

CANADIAN GEOGRAPHY 1202

UNIT 1: NATURAL AND HUMAN SYSTEMS



Introduction



WHAT IS A SYSTEM?

- o A **SYSTEM** IS MADE UP OF DIFFERENT PARTS THAT CONNECT TO FORM A WHOLE.
- o THERE ARE MANY DIFFERENT TYPES OF SYSTEMS OF VARIOUS SIZES.
- o A COMPLEX SET OF **DYNAMIC** (continually changing) SYSTEMS MAKES UP OUR WORLD.

o THEY CAN BE BROKEN INTO 2 CATEGORIES:

1. **NATURAL SYSTEMS**

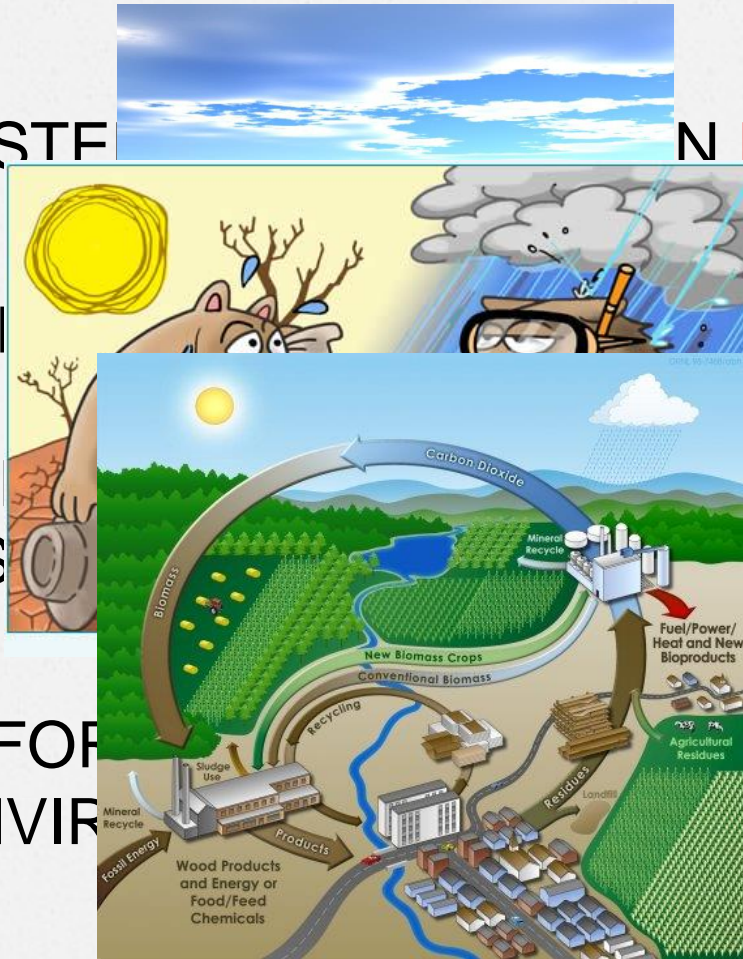
2. **HUMAN SYSTEMS**

1. NATURAL SYSTEMS:

○ THE SYSTEM IS IN NATURE.

○ INCLUDING THE WATER IN THE SYSTEMS, AND ENERGY

○ THESE FORM THE SYSTEMS THAT MAKE UP OUR ENVIRONMENT (that LATER!)



2. HUMAN SYSTEMS:



o CREATI



o INCLUDE SYSTEM



ORTATION IS

Systems: Dynamic and Synergetic

- They are continually changing.
- While natural systems generally evolve very slowly over thousands or millions of years, human systems change much more quickly.
- It is hard to study one system without also examining others because systems and their components are dependent on one another.

