

## Sample Lesson #3

### How does the hydrosphere interact with Earth's other systems?

Earth's major systems interact continuously. The hydrosphere interacts with the atmosphere in the water cycle. Energy from the sun causes evaporation, and water vapor becomes part of the atmosphere. Condensation changes the gas to a liquid in clouds. And water returns to Earth's surface as precipitation.

In the geosphere, water is a major cause of weathering and erosion. Moving water breaks rock into small pieces and carries the sediment away. Ocean waves crash along the shore, wearing down the coastline and reshaping it. Water saturates land, and gravity pulls rock and mud downhill in landslides. Glaciers scrape the ground, carving out valleys and leaving deposits of rich soil. In these ways, water reshapes the landscape of Earth. These changes may happen quickly, or they may take millions of years.

The hydrosphere interacts with the biosphere. All living things need water to survive. The hydrosphere provides this water across the surface of the planet.

Water flows into soil where plants can absorb it through their roots. Plants use water for photosynthesis. Water also contains minerals that plants use for growth. Plants take in these minerals as their roots soak up water.

The oceans contain most of the water on Earth. And oceans are home to many different kinds of ecosystems. These ecosystems show the connection between the biosphere and the hydrosphere. For example, coral reefs cover a tiny section of the ocean. But they provide a habitat for many different species. Coral reefs are home to nearly 25% of all marine animals. These organisms are an important food source for others, including humans. Fish that live in coral reefs help to feed more than a billion people around the world.



Clouds form in the atmosphere.



Ocean waves shape a coastline.



Tree roots absorb water from the soil.

1. List three processes that are part of the water cycle.

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2. The hydrosphere interacts with Earth's other major systems in many ways. Write the letter of each item under the correct heading.

Hydrosphere and Atmosphere	Hydrosphere and Geosphere	Hydrosphere and Biosphere

- A) water vapor changes to liquid in clouds      F) plant roots soak up water  
 B) wearing away of rocky coastlines              G) water carries away sediment  
 C) ocean water evaporates into the air            H) glaciers carve valleys  
 D) marine ecosystem                                    I) all living things depend on water  
 E) saturated ground causes landslides            J) ocean water affects air temperature

3. Explain how a coral reef ecosystem shows the interaction of the hydrosphere and the biosphere. Use these words: **coral reef, ecosystem, hydrosphere, biosphere, fish, water, ocean.**

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4. Which Earth system includes plants and animals?

hydrosphere

atmosphere

biosphere

geosphere

5. Match each organism with its label.

A) secondary consumer

C) tertiary consumer

B) producer

D) primary consumer

