

Wetland Carbon Loop

Trace matter and energy through oxygen-poor and oxygen-rich places.

HS-LS2-3 "Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions..."

NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one process from the word bank in each numbered box. Match each process to the arrow that moves matter from one stage to the next.

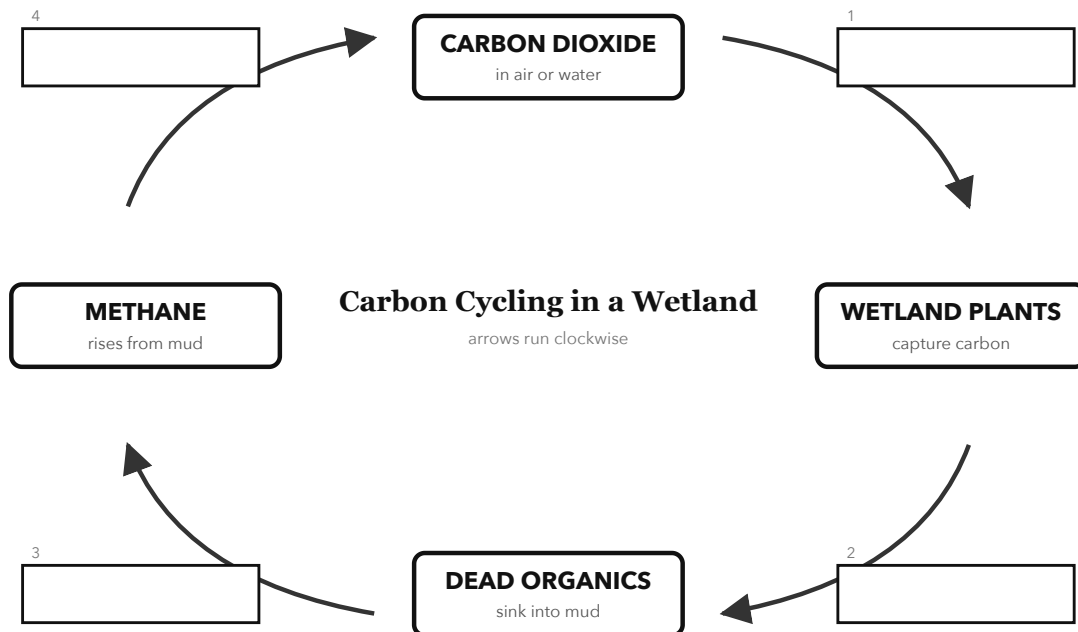
WORD BANK

aerobic methane oxidation

anaerobic decomposition

death and waste

photosynthesis



2 RUN THE MODEL Use your finished diagram

1 Which numbered process occurs where oxygen is scarce? Use the model as evidence.

2 After carbon becomes methane, what process returns it to carbon dioxide in the model?

3 Use the model to explain how energy moves through this system.

3 CHECK IT Before you turn it in

☐ I matched each arrow to a process.

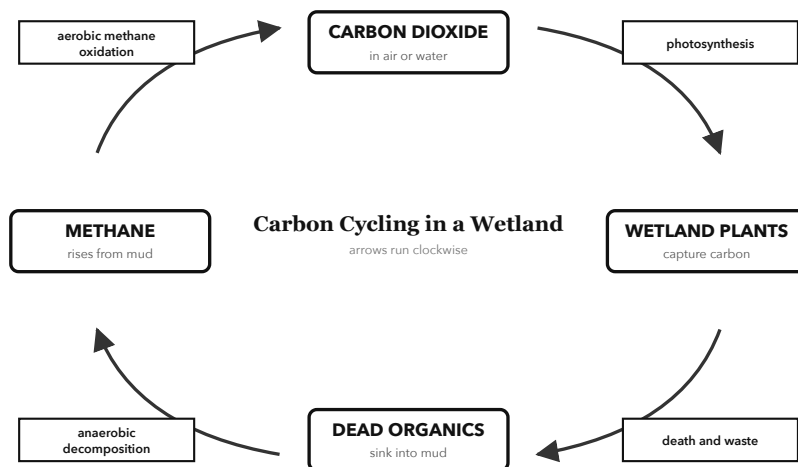
☐ I can identify the anaerobic step.

☐ I can trace carbon through the loop.

TEST THE MODEL

What is one part of a real wetland carbon system that this model leaves out?

PART 1 · COMPLETED MODEL



PART 2 · RUN THE MODEL

1. **Process 3, anaerobic decomposition, occurs in oxygen-poor mud.** (Which numbered process occurs where oxygen is scarce? Use the model as evidence.)
2. **Process 4, aerobic methane oxidation, changes methane into carbon dioxide.** (After carbon becomes methane, what process returns it to carbon dioxide in the model?)
3. **Plants capture sunlight. Microbes release usable energy as they break down organic matter and oxidize methane.** (Use the model to explain how energy moves through this system.)

TEST THE MODEL (SAMPLE ANSWERS)

- The model leaves out animals that eat wetland plants and add waste to dead organic matter.
- The model leaves out methane that escapes into the atmosphere instead of being oxidized.

Accept process names in the numbered order shown: photosynthesis, death and waste, anaerobic decomposition, aerobic methane oxidation. Emphasize that the model simplifies a branching system, because methane can be oxidized or released to the atmosphere.