Virtual Field Trips

Galapagos Islands

National Council for the Social Studies (NCSS), National Geography Standards (NGS), Next Generation Science Standards (NGSS)

Subjects: Science, Social Studies

Grades: 3, 4, 5, 6, 7, 8

Grade 3 - Adopted: 2010

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
CATEGORY 3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 3.1.5. Physical changes in community, state, and region, such as seasons, climate, and weather, and their effects on plants and animals.

Grade 4 - Adopted: 2010

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
CATEGORY 3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 3.1.5. Physical changes in community, state, and region, such as seasons, climate, and weather, and their effects on plants and animals.

Grade 3 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PR. Places and Regions
STANDARD PR.4. The physical and human characteristics of places
STRAND PR.4.2. The Characteristics of Places: Places have physical and human characteristics
<p>| BENCHMARK | PR.4.2.A. | Describe and compare the physical characteristics of places at a variety of scales, local to global, as exemplified by being able to |
| EXPECTATION | PR.4.2.A.3. | Describe and compare the physical environments and landforms of different places in the world (e.g., mountains, islands, valleys or canyons, mesas). |
| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |
| STANDARD | PS.7. | The physical processes that shape the patterns of Earth’s surface |
| STRAND | PS.7.1. | Components of Earth’s Physical Systems: There are four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) |
| BENCHMARK | PS.7.1.A. | Identify attributes of Earth's different physical systems, as exemplified by being able to |
| EXPECTATION | PS.7.1.A.2. | Identify examples of water features on Earth's surface that comprise the hydrosphere (e.g., oceans, rivers, lakes, water vapor, ground water, different types of precipitation). |
| EXPECTATION | PS.7.1.A.3. | Identify examples of landforms on Earth's surface (e.g., mountains, volcanoes, valleys, plains). |
| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |
| STANDARD | PS.7. | The physical processes that shape the patterns of Earth’s surface |
| STRAND | PS.7.3. | Physical Processes: Physical processes shape features on Earth’s surface |
| BENCHMARK | PS.7.3.B. | Describe how physical processes shape features on Earth’s surface, as exemplified by being able to |
| EXPECTATION | PS.7.3.B.2. | Describe the physical processes that shaped particular landform features using pictures of landforms such as canyons, mesas, and deltas. |
| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |
| STANDARD | PS.8. | The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface |
| STRAND | PS.8.1. | Components of Ecosystems: The components of ecosystems |
| BENCHMARK | PS.8.1.A. | Identify the components of different ecosystems, as exemplified by being able to |
| EXPECTATION | PS.8.1.A.3. | Describe local ecosystems by surveying and recording the properties of their components. |
| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |
| STANDARD | PS.8. | The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface |
| STRAND | PS.8.2. | Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems |
| BENCHMARK | PS.8.2.A. | Identify and describe the characteristics of ecosystems, as exemplified by being able to |
| EXPECTATION | PS.8.2.A.1. | Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives. |
| EXPECTATION | PS.8.2.A.2. | Identify and draw pictures of different plants and animals in various local ecosystems (e.g., a pond, forest, city park). |
| EXPECTATION | PS.8.2.A.3. | Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef). |</p>
<table>
<thead>
<tr>
<th>ESSENTIAL ELEMENT</th>
<th>NGS.ES.</th>
<th>Environment and Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARD</td>
<td>ES.14.</td>
<td>How human actions modify the physical environment</td>
</tr>
<tr>
<td>STRAND</td>
<td>ES.14.3.</td>
<td>Consequences for People and Environments: The consequences of human modifications of the physical environment</td>
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<tr>
<td>BENCHMARK</td>
<td>ES.14.3.A.</td>
<td>Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to</td>
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<tr>
<td>EXPECTATION</td>
<td>ES.14.3.A.1.</td>
<td>Identify and describe the changes in local habitats that resulted from human activities.</td>
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<td>STANDARD</td>
<td>ES.15.</td>
<td>How physical systems affect human systems</td>
</tr>
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<td>STRAND</td>
<td>ES.15.2.</td>
<td>Environmental Hazards: Environmental hazards affect human activities</td>
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<td>BENCHMARK</td>
<td>ES.15.2.A.</td>
<td>Identify and describe the locations of environmental hazards, as exemplified by being able to</td>
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<tr>
<td>EXPECTATION</td>
<td>ES.15.2.A.2.</td>
<td>Identify on a map of the Pacific basin the occurrences of earthquakes and volcanoes and describe the pattern that results (e.g., the Pacific Ring of Fire).</td>
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<td>STANDARD</td>
<td>ES.16.</td>
<td>The changes that occur in the meaning, use, distribution, and importance of resources</td>
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<td>STRAND</td>
<td>ES.16.1.</td>
<td>Types and Meanings of Resources: The characteristics of renewable, nonrenewable, and flow resources</td>
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<tr>
<td>BENCHMARK</td>
<td>ES.16.1.A.</td>
<td>Identify and explain the characteristics of renewable, nonrenewable, and flow resources, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>ES.16.1.A.1.</td>
<td>Explain the meaning of the term &quot;resource&quot; and then illustrate the idea of renewable, nonrenewable, and flow resources by sorting example photographs into each of the three categories.</td>
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<td>ESSENTIAL ELEMENT</td>
<td>NGS.UG.</td>
<td>The Uses of Geography</td>
</tr>
<tr>
<td>STANDARD</td>
<td>UG.18.</td>
<td>How to apply geography to interpret the present and plan for the future</td>
</tr>
<tr>
<td>STRAND</td>
<td>UG.18.1.</td>
<td>Using Geography to Interpret the Present and Plan for the Future: Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events</td>
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<tr>
<td>BENCHMARK</td>
<td>UG.18.1.A.</td>
<td>Analyze geographic contexts in which current events and issues occur, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>UG.18.1.A.3.</td>
<td>Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.</td>
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<td>UG.18.2.</td>
<td>Changes in Geographic Contexts: Places, regions, and environments will continue to change</td>
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<td>BENCHMARK</td>
<td>UG.18.2.A.</td>
<td>Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being</td>
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Describe how to plan for the environmental future of a place by completing the following statements: “I will keep...” “I will change...” and “I will remove...”

