

### Chapter 10

#### Patterns of Distribution

Widespread of plants and human activity known as biogeography

#### Biota

Total of plant and animal life

#### What is Flora; Fauna; Ocean Biota

Flora is plants; Fauna are animals; Ocean Biota is planktons, nekton, Benthos

#### Flow of Energy

Sun is the source in which we depend

#### Photosynthesis

Food chain, and energy must be converted to be recycled

#### Net Primary Production

Total amount of chemical energy stored in plants (Reflected in the dry weight of organic materials or biomass)

#### Hydrologic Cycles

Everything depends on water; Water dissolves nutrients and carries them all to parts of organism

#### Two Types of Hydrologic Cycles

Transit- Transportation & Respiration. 2. Residence- To plant and animals

#### The Carbon Cycle

Contains complex mixtures of Carbon Compound

#### Main Components (CARBON CYCLE)

Transfer of carbon for oxygen (CO<sub>2</sub>) to living matter and back to CO<sub>2</sub>. It becomes a rapid process of years and not centuries

#### The Oxygen Cycle

Building block in most organic molecules by product of plant life, include H<sub>2</sub>O, Carbon Dioxide, Ozone, CO<sub>2</sub> stored in rocks

### Chapter 10 (cont)

#### The Nitrogen Cycle

Limited amount of organisms can use nitrogen and it is known as nitrogen fixation.

#### Other Mineral Cycle

Critical to biosphere are phosphorus, sulfur, and calcium.

#### Gaseous & Sedimentary Pathways

Gaseous is interchange between biota and atmospheric ocean environment. Sedimentary are elements weathered and reaches the groundwater, returned to the ocean and is consumed by ocean organisms

#### Food Chain-Who are the Producers

Plants are known as autotrophs also known as self feeders, and plants can be eaten by consumers also known as heterotrophs. Plant-eating animal are called herbivores, and are referred as primary consumers. Herbivores become food for other animals carnivores and are secondary consumers or also known as predators.

#### Who are the Omnivores

Humans because we eat both plants and animals therefore we have several roles on the food chain.

#### Food Pyramid

The consumer is the Apex do not conclude the pyramid because when they die they are fed to decomposers returning the nutrients to the soil to be recycled into another food pyramid.

#### Evolutionary Development

Survival of the fittest. Some localized, and several scattered localities of the same genus

#### Migrations and Dispersal

Animals move from one place to another, Plants move through seed dispersal.

### Chapter 10 (cont)

#### Reproductive Success

Heavy predation, climate change, food supply failure, changing environmental conditions

#### Extinction and die-off

Range diminution; small area changes, and mass extinction

#### Plant Succession

One vegetation type replaces by another

#### Limiting Factor

most important variable for the survival of an organism

#### Influence of Climate Change:Light

Green plants need light to survive, light changes shapes of plants. Photoperiodism stimulates seasonal plant behavior

#### Influence of Climate Change;Moisture

Distribution of Biota governed more by moisture than any other factor. Biota evaluation dictated by adaptation to moisture condition

#### Influence of Climate Change:Temperature

Plants have a limited tolerance for low temperature, and different species can survive in different temperatures

#### Influence of Climate Change:Wind

Strong winds can be destructive to biota

#### Topographic Influence

Slope and drainage, plants and animals in a plains region vastly different from a mountainous region

#### Wildfires

Can be helpful for regrowth and maintaining of plant type. Complete or partial destruction of plant and death or driving away animals.

### Chapter 13

#### The Crust

Can be known as Moho,

#### The Mantle

The largest of the four shells.

#### The Mantle Sub Layers

Lithosphere-overlying or oceanic or continental crust

#### The Mantle Sub Layers

Asthenosphere- rocks are hot and can become tar

#### The Mantle Sub Layers

Lower Mantle- rocks are very hot because higher pressures

#### Outer Core

Molten extends 5000 KM

#### Inner Core

Primarily made of iron/nickel or iron/silicate. Magnetic field of Earth controlled by outer core. Magnetic poles not the same as the axial poles

#### Continental Drift

Fit of the continents, fossil evidence, rocky type and structure geology, paleoclimatic evidence,

#### Minerals

Be solid, found in nature, nonliving, contains atoms arranged in a regular pattern forming solid crystals

#### Rocks

Composed of many minerals: solid rock found right at the surface is called outcrop

#### Bedrock and Regolith

Most of earth's land area solid rock exists as a buried layer of bedrock and covered by a layer of broken rock called regolith

### Chapter 13 (cont)

#### Igneous Rocks

Formed by the cooling and solidification of molten rock. Two Types: Putonic (Instructive) Surrounding rocks insulate the magma intrusion, slowing cooling. Volcanic (Estructive) Generally do not show individual mineral crystals, but can if the crystals are formed from shattered rock that was explosively ejected

