

We All Use Water Module Standard Correlations: Grades 3-7

Next Generation Science Standards

Italics indicate connections between NGSS and We All Use Water Module.

Performance Expectation	Disciplinary Core Idea	Science and Engineering Practice	Crosscutting Concept
<p>4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</p>	<p>ESS3.A: Natural Resources</p> <ul style="list-style-type: none"> • Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. <p><i>Online Activity: Students think critically about how the use of the natural resource water is tied directly and indirectly to many things in their lives.</i></p>	<p>Obtaining, Evaluating, and Communicating Information</p> <ul style="list-style-type: none"> • Obtain and combine information from books and other reliable media to explain phenomena. <p><i>Online Activity: Students use DiscoverWater.org as a source of information about natural resource (water) use.</i></p>	<p>Cause and Effect</p> <ul style="list-style-type: none"> • Cause and effect relationships are routinely identified and used to explain change. <p><i>Online Activity: Students think critically about how their actions impact water use directly and indirectly.</i></p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Interdependence of Science, Engineering, and Technology</p> <ul style="list-style-type: none"> • Knowledge of relevant scientific concepts and research findings is important in engineering. <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> • Over time, people’s needs and wants change, as do their demands for new and improved technologies. <p><i>N/A</i></p>

<p>5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> • The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. <p><i>N/A</i></p> <p>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</p> <ul style="list-style-type: none"> • Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. <p><i>Online Activity: Students think critically about how water is involved in growing food.</i></p>	<p>Developing and Using Models</p> <ul style="list-style-type: none"> • Develop a model to describe phenomena. Connections to the Nature of Science <p>Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena</p> <ul style="list-style-type: none"> • Science explanations describe the mechanisms for natural events. <p><i>N/A</i></p>	<p>Systems and System Models</p> <ul style="list-style-type: none"> • A system can be described in terms of its components and their interactions. <p><i>Online Activity: Students think critically about how water (and its tie to agriculture) is a component in a system of water use.</i></p>
<p>5-ESS2-1. Develop a model using an</p>	<p>ESS2.A: Earth Materials and Systems</p>	<p>Developing and Using Models</p>	<p>Systems and System Models</p>

<p>example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p>	<ul style="list-style-type: none"> • Earth’s major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth’s surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. <p><i>Online Activity: Students think critically about the connections between human (biosphere) and water (hydrosphere) through examining water use.</i></p>	<ul style="list-style-type: none"> • Develop a model using an example to describe a scientific principle. <p><i>Online Activity: Students use the model of a generic person’s day to think about all the ways water is used.</i></p>	<ul style="list-style-type: none"> • A system can be described in terms of its components and their interactions. <p><i>Online Activity: Students think critically about different components of a human water use system.</i></p>
<p>5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.</p>	<p>ESS3.C: Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. <p><i>Online Activity: Students think critically about direct and indirect water use and how human activities impact natural resources (water).</i></p>	<p>Obtaining, Evaluating, and Communicating Information</p> <ul style="list-style-type: none"> • Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. <p><i>Online Activity: Students use DiscoverWater.org as a reliable source of information to learn about water use.</i></p>	<p>Systems and System Models</p> <ul style="list-style-type: none"> • A system can be described in terms of its components and their interactions. <p><i>Online Activity: Students think critically about different components of a human water use system.</i></p> <p>Connections to Nature of Science Science Addresses Questions About the Natural and Material World.</p> <ul style="list-style-type: none"> • Science findings are limited to questions that can be answered with empirical evidence. <p><i>N/A</i></p>

<p>MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p>	<p>LS2.A: Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> • Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. • In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. • Growth of organisms and population increases are limited by access to resources. <p><i>Online Activity: Students think critically about water use by humans for different purposes, as well as water needs of other living things, leading to the conclusion that limited water resources are finite and must be shared.</i></p>	<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> • Analyze and interpret data to provide evidence for phenomena. <p>N/A</p>	<p>Cause and Effect</p> <ul style="list-style-type: none"> • Cause and effect relationships may be used to predict phenomena in natural or designed systems. <p>N/A</p>
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Common Core ELA Standards

NONE

Ocean Literacy Standards

<p>(1) The Earth has one big ocean with many features</p>	<p>(f) The ocean is an integral part of the water cycle and is connected to all of the earth's water reservoirs via evaporation and precipitation processes.</p> <p>(g) The ocean is connected to major lakes, watersheds and waterways because all major watersheds on Earth drain to the ocean. Rivers and streams transport nutrients, salts, sediments and pollutants from watersheds to estuaries and to the ocean.</p> <p>(h) Although the ocean is large, it is finite and resources are limited.</p>
<p>(3) The ocean is a major influence on weather and climate.</p>	<p>(b) The ocean absorbs much of the solar radiation reaching Earth. The ocean loses heat by evaporation. This heat loss drives atmospheric circulation when, after it is released into the atmosphere as water vapor, it condenses and forms rain. Condensation of water evaporated from warm seas provides the energy for hurricanes and cyclones.</p>
<p>(6) The ocean and humans are inextricably interconnected.</p>	<p>(a) The ocean affects every human life. It supplies freshwater (most rain comes from the ocean) and nearly all Earth's oxygen. It moderates the Earth's climate, influences our weather, and affects human health.</p> <p>(b) From the ocean we get foods, medicines, and mineral and energy resources. In addition, it provides jobs, supports our nation's economy, serves as a highway for transportation of goods and people, and plays a role in national security.</p> <p>(e) Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution) and physical modifications (changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.</p>

	(g) Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.
(7) The ocean is largely unexplored.	(c) Over the last 40 years, use of ocean resources has increased significantly, therefore the future sustainability of ocean resources depends on our understanding of those resources and their potential and limitations.

Source: National Oceanic and Atmospheric Administration, et al. 2006. *Ocean Literacy: The Essential Principles of Ocean Sciences, K-12*. Washington, DC: NOAA.