**National Geography Standards (NGS)**

**Science**

**Grade 4 - Adopted: 2012**

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<td>PR.4.2.A.</td>
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<td>Places and Regions</td>
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<td>The Characteristics of Places: Places have physical and human characteristics</td>
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<td>Identify attributes of Earth's different physical systems, as exemplified by being able to</td>
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<td>PS.7.3.B.</td>
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<td>Physical Systems</td>
<td>The characteristics and spatial distribution of ecosystems and biomes on Earth's surface</td>
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EXPECTATION PS.8.1.A.3. Describe local ecosystems by surveying and recording the properties of their components.

ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND PS.8.2. Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems
BENCHMARK PS.8.2.A. Identify and describe the characteristics of ecosystems, as exemplified by being able to
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EXPECTATION PS.8.2.A.3. Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.14. How human actions modify the physical environment
STRAND ES.14.3. Consequences for People and Environments: The consequences of human modifications of the physical environment
BENCHMARK ES.14.3.A. Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to
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ESSENTIAL ELEMENT NGS.ES. Environment and Society
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ESSENTIAL ELEMENT NGS.UG. The Uses of Geography
STANDARD UG.18. How to apply geography to interpret the present and plan for the future
Using Geography to Interpret the Present and Plan for the Future:

Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events.

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**STRAND** UG.18.1. Using Geography to Interpret the Present and Plan for the Future:

**BENCHMARK** UG.18.1.A. Analyze geographic contexts in which current events and issues occur, as exemplified by being able to analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.

**EXPECTATION** UG.18.1.A.3. Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.

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**ESSENTIAL ELEMENT** NGS.UG. The Uses of Geography

**STANDARD** UG.18. How to apply geography to interpret the present and plan for the future

**STRAND** UG.18. Changes in Geographic Contexts: Places, regions, and environments will continue to change

**BENCHMARK** UG.18.2.A. Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being able to describe how to plan for the environmental future of a place by completing the following statements: “I will keep....” “I will change....” and “I will remove....”

