

HS-ESS3-6 Earth and Human Activity

California Alternate Assessment for Science—Item Content Specifications

# HS-ESS3-6 Earth and Human Activity

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
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| Use representations to identify the relationships among Earth systems and how those relationships are being modified due to human activity (e.g., increase in atmospheric carbon dioxide, increase in ocean acidification, effects on organisms in the ocean (coral reef), carbon cycle of the ocean, possible effects on marine populations). | 1. Ability to use representations to identify the relationships among Earth systems and how those relationships are being modified due to human activity. | Recognize that some human activities have negative consequences for Earth’s air, water, plants, and animals. |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.** [Clarification Statement: Clarification Statement: Examples of Earth systems to be considered are the hydrosphere, atmosphere, cryosphere, geosphere, and/or biosphere. An example of the far-reaching impacts from a human activity is how an increase in atmospheric carbon dioxide results in an increase in photosynthetic biomass on land and an increase in ocean acidification, with resulting impacts on sea organism health and marine populations.] *[Assessment Boundary: Assessment does not include running computational representations but is limited to using the published results of scientific computational models.]*

## Mastery Statements

Students will be able to:

* Identify a negative effect on Earth’s systems caused by human activity
* Recognize the relationship between Earth’s systems and how human activity affects the relationship
* Use evidence to identify a change in Earth’s systems due to human activity

## California Environmental Principles and Concepts

Principle 1—The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Principle 2—The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

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

Principle 4—The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Principle 5—Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

## Possible Phenomena or Contexts

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

**Possible contexts include the following:**

* Effect of increases in ocean temperatures on marine life
* Impact of increasing acidity of ocean surface waters and bodies of fresh water
* Impact of acid rain
* Changes in precipitation trends
* Decreases in available freshwater resources
* Soil erosion caused by farming or ranching practices
* Air or water pollution

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for HS-ESS3-6

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-hs-ess3-6.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>

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