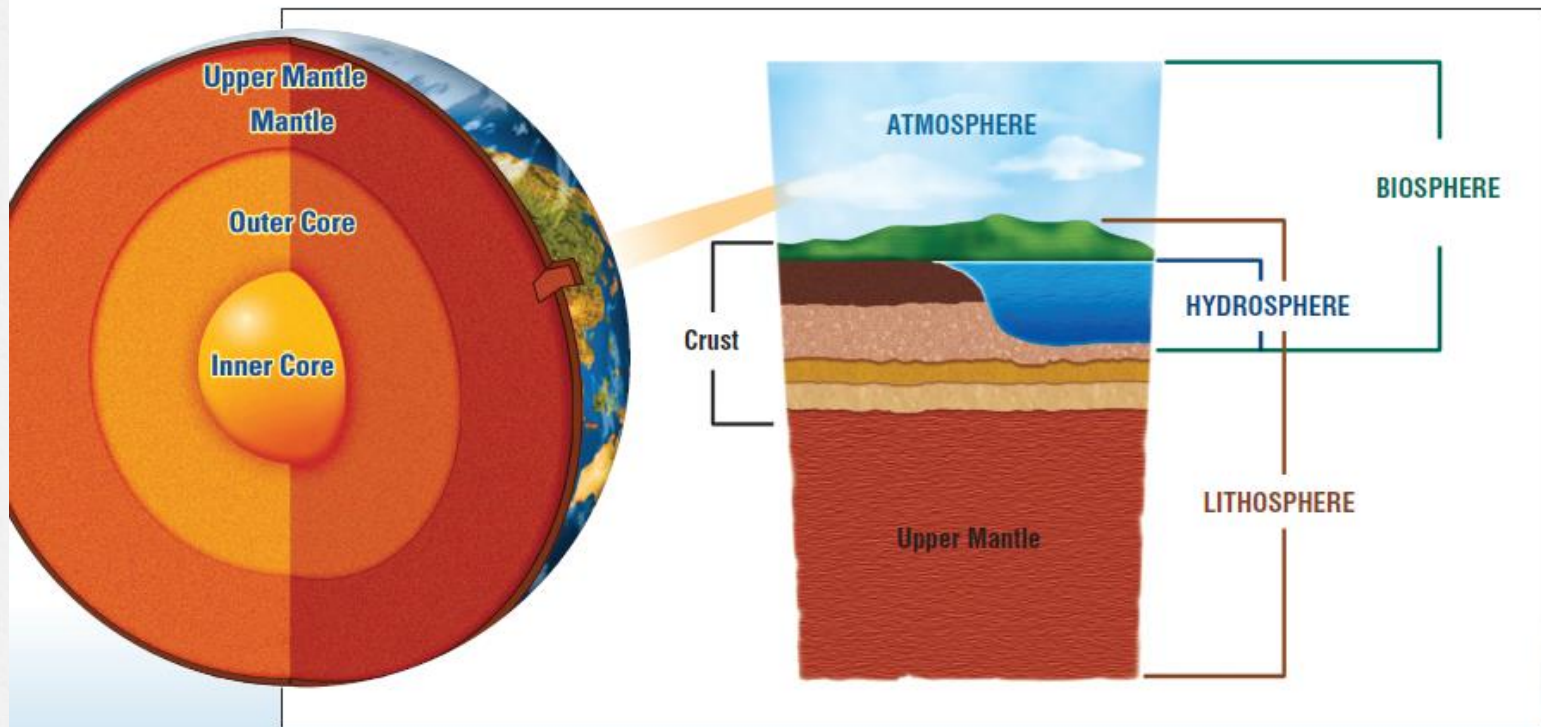
System	WATER 	CAR 
Parts	2 parts HYDROGEN + 1 part OXYGEN	ENGINE + WHEELS + STEERING
	Only when these two elements interact do we get water. With just one of the individual parts, you will not get wet.	Only with all parts in place, and the car as a whole working system, can a driver get from place to place.

WHY STUDY GEOGRAPHY USING A SYSTEMS APPROACH?

- o BY STUDYING RELATIONSHIPS AMONG THE NATURAL AND HUMAN SYSTEMS, GEOGRAPHERS CAN UNDERSTAND THE PROCESS THAT MAKES THINGS THE WAY THEY ARE AND IT HELPS THEM MAKE BETTER DECISIONS ABOUT THE FUTURE OF OUR PLANET.

