

Lesson 3

Cycling of Matter

Focus Question

How does matter flow through an ecosystem?

New Vocabulary

matter

nutrient

biogeochemical cycle

nitrogen fixation

denitrification

Review Vocabulary

cycle: a series of events that occur in a regular repeating pattern

Cycles in the Biosphere

- Natural processes cycle matter and nutrients through the biosphere.
 - **Matter** is anything that takes up space and has mass.
 - A **nutrient** is a chemical substance that an organism needs to obtain from its environment in order to survive.

Cycles in the Biosphere

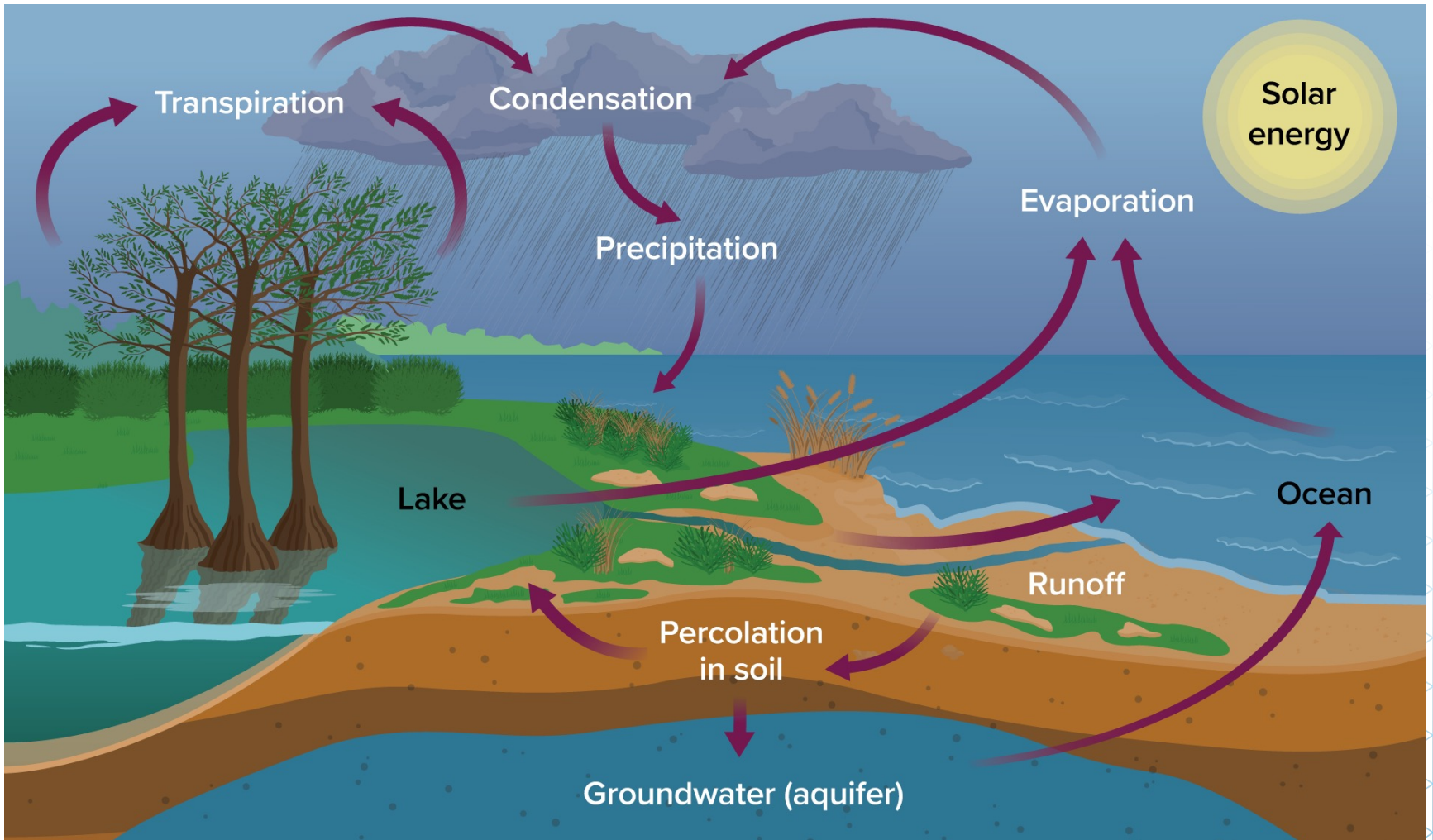
- The cycling of nutrients through the biosphere involves both living organisms and physical processes.
- The exchange of matter through the biosphere is called the **biogeochemical cycle**.

