

Anthropogenic Effects on Carbon Flows and Reservoirs

Overview

In this activity, participants continue to explore the carbon cycle as they consider carbon flows between land, ocean and atmosphere reservoirs, including flows caused by human activities. They run two models of the carbon cycle as they play the *Paper Clip Carbon Cycle Game* and use *Carbon Cycle Cards* to gather evidence and describe the flows (processes) that move carbon from one reservoir to another. Finally, they discuss how the design of the activity affected what they learned.

Learning Outcomes

Students will be able to:

- Construct a model demonstrating carbon flows between reservoirs.
- Discuss how human activities increase the amount of carbon stored in the atmosphere.



NGSS Connections

- **Disciplinary Core Ideas:** MS.LS2.B Cycles of Matter and Energy Transfer in Ecosystems; MS.ESS2.A: Earth's materials and Systems; MS.ESS3.C: Human impacts on Earth's Systems; HS.LS2.B Cycles of Matter and Energy Transfer in Ecosystems
- **Science and Engineering Practice:** Developing and Using Models
- **Crosscutting Concepts:** Systems and System Models

Ocean Literacy Principles

- 3.E: The ocean dominates Earth's carbon cycle. Half of the primary productivity on Earth takes place in the sunlit layers of the ocean. The ocean absorbs roughly half of all carbon dioxide and methane that are added to the atmosphere.



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