

spheres of the earth

Hydrosphere	made up of water	rivers, lakes, streams, oceans, groundwater, polar ice caps, glaciers, water vapor, clouds, and precipitation
Biosphere	made up of all living organisms	plants, animals, bacteria, fungi
Geosphere	ground composed of all rocks and minerals	mountains, continents, ocean floor, sand, bedrocks and <i>earth's interior layers</i>
Atmosphere	body of gas that envelops earth	carbon dioxide and gaseous elements

Layers of earth

Crust	outermost and thinnest layer of Earth there are two types: continental (less dense) and oceanic (dense)
	☐ lithosphere : crust and upper mantle ☐ asthenosphere : below the lithosphere is the asthenosphere layer, a much hotter and malleable portion of the upper mantle.
Mantle	Middle layer , the crust is thicker and denser because of aluminum and magnesium
Core	Center of the earth
	outer core : liquid (melted) nickel and iron because of high temperature

Layers of earth (cont)

inner core: higher temperature and is in solid form because of the atomic pressure

Geological Processes

Hydrometeorological Hazard	A process or phenomenon of atmospheric, hydrological or oceanographic nature
	Typhoon Thunderstorm Flood Storm Surge El Niño La Niña Rainfall-induced landslide Tornado
Typhoon (pacific and Indian Ocean, Hurricane for Atlantic Ocean).	Are intense circulating winds with heavy rain over tropical waters and land
tropical cyclones (bagyo)	wind systems circulating around a low-pressure area (warm water)
	Tropical depression speed up to 61 kph
Eye of the storm	A region of most calm weather at the center of strong tropical cyclone
Monsoon	seasonal wind pattern
	amihan: cloudless skies and cold mornings
	habagat: brings heavy rain
Flood	hazard brought by heavy rains where there's a progressive rise in water level

Geological Processes (cont)

Tornado	is a narrow, violently rotating column of air
Thunderstorms	characterized by strong winds, heavy rains, lightning and thunder
	- formed when warm air mass is forced to move upward by cold air mass
Storm Surge	- rise of normal sea level caused by winds that are directed toward the shore
	not a Tsunami
El Niño	It refers to the large-scale warming of the ocean and atmosphere across the central and east-central Equatorial Pacific.
La Niña	begins in the eastern part of the Pacific Ocean, much similar to the location of El Niño. The sea surface temperatures during this period become lower by 3-5 degree Celsius. Cyclones formed during this time shift westward going to the direction of China.

Thunderstorm Hazards

1. heavy rainfall that can lead to flooding.
2. lightning that can electrocute humans and livestock and damage electrical facilities.
3. air turbulence which can displace or disorient a flying aircraft.
4. fire that can burn building and vegetation.

Flood Hazards

1. disruption of commercial and industrial operations leading to loss of income
2. stand-still traffic causing paralysis in network transportation and communication
3. displacement of affected homes and families
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5. waterborne diseases such as leptospirosis and typhoid fever.

Geological Processes

exogenic process occurring on the surface of the earth, responsible for transforming rocks

weathering breaking down of rocks

*physical/mechanical weathering can be done mechanically or chemically, there's no change in chemical composition

chemical weathering the breakdown of rocks by chemical mechanisms

- Examples: **Hydration**: minerals dissolving when coming into contact with water

Carbonization: reaction between rocks and carbonic acid

Oxidation: causes rock to become fragile

Geological Processes (cont)

Differential Weathering - landscape shaping

Examples: Fall, slides, flow

Erosion The components of soil pile up and are physically removed from their place.

☆ **Agents**: the materials are transported to different locations through **moving water, wind, gravity, and animals**

endogenic process takes place within the earth responsible for the changes of the surface of the earth

internal heat source of energy of endogenic processes

Geological Processes physical processes which create and modify landforms on the surface of the Earth

Mass Wasting the downslope movement of rocks & soil under the influence of gravity

Marine and Coastal Processes and Hazards

Atmospheric factors affecting coastal erosion Climate change and gravity

Human factors Pollution, and sand and gravel extraction which can increase the strength of the waves

Marine and Coastal Processes and Hazards (cont)

Coast part of the land near the sea

contains some of the world's sensitive and threatened ecosystems

Coastal Processes waves, tides, sea level, change, crustal movement

- they could pose threat to life but shape the physical environment, providing habitat such as turtle or seabird nesting beaches, reefs, and mangrove forests or seagrass beds.

Coastal Hazards

Coastal Erosion: displacement of land along the coastline

Submersion: movement of coastal sediments from the visible portion of a beach to the submerged nearshore region of the coast

Saltwater Intrusion: Is the movement of saltwater to freshwater

endogenic

Endogenic Processes caused by radioactive decay from the Earth's core and the redistribution of materials in the Earth's interior

effect is formation of landforms

endogenic (cont)

tensional stress: occurs when a rock is pulled causing it to be stretched in a divergent boundary

shearing stress: occurs when the forces that push the rocks and faults in opposite directions

compressional: occurs when a rock is *squeezed* until it folds or breaks in convergent boundary

Folding/folds: wavelike plastic deformation that result to compressional stresses

Anticlines (upward-ping): forms mountains & hills

Synclines (downward-ping): forms valleys and trenches

Monocline: gradual bending

Types of Stress

Normal Fault: faulting where the hanging wall goes down

Reverse Fault: faulting where the hanging wall goes up

Strike-Slip Fault: faulting caused by a shearing force

foot wall is longer, hanging wall is shorter

Convergent Plate Boundary: where 2 plates move towards each other and destroys the crust

Divergent Plate Boundary: where 2 plates move away from each other and usually occurs on ocean ridges

Types of Stress (cont)

Transform Plate Boundary: where plates slide horizontally past one another which produces zigzag plate margins & shallow earthquakes

3 Types of Rocks

Sedimentary rocks: are formed from layers of sand, silt, dead plants, and animal skeletons.

Igneous rocks: are formed from melted rock deep inside the Earth.

Metamorphic rocks: formed from other rocks that are changed by heat and pressure underground.

Terms

Sea floor spreading: seafloor slowly spreads & moves sideways away from the mid ocean ridge

Convection Current: hot magma is forced upward to the lithosphere. As it reaches its destination, the lithosphere moves horizontally carrying the plates with it. As it cools, the magma becomes denser and sinks in the mantle, overlying the crust with it.

the concept where hot air rises, cool air sinks