Cycles in the Biosphere

The Water Cycle

- Water evaporates from bodies of water, soil, and organisms.
- Water returns from the atmosphere in the form of precipitation.

Cycles in the Biosphere

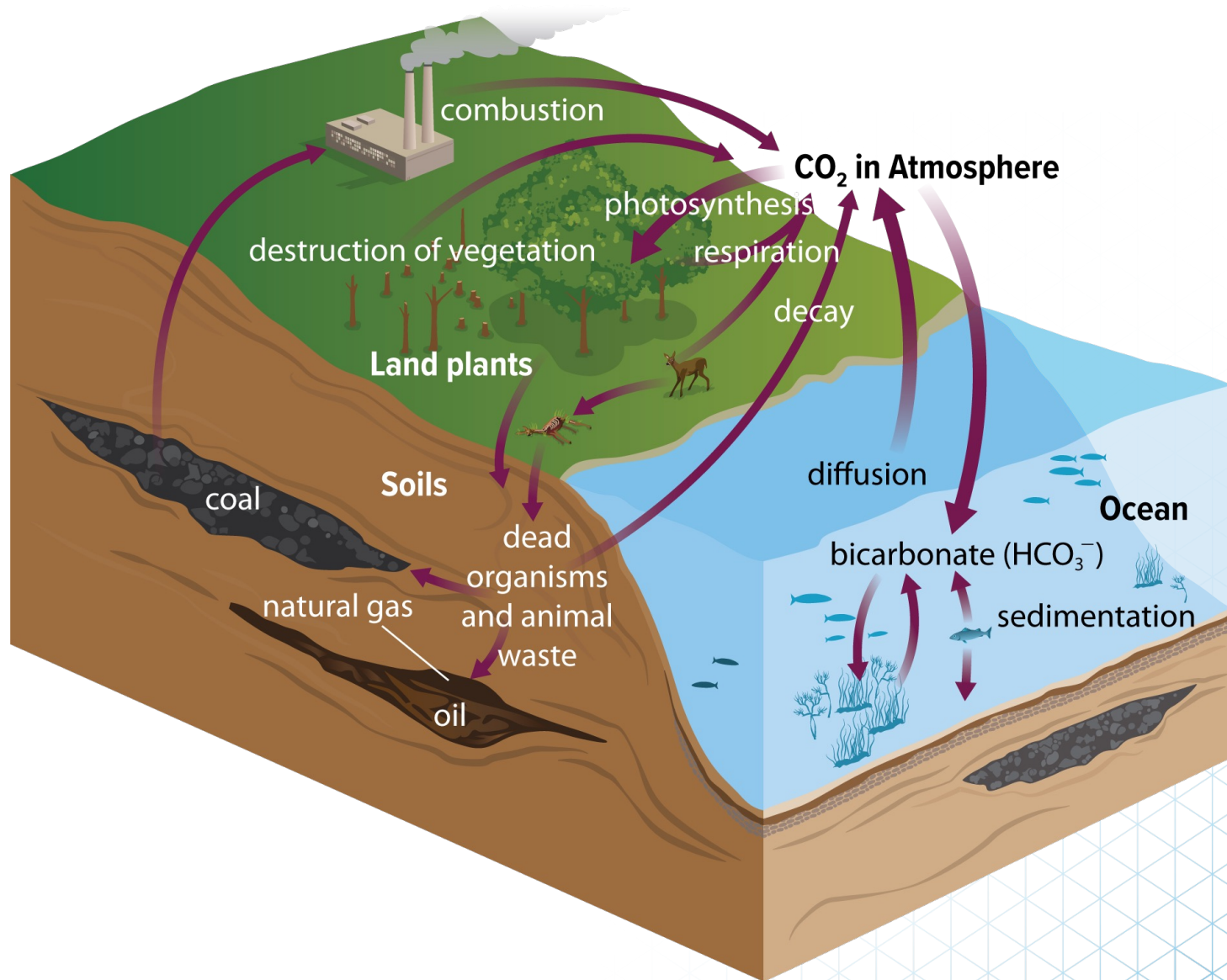


Cycles in the Biosphere

The Carbon and Oxygen Cycles

- Carbon and oxygen recycle relatively quickly through living organisms.
- Photosynthesis and cellular respiration are important components of these cycles.
- Carbon and oxygen enter a long-term cycle when they combine to form calcium carbonate.