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**ESSENTIAL ELEMENT** NGS.PR. Places and Regions

**STANDARD** PR.4. The physical and human characteristics of places

**STRAND** PR.4.2. The Characteristics of Place: Physical and human characteristics of places change

**BENCHMARK** PR.4.2.A. Explain the ways that physical processes change places, as exemplified by being able to explain the ways in which islands and coastal places may change as a result of sea level rise.

**EXPECTATION** PR.4.2.A.2. Explain the ways in which islands and coastal places may change as a result of sea level rise.

**ESSENTIAL ELEMENT** NGS.PS. Physical Systems

**STANDARD** PS.7. The physical processes that shape the patterns of Earth’s surface

**STRAND** PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

**BENCHMARK** PS.7.1.B. Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

**EXPECTATION** PS.7.1.B.1. Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

**ESSENTIAL ELEMENT** NGS.PS. Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface
<table>
<thead>
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<th>PS.8.1.</th>
<th>Components of Ecosystems: Components of ecosystems are interdependent</th>
</tr>
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<tbody>
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<td>BENCHMARK</td>
<td>PS.8.1.A.</td>
<td>Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>PS.8.1.A.3.</td>
<td>Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).</td>
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<td>PS.8.1.B.</td>
<td>Construct a model to explain how an ecosystem works, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>PS.8.1.B.1.</td>
<td>Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.</td>
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<td>EXPECTATION</td>
<td>PS.8.1.B.3.</td>
<td>Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).</td>
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<td>Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities</td>
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<td>BENCHMARK</td>
<td>ES.14.3.A.</td>
<td>Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>ES.14.3.A.3.</td>
<td>Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).</td>
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<td>Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global</td>
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<tr>
<td>BENCHMARK</td>
<td>ES.15.2.B.</td>
<td>Explain the causes and locations of various types of environmental hazards, as exemplified by being able to</td>
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<td>EXPECTATION</td>
<td>ES.15.2.B.1.</td>
<td>Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).</td>
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<td>EXPECTATION</td>
<td>ES.15.2.B.2.</td>
<td>Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.</td>
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<td>Sustainable Resource Use and Management: Humans can manage</td>
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resources to sustain or prolong their use

**BENCHMARK** ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

**EXPECTATION** ES.16.3.A.1.

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**National Geography Standards (NGS)**

**Science**

**Grade 6 - Adopted: 2012**

**ESSENTIAL ELEMENT**

**NGS.PR.** Places and Regions

**STANDARD** PR.4. The physical and human characteristics of places

**STRAND** PR.4.2. The Characteristics of Place: Physical and human characteristics of places change

**BENCHMARK** PR.4.2.A. Explain the ways that physical processes change places, as exemplified by being able to

**EXPECTATION** PR.4.2.A.2. Explain the ways in which islands and coastal places may change as a result of sea level rise.

**ESSENTIAL ELEMENT**

**NGS.PS.** Physical Systems

**STANDARD** PS.7. The physical processes that shape the patterns of Earth’s surface

**STRAND** PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

**BENCHMARK** PS.7.1.B. Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to

**EXPECTATION** PS.7.1.B.1. Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

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**ESSENTIAL ELEMENT**

**NGS.PS.** Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

**STRAND** PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

**BENCHMARK** PS.8.1.A. Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).

**EXPECTATION** PS.8.1.A.3. Construct a model to explain how an ecosystem works, as exemplified by being able to

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**ESSENTIAL ELEMENT**

**NGS.PS.** Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

**STRAND** PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

**BENCHMARK** PS.8.1.B. Construct a model to explain how an ecosystem works, as exemplified by being able to
EXPECTATION PS.8.1.B.1. Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.

EXPECTATION PS.8.1.B.3. Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.14. How human actions modify the physical environment
STRAND ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to
Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.15. How physical systems affect human systems
STRAND ES.15.2. Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global
BENCHMARK ES.15.2.B. Explain the causes and locations of various types of environmental hazards, as exemplified by being able to
Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).

EXPECTATION ES.15.2.B.1. Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources
STRAND ES.16.3. Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use
BENCHMARK ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

EXPECTATION ES.16.3.A.1.

