

Natural and Human Systems

- What happens when interact?
- Determine the significance of interactions between natural systems and human systems

Journey into the World of Systems

- A complex set of dynamic systems makes up our world.
- People depend on natural systems for survival
- Natural systems influence people's activities
- Human activities have an impact on natural systems
- Each region in Canada has a unique combination of natural and human systems.
- What are Systems ?
 - A system is made up of different parts that connect to form a whole.
- Why is it important to know about systems and how they operate?
 - The interaction of systems on earth shapes the environment in which we live.
- THEY CAN BE BROKEN INTO 2 CATEGORIES:
 - NATURAL SYSTYEMS
 - HUMAN SYSTEMS

Natural System

- Systems that occur in nature
 - Circulation of water in the ocean
 - Weather and climate
 - Water drainage
 - Energy cycles
- These systems work together to form the ECOSYSTEMS
 - Ecosystem is a community of plants and animals that interact with one another and with their physical environment (land, climate, soil, water and nutrients).

Human System

- System that are created by humans include:
 - Human settlements
 - Transportation routes

- Communication systems
- Economics
- Infrastructure
- Energy

The Systems Approach

- Used by geographers to study both natural and human systems
- Used to help us make better decisions as we work to create safer and healthier environments.
- Can help us to protect natural systems and to use resources so they last into the future.

Complex Web of Systems

- A complex set of dynamic systems make up our world.
 - Dynamic---continually changing.
 - May take millions of years for the change(oil formation)
 - May only take a few minutes for the change (car burning gas)
- In what ways can a change in one natural system influence that system? Influence another natural system?

Greater than the Sum of its Parts

- Synergy
 - The whole system is greater than the sum of its parts
 - WATER (2 parts hydrogen/1 part oxygen)
 - CAR (engine, tires, brakes)

Earth's Natural Systems

- Earth is made up of 4 spheres that are interconnected:
 - Atmosphere
 - Lithosphere
 - Hydrosphere
 - Biosphere

Atmosphere

- is a layer of [gases](#) surrounding the planet [Earth](#) that is retained by Earth's [gravity](#).
- It protects [life on Earth](#) by absorbing [ultraviolet solar radiation](#), warming the surface through heat retention ([greenhouse effect](#)), and reducing [temperature](#) extremes between [day](#) and [night](#).
- Consists mainly of [nitrogen](#) and oxygen but also traces of water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

Lithosphere

- contains :
 - all of the cold, hard solid land of the planet's crust (surface),
 - the semi-solid land underneath the crust, and the liquid land near the center of the planet.
- The surface of the lithosphere is very uneven (see image below).
 - There are high mountain ranges like the Rockies and Andes
 - huge plains or flat areas like those in Texas, Iowa, and Brazil
 - and deep valleys along the ocean floor

CRUSTAL PLATES: pieces of the lithosphere

PLATE TECTONICS: slow movement of these plates on the underlying mantle.

This movement causes mountain-building, volcanoes and earthquakes.

Hydrosphere

- contains all the solid, liquid, and gaseous water of the planet.
 - Fresh
 - Salty (Ninety-seven percent)
 - Frozen
- Covers 70% of the Earth's surface

- Some scientists place frozen water--glaciers, icecaps, and icebergs--in its own sphere called the "cryosphere".