

Unit I: Natural and Human Systems

1.1.1 Identify and Describe Natural Systems

(pgs. 46 - 57)

Introduction:

What is a System?

- A system is made up of different parts that connect to form a whole.
- There are many different types of systems of various sizes.
- A complex set of **DYNAMIC** (continually changing) systems make up our world.
- They can be broken into **TWO** categories:

1. NATURAL SYSTEMS:

- The systems that occur in nature.
- **Include:**
 - a. Circulation of water in the ocean
 - b. Weather and climate systems
 - c. Water drainage systems
 - d. Energy cycles
- These form the **ECOSYSTEMS** that make up our environment (more on that later!).

2. HUMAN SYSTEMS:

- Created by people.
- **Include:**
 - a. Human settlements
 - b. Transportation systems
 - c. Communication systems

The Four Interconnected Spheres of the Earth

1. Atmosphere:

- Surrounds Earth as a thin layer of mixed gasses that makes up the air you breathe.
- The atmosphere protects you from the sun's intense energy and distributes heat on Earth.

2. Lithosphere:

- Includes Earth's crust and uppermost part of the mantle.
- It consists of rocks, minerals and soil.
- The thickness of the lithosphere depends on location

3. Hydrosphere:

- All of the water on Earth's crust – salty, fresh and frozen.
- Includes oceans, lakes, rivers, glaciers, swamps and water vapor.
- 70% of Earth is ocean.

4. Biosphere:

- Means “sphere of life”: is the layer of Earth in which life evolves.
- Supports all living things: millions of species, including those in the atmosphere and hydrosphere.
- Often times, all of the spheres together are referred to as the biosphere because all of life on Earth interacts.

Examples of Natural Systems

1. The Water Cycle:

- The natural system that involves the circulation of water to support life on Earth.
- The water on Earth is continuously flowing and changing state from gas (water vapour), to liquid, to solid (ice).
- The Earth never loses or gains any water.
- It is a **CLOSED SYSTEM** and the water in that system is constantly recycled.
- Canada has approximately **9%** of the world's fresh water supply.
- Most of Canada's fresh water is located in unhabitated areas and in **AQUIFIERS** (which are layers of porous rock that can store large quantities of water.)

2. Nitrogen Cycle:

- In natural systems there is no waste.
- Creatures such as fungi and bacteria act as **DECOMPOSERS** to eat and recycle nature's waste material.
- When leaves fall to the ground they are broken down by decomposers and the leaves nutrients are passed back into the soil for other plants to use.
- This process of decomposition and regeneration in nature is called the **DECAY CYCLE**.
- Decomposers break down the dead matter from trees or animals break down plant leaves.
- Nutrients are released back into the soil.
- Roots of trees absorb these nutrients.
- Nutrients travel up the trunk and are used as energy for growth.
- Consumers eat the leaves of trees or the dead leaves fall back to the ground.

Worksheets:

#1: Examples of Systems

#2: Earth's Natural Systems

#3: The Geography of Life: Natural Systems

#4: Activate your Learning