National Geography Standards (NGS)
Science

Grade 7 - Adopted: 2012
ESSENTIAL ELEMENT NGS.PR. Places and Regions
<table>
<thead>
<tr>
<th>STANDARD</th>
<th>STRAND</th>
<th>ESSENTIAL ELEMENT</th>
<th>EXPECTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR.4.</td>
<td>PR.4.2.</td>
<td>NGS.PS. Physical Systems</td>
<td>PR.4.2.A. Explain the ways that physical processes change places, as exemplified by being able to</td>
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<td>PR.4.2.A.2. Explain the ways in which islands and coastal places may change as a result of sea level rise.</td>
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<tr>
<td>PS.7.</td>
<td>PS.7.1.</td>
<td>NGS.PS. Physical Systems</td>
<td>PS.7.1.B. Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to</td>
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<td>PS.7.1.B.1 Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).</td>
</tr>
<tr>
<td>PS.8.</td>
<td>PS.8.1.</td>
<td>NGS.PS. Physical Systems</td>
<td>PS.8.1.A. Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to</td>
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<td>PS.8.1.A.3 Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).</td>
</tr>
<tr>
<td>PS.8.</td>
<td>PS.8.1.</td>
<td>NGS.PS. Physical Systems</td>
<td>PS.8.1.B. Construct a model to explain how an ecosystem works, as exemplified by being able to</td>
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<td></td>
<td>PS.8.1.B.1 Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.</td>
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<tr>
<td></td>
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<td></td>
<td>PS.8.1.B.3 Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).</td>
</tr>
<tr>
<td>ES.14.</td>
<td>ES.14.3.</td>
<td>NGS.ES. Environment and Society</td>
<td>ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to</td>
</tr>
</tbody>
</table>

The physical and human characteristics of places

The Characteristics of Place: Physical and human characteristics of places change

Explain the ways that physical processes change places, as exemplified by being able to

Explain the ways in which islands and coastal places may change as a result of sea level rise.

Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to

Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to

Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).

Construct a model to explain how an ecosystem works, as exemplified by being able to

Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.

Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).


Essential Elements

**NGS.ES. Environment and Society**

**Standard ES.15.** How physical systems affect human systems

**Strand ES.15.2.** Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global

**Benchmark ES.15.2.B.** Explain the causes and locations of various types of environmental hazards, as exemplified by being able to

Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.

Expectation ES.15.2.B.2.

Essential Elements

**NGS.ES. Environment and Society**

**Standard ES.16.** The changes that occur in the meaning, use, distribution, and importance of resources

**Strand ES.16.3.** Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use

**Benchmark ES.16.3.A.** Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to

Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

Expectation ES.16.3.A.1.

National Geography Standards (NGS) Science

**Grade 8 - Adopted: 2012**

**Essential Element**

**NGS.PR. Places and Regions**

**Standard PR.4.** The physical and human characteristics of places

**Strand PR.4.2.** The Characteristics of Place: Physical and human characteristics of places change

**Benchmark PR.4.2.A.** Explain the ways that physical processes change places, as exemplified by being able to

**Expectation PR.4.2.A.2.** Explain the ways in which islands and coastal places may change as a result of sea level rise.

**Essential Element**

**NGS.PS. Physical Systems**

**Standard PS.7.** The physical processes that shape the patterns of Earth’s surface

**Strand PS.7.1.** Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

**Benchmark PS.7.1.B.** Analyze and explain patterns of physical features resulting from the
interactions of Earth’s physical processes, as exemplified by being able to
Analyze maps of tectonic plates to predict the location of physical features
(e.g., mountain ranges, volcanoes, rift valleys).

**EXPECTATION** PS.7.1.B.1.

**ESSENTIAL ELEMENT** NGS.PS. Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

**STRAND** PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

**BENCHMARK** PS.8.1.A. Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).

**EXPECTATION** PS.8.1.A.3.

**ESSENTIAL ELEMENT** NGS.PS. Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

**STRAND** PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

**BENCHMARK** PS.8.1.B. Construct a model to explain how an ecosystem works, as exemplified by being able to
Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.