#### Sedimentary Rock

Material transported by water as sediment. Over long periods, large amounts of sediment build to large thicknesses. Two Types: Clastic Composed of fragments of preexisting rocks. Chemical and organic sedimentary rocks: Organic sedimentary rocks such as coal form from remains of dead plants and animals

#### Metamorphic Rock

Rocks that were originally igneous or sedimentary and have been changed by heat and pressure. Two Types. Schist: metamorphic rocks with narrow foliations. Gneiss – broad, banded foliations

#### The Rock Cycle

Processes where rocks can transition between the three rock types

#### Continental and Ocean Floor Types

Ocean crust can be subducted into the athenosphere

#### Isostasy

recognition of differences between oceanic crust, continental crust, and mantle

#### Internal and External Geomorphic Processes

Internal – originate from within Earth, increase relief of land surface – External – originate from sources above the lithosphere, such as the atmosphere or oceans; decrease relief of land surface

### Chapter 13 (cont)

#### Uniformitarianism/Catastrophism

The present is the key to the past. Processes that shaped the landscape of the past are the same that will shape the future. Past thinking believed catastrophism, catastrophes shaped the land surface. (geological time)

#### The Pursuit of Pattern

Major landform assemblages of the world

### Chapter 14

#### Who is Alfred Wegener

Revived the Continental drift by shape, rock type, fossil assemblage, and Pangea,

#### Seafloor Spreading

Movement on ocean floor, push and pull, and it came above to be in 1968

#### Plate Boundaries Type 1

Divergent: Oceanic- Mid ocean rifts. Continental- Rift Valleys

#### Plate Boundaries Type 2

Convergent: Continental -Continental : folded and faulted mountains. Continental Oceanic: volcanoes and accretion. Subduction melting, mild metamorphism. Oceanic Oceanic: Volcanoes Island arc Deepest trenches in the world

#### Transform Boundaries

San Andreas: Lateral movement of land, Does not create or destroy, Earthquakes are very common

#### Hot Spots

Mantle Plume, stable over time

#### Hot Spots-Hawaii

Massive volcanic activity, do not occur at plate boundaries

#### Hot Spots-Yellowstone

?

### Chapter 14 (cont)

#### Ring of Fire

Subduction Zones: lots of Volcanoes, and lots of Earthquakes: Active volcanoes erupted within known history, Relative Time scale

#### Magma Chemistry

Determines character of eruption. Felsic: High Silica, lower temp, less viscous, holds gasses. Mafic -low silica, high temps, more viscous, low gas content, flow (Hawaii's volcanoes) Intermediate: qualities of both, generally explosive (Rainer)

#### Flood Basalts

Behave like Sedimentary rock, extensive area

#### Volcanic Forms: Shield Volcanoes

Shield Volcanoes, Mafic magma, very large but not steep

#### Volcanic Forms: Composite Cones

Stratovolcano, Intermediate lava, Explosive, steep sides

#### Volcanic Forms: Lava Domes

felsic lava, bulge outward, grows by expansion

#### Volcanic Forms: Cinder Cones

produces mostly ash, associated with larger volcanic activity

#### Volcanic Forms: Calderas

Collapsed volcano

#### Volcanic gasses and flows

CO<sub>2</sub> and H<sub>2</sub>SO<sub>4</sub>

#### Eruption Column and Ash Fall

Fine grained Silica • Damages Lungs • Destroy motors • Icelandic Volcano 2010 • Disrupted Airline travel over the north Atlantic • Large Eruptions Alter climate

### Chapter 14 (cont)

#### Pyroclastic Flows

Collapse of structure • Rapid downward movement of rocks and molten materials • Two parts • Rocky base • Ash and gasses on top • Immediate Local Danger

#### Lahars

Volcanic Mudslides • Common on Glaciated Volcanoes • Melted Ice

#### Faulting

Results from compression or extension of Earth's Surface

#### Faulting Normal

Extension • Fault scarp forms

#### Faulting Reverse

Compression

#### Faulting Thrust

Low Angle

#### Faulting Strike-Slip

Lateral displacement

#### Landforms Horst

Non displaced part of the fault block

#### Landforms Graben

Downthrown fault block

#### Landforms Rift Valley

Large areas of extension

#### Seismic Waves

P waves • Faster moving • Compress and Expand the medium • S waves • Damaging • Vertical and horizontal displacement of medium • Surface Waves • Effect of energy on the land surface • Epicenter located through tracking time between waves on various seismographs

#### Magnitude and Intensities

Richter Scale • Local Magnitude Scale • Significant variations in force between values • Shaking intensity • More of a qualitative measurement

### Chapter 14 (cont)

#### Landslide

Saturated Sediment • Trigger

#### Tsunamis

Propagation of energy through the water • Can be caused by underwater landslides

#### Structure Failure

Lots of work done in designing structure for resiliency • Larger challenge in developing areas