

Key Concept Summaries

The Earth System

What Are the Main Parts of the Earth System?

A **system** is a group of parts that work together as a whole. The Earth system involves a constant flow of matter through different parts. The constant flow, or cycling, of matter through the Earth system is driven by energy. **Energy** is the ability to do work. The energy that drives the Earth system has two main sources: heat from the sun and heat flowing out of Earth as it cools.

Earth's **atmosphere** is the relatively thin envelope of gases that form Earth's outermost layer. Earth's **geosphere** has three main parts: a metal core, a solid middle layer, and a rocky outer layer. The **hydrosphere** contains all of Earth's water. The part of Earth that contains living organisms makes up the **biosphere**.

The Earth system has four main spheres: the atmosphere, the hydrosphere, the geosphere, and the biosphere. As a major source of energy for Earth processes, the sun can be considered part of the Earth system as well.

When feedback occurs, a system returns—or feeds back—to itself data about a change in the system. Feedback demonstrates how changes in one part of the Earth system might affect the other parts.

How Do Constructive and Destructive Forces Change Earth?

Lands are constantly being created and destroyed by competing forces. Forces that construct, or build up, mountains are called **constructive forces**. **Constructive forces shape the land's surface by building up mountains and other landmasses.** Volcanoes build up Earth's surface by spewing lava that hardens into rock. Earthquakes build landmasses by lifting up mountains and rock.

Because forces such as ice, rain, wind, and changing temperatures wear down, or destroy, landmasses, they are called **destructive forces**. **Destructive forces destroy and wear away landmasses through processes like erosion and weathering.** Erosion is the wearing down and carrying away of land by natural forces such as water, ice, or wind.

On a separate sheet of paper, explain how destructive forces are related to two spheres of the Earth system.