**EXPECTATION** PS.8.1.B.1.

**EXPECTATION** PS.8.1.B.3.

**ESSENTIAL ELEMENT** NGS.ES. Environment and Society

**STANDARD** ES.14. How human actions modify the physical environment

**STRAND** ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities

**BENCHMARK** ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to
Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

**EXPECTATION** ES.14.3.A.3.

**ESSENTIAL ELEMENT** NGS.ES. Environment and Society

**STANDARD** ES.15. How physical systems affect human systems

**STRAND** ES.15.2. Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global

**BENCHMARK** ES.15.2.B. Explain the causes and locations of various types of environmental hazards, as exemplified by being able to
Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).

**EXPECTATION** ES.15.2.B.1.
Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.

**ESSENTIAL ELEMENT**

**STANDARD**

**STRAND**

**BENCHMARK**

**EXPECTATION**

**National Geography Standards (NGS)**

**Social Studies**

**Grade 3 - Adopted: 2012**

**ESSENTIAL ELEMENT**

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**BENCHMARK**

**EXPECTATION**
of biomes

BENCHMARK  PS.8.3.A. Describe the characteristics of biomes, as exemplified by being able to

EXPECTATION  PS.8.3.A.1. Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.

EXPECTATION  PS.8.3.A.2. Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).

EXPECTATION  PS.8.3.A.3. Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallow, tropical marine waters).

National Geography Standards (NGS)

Social Studies

Grade 4 - Adopted: 2012

ESSENTIAL ELEMENT  NGS.PS. Physical Systems

STANDARD  PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND  PS.8.1. Components of Ecosystems: The components of ecosystems

BENCHMARK  PS.8.1.A. Identify the components of different ecosystems, as exemplified by being able to

EXPECTATION  PS.8.1.A.1. Identify the three major components of an ecosystem (i.e., biomass, climate, and soil).

EXPECTATION  PS.8.1.A.2. Identify examples of each ecosystem component (e.g., pine trees versus grasslands, low versus high rainfall, clay versus sandy soils).

ESSENTIAL ELEMENT  NGS.PS. Physical Systems

STANDARD  PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND  PS.8.2. Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems

BENCHMARK  PS.8.2.A. Identify and describe the characteristics of ecosystems, as exemplified by being able to

EXPECTATION  PS.8.2.A.1. Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.

EXPECTATION  PS.8.2.A.3. Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).

ESSENTIAL ELEMENT  NGS.PS. Physical Systems

STANDARD  PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND  PS.8.3. Characteristics and Geographic Distribution of Biomes: The characteristics of biomes

BENCHMARK  PS.8.3.A. Describe the characteristics of biomes, as exemplified by being able to

EXPECTATION  PS.8.3.A.1. Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.
Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).

Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallow, tropical marine waters).

National Geography Standards (NGS)
Social Studies

Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.7. The physical processes that shape the patterns of Earth's surface
STRAND PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK PS.7.1.A. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to
EXPECTATION PS.7.1.A.2. Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND PS.8.2. Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK PS.8.2.A. Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION PS.8.2.A.2. Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

Grade 6 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.7. The physical processes that shape the patterns of Earth's surface
STRAND PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK PS.7.1.A. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to
EXPECTATION PS.7.1.A.2. Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and
ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD  PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND  PS.8.2.  Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK  PS.8.2.A.  Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION  PS.8.2.A.2.  Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

National Geography Standards (NGS)
Social Studies
Grade 7 - Adopted: 2012
ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD  PS.7.  The physical processes that shape the patterns of Earth's surface
STRAND  PS.7.1.  Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK  PS.7.1.A.  Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to
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Grade 8 - Adopted: 2012
ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD  PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND  PS.8.2.  Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK  PS.8.2.A.  Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION  PS.8.2.A.2.  Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

National Geography Standards (NGS)
Social Studies
physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

**BENCHMARK** PS.7.1.A.
Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to

**EXPECTATION** PS.7.1.A.2.
Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

**ESSENTIAL ELEMENT** NGS.PS.
Physical Systems

**STANDARD** PS.8.
The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

**STRAND** PS.8.2.
Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems

**BENCHMARK** PS.8.2.A.
Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to

**EXPECTATION** PS.8.2.A.2.
Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

Next Generation Science Standards (NGSS)

