outermost layer of the Earth, including the crust and upper mantle
- Made up of rocks, minerals, and soil
- Supports terrestrial life and is the foundation for human activities like farming and building

d. Hydrosphere

- All water on Earth: oceans, rivers, lakes, groundwater, glaciers
- Covers about 71% of the Earth's surface

- Essential for all living organisms and influences weather and climate
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2. Inter-Relationships Among Spheres

- The spheres are interconnected and influence each other continuously.
 - Example: Plants (biosphere) depend on water (hydrosphere) and air (atmosphere) and grow on soil (lithosphere).
 - Human activities can affect these relationships positively or negatively (e.g., pollution affects air, water, and land quality).
 - Understanding these links helps in environmental conservation and sustainable development.
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3. Layers of the Earth

a. Crust

- The Earth's thin, outermost layer (5-70 km thick)
- Divided into continental crust (thicker and less dense) and oceanic crust (thinner and denser)
- Where humans live and all surface features exist

b. Mantle

- Located beneath the crust, about 2,900 km thick
- Made of semi-solid rock that moves slowly (plasticity)
- Movement in the mantle causes tectonic plate movements, earthquakes, and volcanic eruptions

c. Core

- The innermost part of the Earth
 - Divided into outer core (liquid, mainly iron and nickel) and inner core (solid)
 - Extremely hot and responsible for Earth's magnetic field
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Summary Table

Layer/Sphere Description		Importance
Atmosphere	Gaseous layer around Earth	Protects life, regulates climate
Biosphere	Zone of all living things	Supports ecosystems and life
Lithosphere	Solid outer layer	Supports land life and human activities
Hydrosphere	All Earth's water	Sustains aquatic life, affects weather
Crust	Thin solid outer layer	Surface of Earth
Mantle	Semi-solid layer beneath crust	Drives plate tectonics
Core	Inner Earth (liquid outer, solid inner)	Generates magnetic field