1.1 Natural Systems:

Earth's Natural Systems

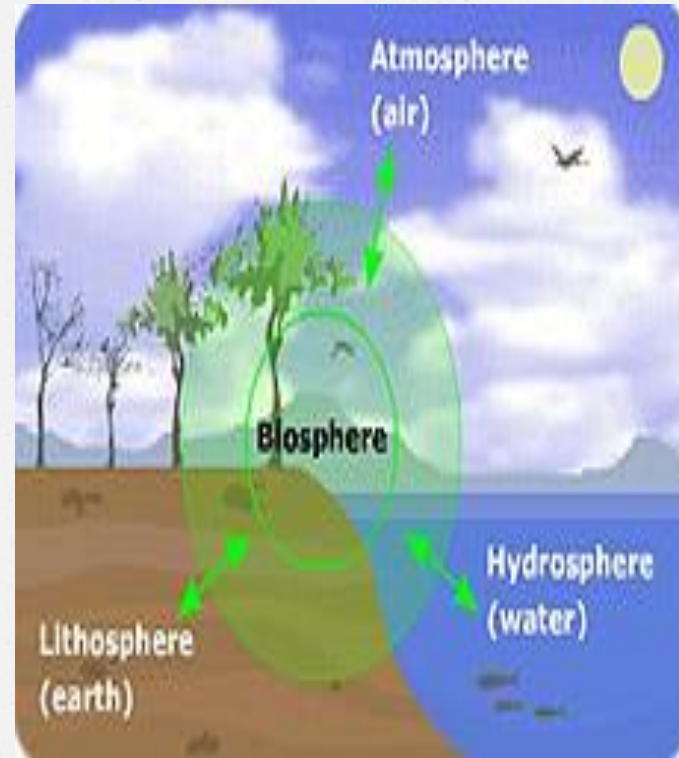


▲ FIGURE 2.4 The Earth's four spheres

About the Four Earth Spheres – 2:07

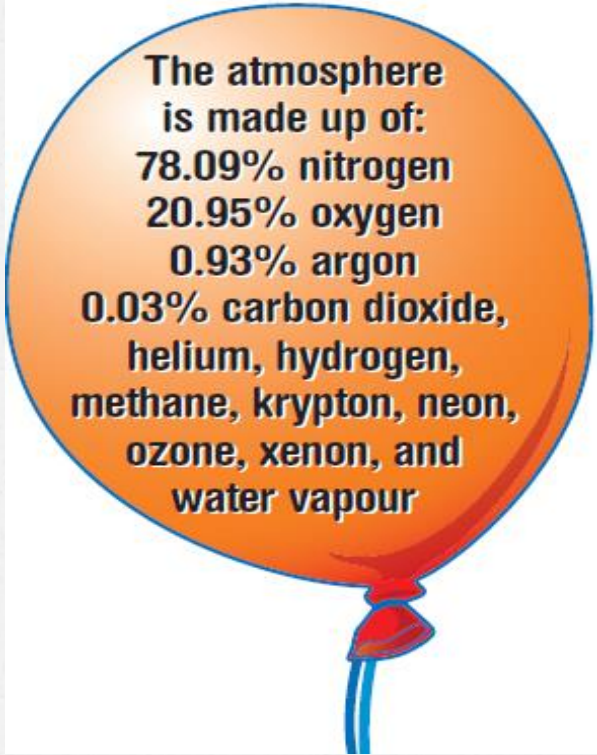
THE FOUR INTERCONNECTED SPHERES OF EARTH:

1. ATMOSPHERE
2. LITHOSPHERE
3. HYDROSPHERE
4. BIOSPHERE



1. ATMOSPHERE

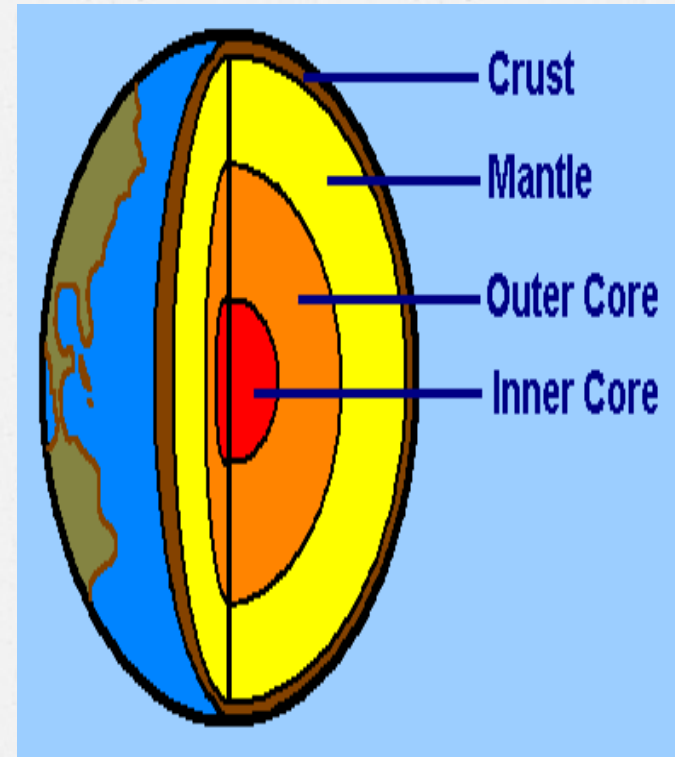
- Surrounds Earth as a thin layer of mixed gasses that makes up the air you breathe.
- The atmosphere protects you from the sun's intense energy and distributes heat on Earth.



The atmosphere is made up of:
78.09% nitrogen
20.95% oxygen
0.93% argon
0.03% carbon dioxide, helium, hydrogen, methane, krypton, neon, ozone, xenon, and water vapour

2. THE 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

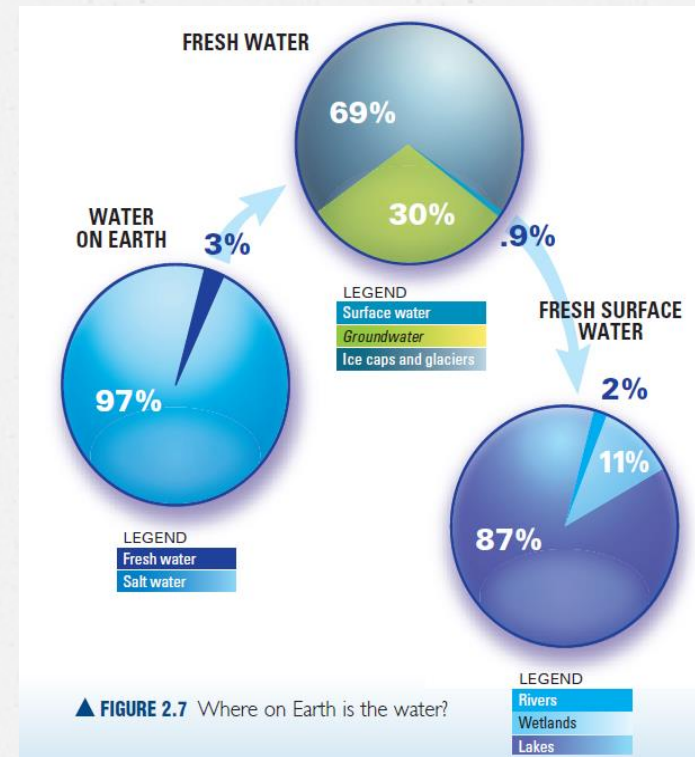




Major tectonic plates of the world.

