

Earth Systems in Action

Use models to show how pairs of Earth systems affect each other.

5-ESS2-1 “Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate...”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the two Earth systems named in each example. Number the words or sentences that show what one system does and what changes because of it.

Changing Coasts, Rocks, and Streams

- ① On a rocky island, ocean waves are part of the hydrosphere, and the cliffs are part of the geosphere. When waves are strong, they strike cracks in the rock. The moving water carries away loose pieces. Over many years, the cliff can become steeper or form a small cave. This model shows water acting on land, an interaction between two Earth systems.
- ② Air is part of the atmosphere. In a dry desert, wind can blow sand across bare rock, which is part of the geosphere. The sand grains scrape the rock like sandpaper. This scraping can smooth sharp edges and shape unusual rock forms. A simple model can use arrows from moving air to rock, then show the changed rock shape.
- ③ Along a stream, fish are part of the biosphere, and stream water is part of the hydrosphere. Fish need water with enough dissolved oxygen to breathe. When the water is warmer, it can hold less dissolved oxygen. If oxygen becomes too low, fish may move to cooler water or may not survive. A model can connect water temperature to the fish's response.

2 ANSWER WITH EVIDENCE Use the passage

1 What two Earth systems interact on the rocky island? Describe how one system changes the other.

2 How could arrows in a desert model show the interaction between the atmosphere and geosphere?

3 How can warmer stream water affect fish? Name the two systems involved.

4 What should a model show after it names two Earth systems that interact? Use details from the passage.

3 YOUR TURN Your own words

Create a model of one interaction between exactly two Earth systems. Draw and label the two systems, add at least two arrows that show cause and effect, then write two sentences explaining your model.

PART 1 • READ AND MARK

Underline the two Earth systems named in each example. Number the words or sentences that show what one system does and what changes because of it. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What two Earth systems interact on the rocky island? Describe how one system changes the other.	The hydrosphere and geosphere interact. Ocean waves carry away loose rock, changing the cliff's shape.
2	How could arrows in a desert model show the interaction between the atmosphere and geosphere?	Arrows can point from moving air and sand to the rock, then to the changed rock shape.
3	How can warmer stream water affect fish? Name the two systems involved.	Warmer water can hold less dissolved oxygen, so fish may move or may not survive. The interaction is between the hydrosphere and biosphere.
4	What should a model show after it names two Earth systems that interact? Use details from the passage.	It should show a cause and an effect, such as waves carrying away rock or warmer water affecting fish.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Model labels and arrows: Hydrosphere, river water → Geosphere, riverbank soil → Geosphere, soil carried downstream River water flows against the riverbank and loosens soil. The moving water carries the soil downstream, changing the bank's shape.

For Part 3, accept any accurate interaction involving exactly two systems, with clear labels, arrows, and a cause-and-effect explanation. In Part 2, accept equivalent wording that identifies the stated systems and changes.