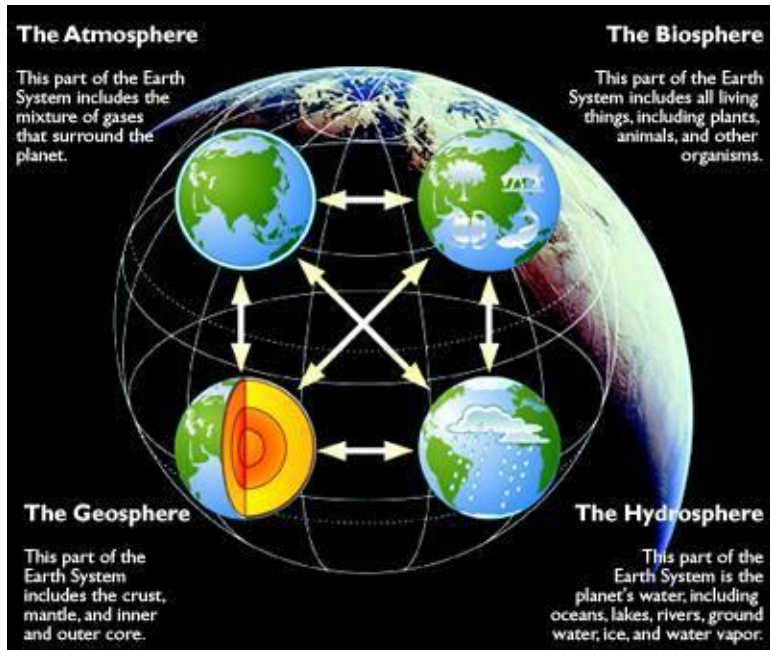


Grade 7: Overview



Earth's Dynamic Systems

Scientists increasingly view Earth as a dynamic system that is a combination of interrelated, interdependent, or interacting parts forming a collective whole or entity. On a macro level, the Earth systems maintain their existence and functions as a whole through the interactions of their parts, called components. At a lower, or micro level, the Earth system is made of four central components known as the subsystems: the hydrosphere (water, including oceans, rivers, ice), geosphere (solid earth), atmosphere (air), and biosphere (life).

Processes and cycles interconnect these subsystems, and over time, intermittently store, transform and/or transfer matter and energy throughout the whole Earth system in ways that are governed by the laws of conservation of matter and energy. The energy that drives these processes comes mainly from the Sun.

There are many interrelationships and interdependencies that develop between the components of Earth's dynamic systems. The continents, atmosphere, oceans, ice, and life are interacting and changing in many ways. The living portion of Earth that inhabits the air, water and land is collectively known as the biosphere. In the hydrosphere, water continuously cycles through the Earth system interacting with life and changing the Earth's surface. In the geosphere, the land surface is shaped and geologic materials are redistributed through the processes of erosion and sedimentation. The great circulation systems of Earth: water, carbon, and the nutrients replenish what life needs. The availability of natural resources affects the ability of organisms to support and propagate life. Interactions of humans and key technological systems used by society affect the Earth's systems. These complex and interconnected processes comprise the Earth's dynamic systems.

The focus on systems requires students to apply concepts and skills across disciplines since most natural and designed systems and cycles are complex and interactive.