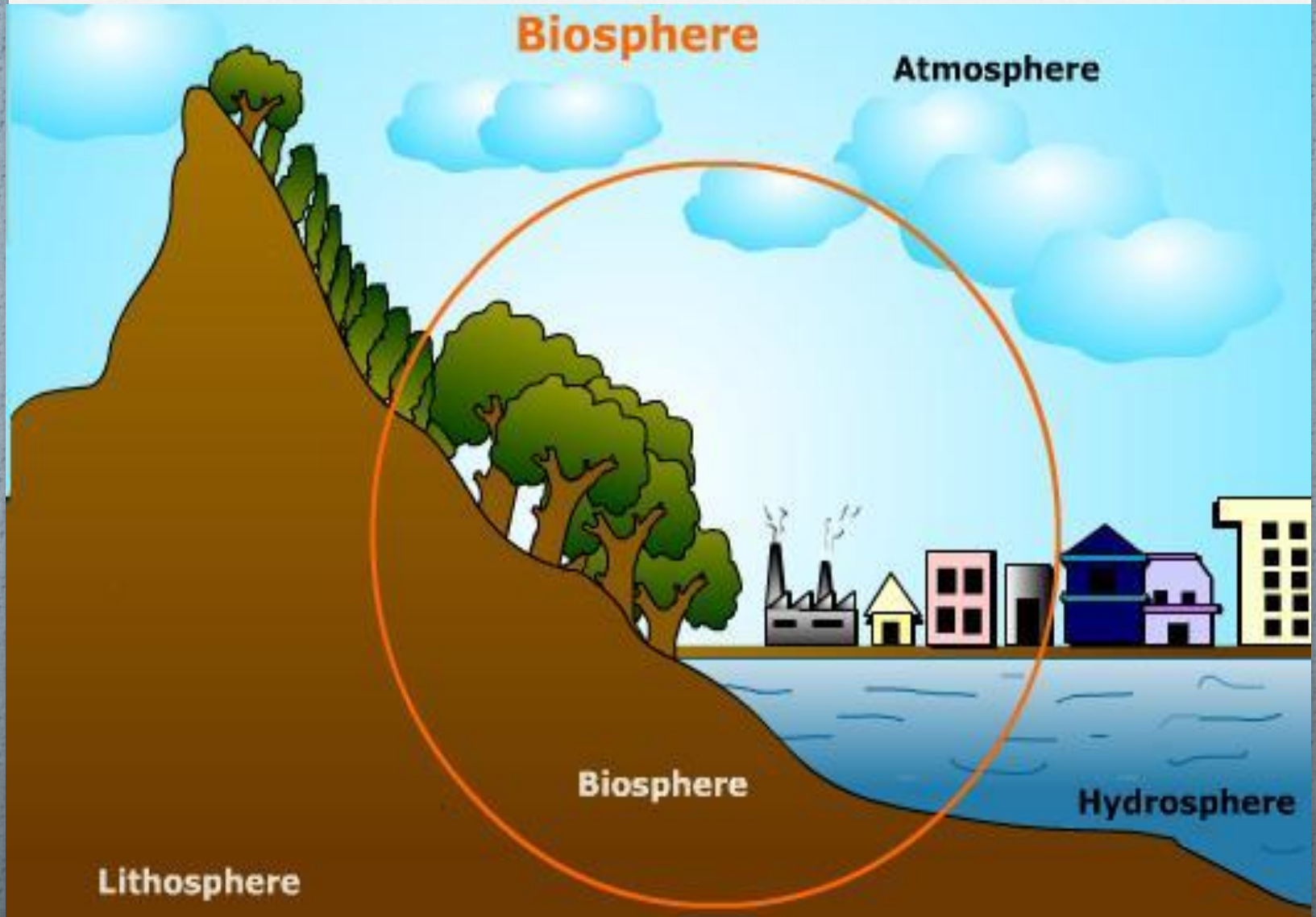
3. THE HYDROSPHERE

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



3. THE BIOSPHERE

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



Biosphere

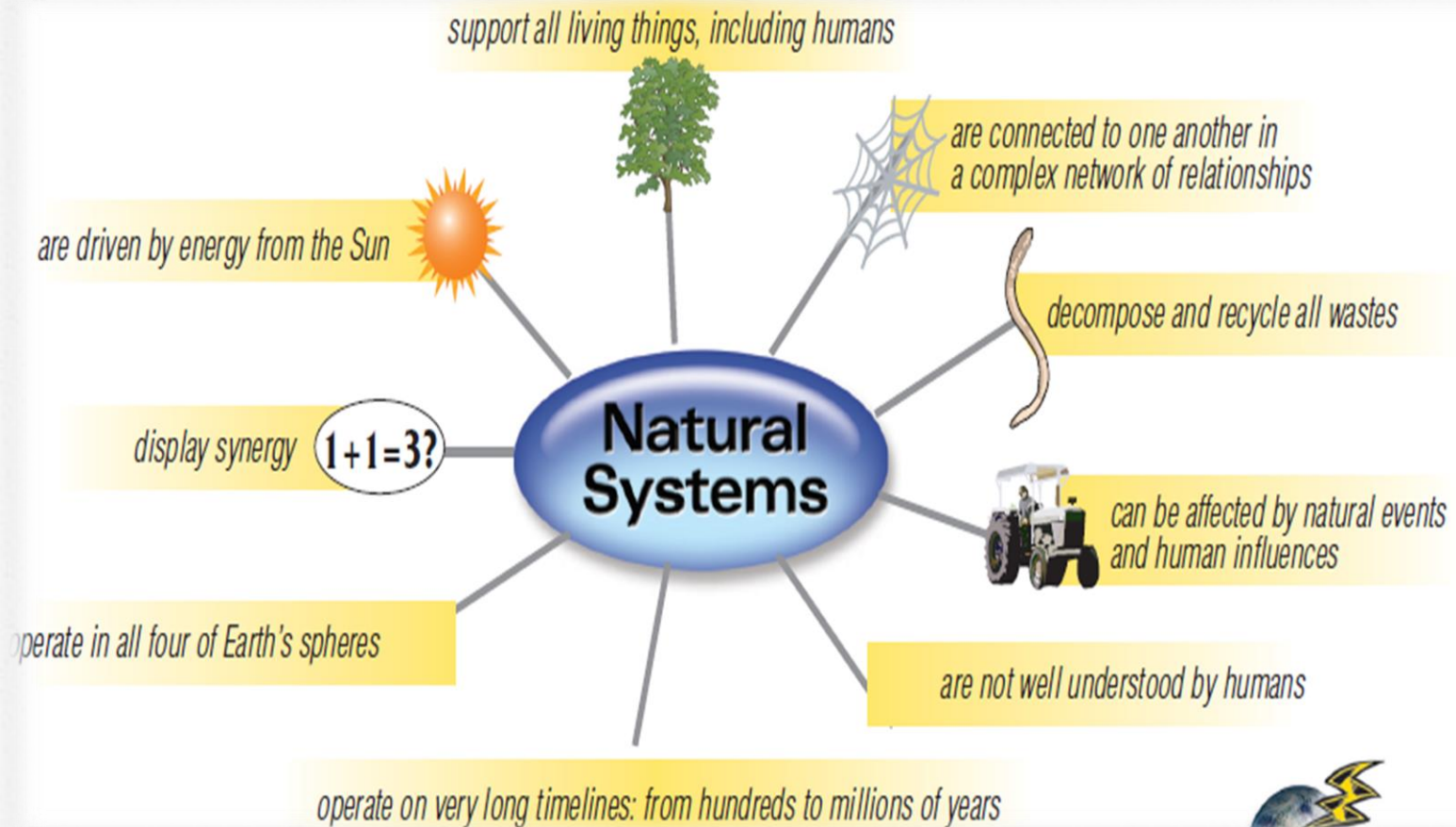
Atmosphere

Biosphere

Hydrosphere

Lithosphere

Characteristics of Natural Systems





Examples of Natural Systems

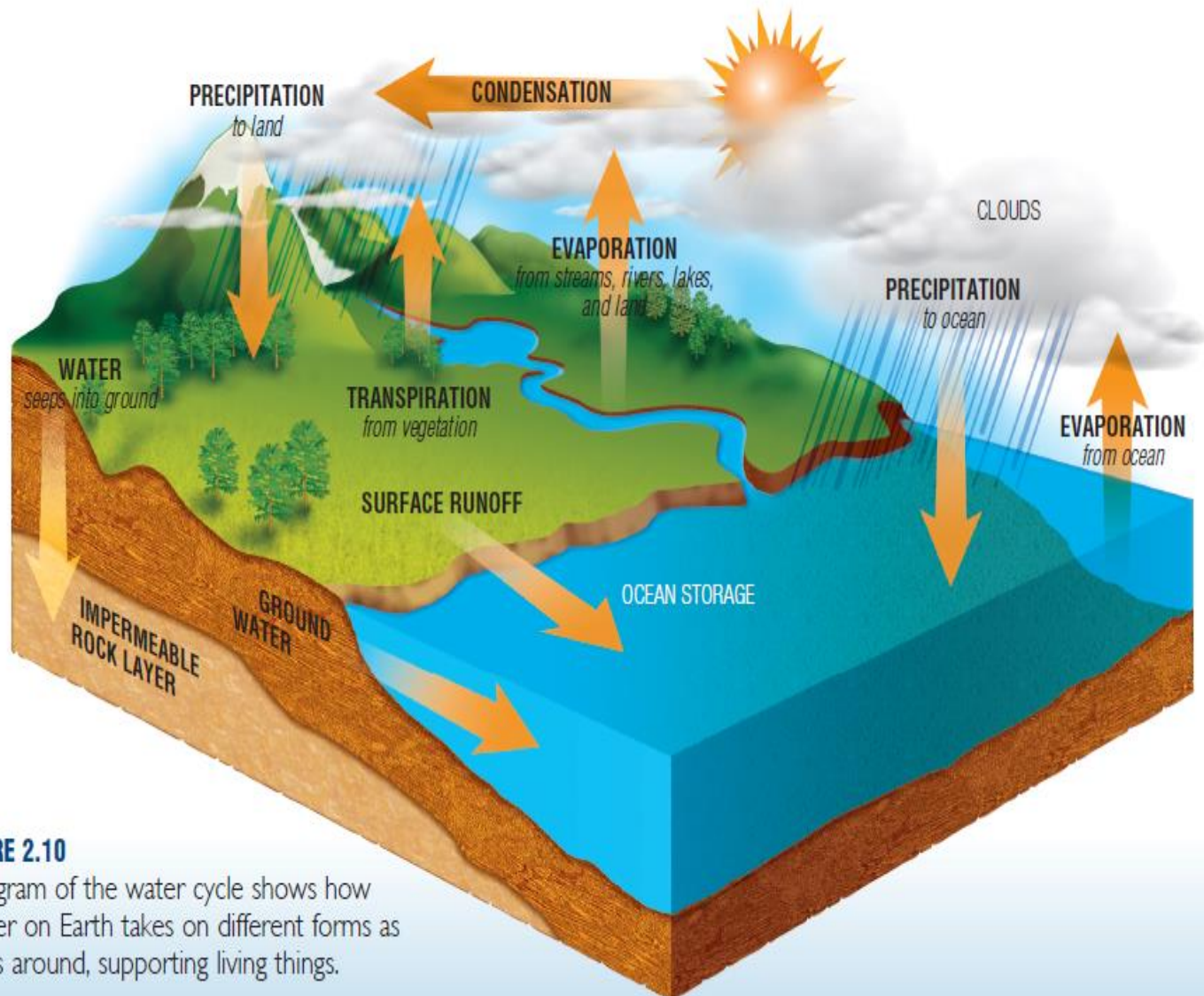
1. The Water Cycle:

- o Is the natural system that involves the circulation of water to support life on Earth.
- o The water on Earth is continuously flowing and changing state from gas (water vapour), to liquid, to solid (ice).
- o The Earth never loses or gains any water.
- o 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.



- o Most of Canada's fresh water is located in unhabituated areas and in **AQUIFIERS** (which are layers of porous rock that can store large quantities of water.)



▲ **FIGURE 2.10**

This diagram of the water cycle shows how the water on Earth takes on different forms as it moves around, supporting living things.

Animated Water Cycle

- o [Water Cycle Diagram](#)
- o [Investigating Groundwater](#)

2. Nitrogen Cycle:

- o In natural systems there is no waste.
- o Creatures such as fungi and bacteria act as **DECOMPOSERS** to eat and recycle nature's waste material.
- o 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.
- o 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.

DECOMPOSERS

They consume (eat) dead plants & animals and decomposes them - reduces them to simpler forms of matter.

PRIMARY DECOMPOSERS

Fungi & Bacteria