**Science**

**Grade 3** - Adopted: 2013

**STRAND** NGSS.3-
**LIFE SCIENCE**

**TITLE** 3-LS1.
From Molecules to Organisms: Structures and Processes
Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION** 3-LS1-1.
Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**STRAND** NGSS.3-
**LIFE SCIENCE**

**TITLE** 3-LS4.
Biological Evolution: Unity and Diversity
Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION** 3-LS4-2.
Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

**PERFORMANCE EXPECTATION** 3-LS4-3.
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

**PERFORMANCE EXPECTATION** 3-LS4-4.
Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
Grade 4 - Adopted: 2013

**STRAND**  NGSS.4.-
**TITLE**  4-LS. From Molecules to Organisms: Structures and Processes
**PERFORMANCE EXPECTATION**  4-LS1. Students who demonstrate understanding can:

- Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Next Generation Science Standards (NGSS)

Grade 5 - Adopted: 2013

**STRAND**  NGSS.5.-
**TITLE**  5-PS. Energy
**PERFORMANCE EXPECTATION**  5-PS3-1. Students who demonstrate understanding can:

- Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

**STRAND**  NGSS.5.-
**TITLE**  5-LS2. Ecosystems: Interactions, Energy, and Dynamics
**PERFORMANCE EXPECTATION**  5-LS2-1. Students who demonstrate understanding can:

- Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**STRAND**  NGSS.5.-
**TITLE**  5-ESS3-1. Earth and Human Activity
**PERFORMANCE EXPECTATION**  5-ESS3-1. Students who demonstrate understanding can:

- Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

Next Generation Science Standards (NGSS)

Grade 6 - Adopted: 2013

**STRAND**  NGSS.MS-
**TITLE**  MS-LS1. From Molecules to Organisms: Structures and Processes
**PERFORMANCE EXPECTATION**  MS-LS1-5. Students who demonstrate understanding can:

- Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

**STRAND**  NGSS.MS-
**TITLE**  MS-LS2. Ecosystems: Interactions, Energy, and Dynamics
**PERFORMANCE EXPECTATION**  MS-LS2. Students who demonstrate understanding can:
PERFORMANCE EXPECTATION MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

PERFORMANCE EXPECTATION MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

PERFORMANCE EXPECTATION MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

PERFORMANCE EXPECTATION MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PERFORMANCE EXPECTATION MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Next Generation Science Standards (NGSS)

Science

Grade 7 - Adopted: 2013

PERFORMANCE EXPECTATION MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

PERFORMANCE EXPECTATION MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

PERFORMANCE EXPECTATION MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

PERFORMANCE EXPECTATION MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

PERFORMANCE EXPECTATION MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PERFORMANCE EXPECTATION MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
## Next Generation Science Standards (NGSS)

### Science

**Grade 8** - Adopted: **2013**

<table>
<thead>
<tr>
<th>STRAND</th>
<th>NGSS.MS-LS.</th>
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<tbody>
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<td>LIFE SCIENCE</td>
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**From Molecules to Organisms: Structures and Processes**

Students who demonstrate understanding can:

<table>
<thead>
<tr>
<th>PERFORMANCE EXPECTATION</th>
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<td><strong>Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.</strong></td>
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**Ecosystems: Interactions, Energy, and Dynamics**

Students who demonstrate understanding can:

<table>
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<th>PERFORMANCE EXPECTATION</th>
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<td><strong>Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.</strong></td>
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<th>PERFORMANCE EXPECTATION</th>
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<td><strong>Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.</strong></td>
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<th>PERFORMANCE EXPECTATION</th>
<th>MS-LS2-4.</th>
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<tr>
<td><strong>Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</strong></td>
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<th>PERFORMANCE EXPECTATION</th>
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<td><strong>Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</strong></td>
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**Earth’s Systems**

Students who demonstrate understanding can:

<table>
<thead>
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<th>PERFORMANCE EXPECTATION</th>
<th>MS-ESS2-6.</th>
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<td><strong>Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.</strong></td>
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