

**5-ESS2-1 Earth’s Systems**

California Alternate Assessment for Science—Item Content Specifications

# 5-ESS2-1 Earth’s Systems

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
| --- | --- | --- |
| Identify examples of ways the four major Earth systems interact to affect living things and the Earth’s surface materials and processes. | 1. Ability to identify examples of ways the four major Earth systems interact to affect living things and the Earth’s surface materials and processes.
 | Match a feature, material, or plant/animal to a sphere (e.g., plants [biosphere]; water [hydrosphere]; soil [geosphere]; release water vapor [atmosphere]). |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.** [Clarification Statement: The geosphere, hydrosphere (including ice), atmosphere, and biosphere are each a system and each system is a part of the whole Earth system. Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] *[Assessment Boundary*: *Assessment is limited to the interactions of two systems at a time.]*

## Mastery Statements

Students will be able to:

* Identify ways that two of Earth’s systems interact
* Identify examples of interactions of systems that affect living things or Earth’s materials
* Match one feature, material, or plant/animal to the sphere it occupies

## California Environmental Principles and Concepts

Principle 3—Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

## Possible Phenomena or Contexts

*Note that the list in this section is not exhaustive or prescriptive.*

**Possible contexts include the following:**

* Effect of air on living things (necessary for survival)
* Effect of water on living things (necessary for survival)
* Effect of soil on plants (e.g., soil provides plants in nature with a support for the roots)
* Effect of water on soil (erosion)
* Presence of water in air in the form of rain or snow
* Effect of animals on soil (e.g., earthworms aerating soil, bird droppings adding nutrients to soil)
* Effect of Earth structures such as mountains on weather and climate (e.g., rain shadow effect, where moist air rises and forms rain on the near side of the mountain, causing the air on the far side of the mountain to be dry)

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for 5-ESS2-1

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-5-ess2-1.docx>

California Environmental Principles and Concepts <http://californiaeei.org/abouteei/epc/>

The *2016 Science Framework for California Public Schools Kindergarten through Grade Twelve* <https://www.cde.ca.gov/ci/sc/cf/cascienceframework2016.asp>

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade Twelve

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix1.pdf>

Appendix 2: Connections to Environmental Principles and Concepts

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix2.pdf>

Posted by the California Department of Education, July 2025