Cycles in the Biosphere

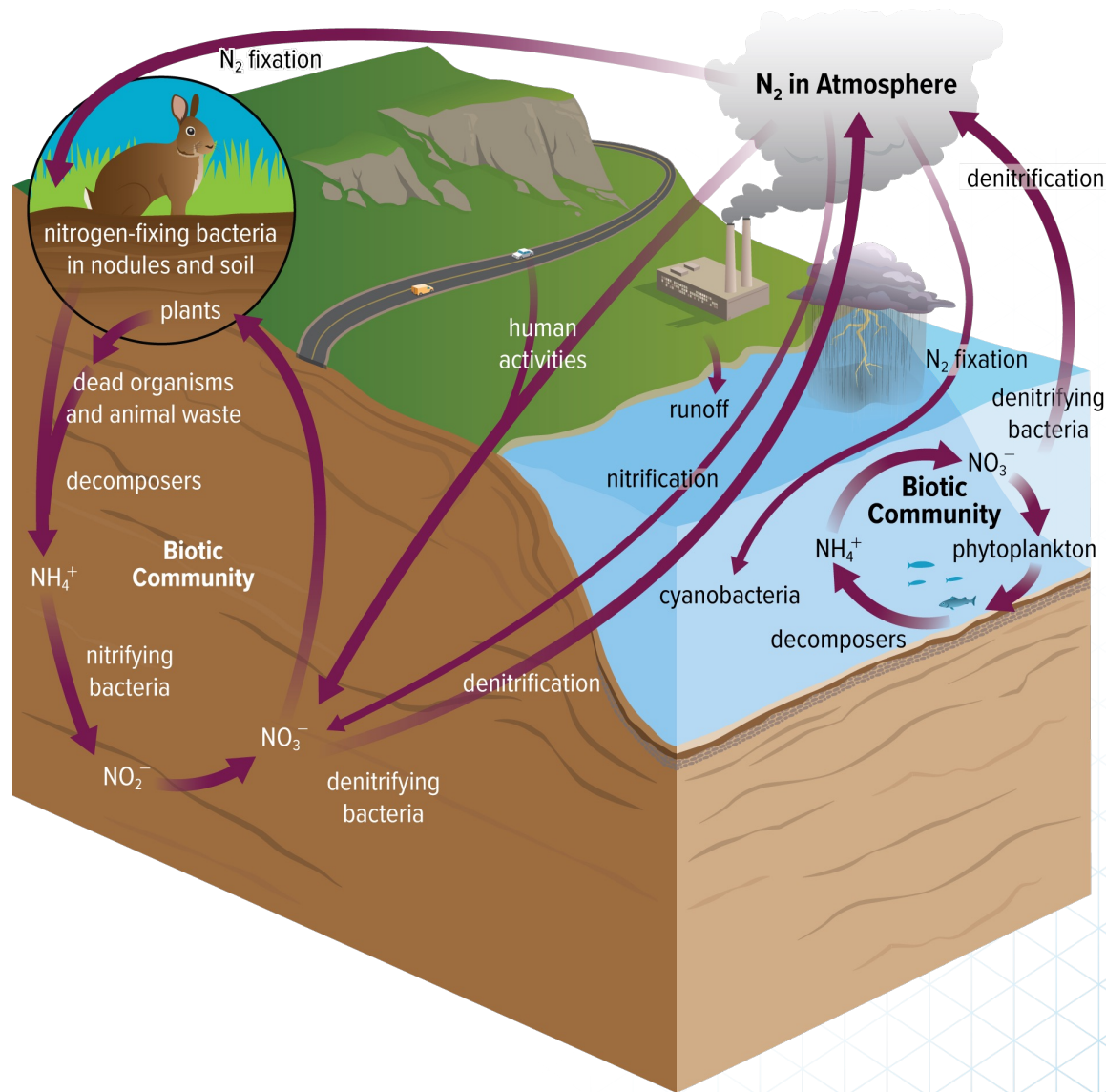


Cycles in the Biosphere

The Nitrogen Cycle

- The capture and conversion of nitrogen into a form that is useable by plants is called **nitrogen fixation**.
- Nitrogen is fixed by bacteria or by electrical storms.
- Nitrogen returns to the atmosphere through **denitrification**, a process in which bacteria convert fixed nitrogen back into nitrogen gas.

Cycles in the Biosphere



Cycles in the Biosphere

The Phosphorus Cycle

- Phosphorus is essential for the growth and development of organisms.
- Phosphorus cycles quickly as phosphates through sediments, plants, and consumers.
- In addition, phosphorus is weathered or eroded from rocks and added to the cycle.

Cycles in the Biosphere

