### 5-ESS2 Earth's Systems

**Students who demonstrate understanding can:**

**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; 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.]

**5-ESS2-2. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.**

[Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.]

---

<table>
<thead>
<tr>
<th>Science and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
</tr>
</thead>
</table>
| **Developing and Using Models**  | **ESS2.A: Earth Materials and Systems**  
Modeling in 3-5 builds on K-2 experiences and progresses to extending simple models and using models to represent events and design solutions.  
- Develop a model using an example to describe a scientific principle. (5-ESS2-1)  
- Using Mathematics and Computational Thinking  
Mathematical and computational thinking in 3-5 builds on K-2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.  
- Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2) | **Scale, Proportion, and Quantity**  
- Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2) |
| **Articulation of DCIs across grade-levels:** 2.ESS2.A (5-ESS2-1); 2.ESS2.C (5-ESS2-2); 3.ESS2.D (5-ESS2-1); 4.ESS2.A (5-ESS2-1); MS.ESS2.A (5-ESS2-1); MS.ESS2.C (5-ESS2-1); MS.ESS2.D (5-ESS2-1); MS.ESS3.A (5-ESS2-2) | **ESS2.C: The Roles of Water in Earth's Surface Processes**  
- Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2) | **Systems and System Models**  
- A system can be described in terms of its components and their interactions. (5-ESS2-1) |
| **ELA/Literacy**  
RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2-1); (5-ESS2-2)  
W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2)  
SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-1); (5-ESS2-2) | **Mathematics**  
- MP.2 Reason abstractly and quantitatively. (5-ESS2-1); (5-ESS2-2)  
- MP.4 Model with mathematics. (5-ESS2-1); (5-ESS2-2)  
- 5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1) |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The section entitled “Disciplinary Core Ideas” is reproduced verbatim from A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas. Integrated and reprinted with permission from the National Academy of Sciences.*