<table>
<tr><td colspan="3">Connections to the Next Generation Science Standards (NGSS Lead States 2013) and Common Core State Standards for Mathematics (National Governors Association Center for Best Practices and Council of Chief State School Officers 2010).</td></tr>
<tr><td>Scientific and engineering practice</td><td>Cross-cutting concepts</td><td>Disciplinary core ideas</td></tr>
<tr><td>4: Analyzing and interpreting data
Analyzing data in grades 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data (NGSS Lead States 2013, p. 47.)
• Analyze data using tools, technologies, or models (e.g., computational, mathematical) to make valid and reliable scientific claims or determine an optimal design solution.
• Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.
• Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.</td><td>1: Patterns
In grades 9–12, students observe patterns in systems at different scales and cite patterns as empirical evidence for causality in supporting their explanations of phenomena. They recognize classifications or explanations used at one scale may not be useful or need revision using a different scale, thus requiring improved investigations and experiments. They use mathematical representations to identify certain patterns and analyze patterns of performance to reengineer and improve a designed system. (NGSS Lead States 2013, p. 5.)

2: Cause and effect
In grades 9–12, students understand that empirical evidence is required to differentiate between cause and correlation and to make claims about specific causes and effects. They suggest cause and effect relationships to explain and predict behaviors in complex natural and designed systems. They also propose causal relationships by examining what is known about smaller scale mechanisms within the system. They recognize changes in systems may have various causes that may not have equal effects. (NGSS Lead States 2013, p. 6.)</td><td>ESS2.C: The roles of water in Earth’s surface processes
The abundance of liquid water on Earth’s surface and its unique combination of physical and chemical properties are central to the planet’s dynamics. These properties include water’s exceptional capacity to absorb, store, and release large amounts of energy, transmit sunlight, expand upon freezing, dissolve and transport materials, and lower the viscosities and melting points of rocks (HS-ESS2-5).
ESS2.D: Weather and climate
The foundation for Earth’s global climate systems is the electromagnetic radiation from the sun and its reflection, absorption, storage, and redistribution among the atmosphere, ocean, and land systems, and this energy’s re-radiation into space (HS-ESS2-2; HS-ESS2-4).</td></tr>
<tr><td>Common Core State Standards for Mathematics</td><td colspan="2">Statistics and probability-interpreting categorical and quantitative data
• Represent data with plots on the real number line (dot plots, histograms, and box plots) (CCSS.Math.HSS-ID.A.1).
• Represent data on two quantitative variables on a scatter plot and describe how the variables are related (CCSS.Math.HSS-ID.B.6) .</td></tr>
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