Mc Graw Hill Education

Alignment Guide

EARTH & SPACE iSCIENCE

GLENCOE

Glencoe Science—Your Partner in Understanding and Implementing NGSS*

Ease the Transition to Next Generation Science Standards

Meeting NGSS

Glencoe Science helps ease the transition to Next Generation Science Standards (NGSS). Our middle school science programs ensure you are fully aligned to:

- Performance Expectations
- Science and Engineering Practices
- Disciplinary Core Ideas
- Crosscutting Concepts

We are committed to ensuring that you have the tools and resources necessary to meet the expectations for the next generation of science standards.

What is NGSS?

The purpose of the NGSS Framework is to act as the foundation for science education standards while describing a vision of what it means to be proficient in science. It emphasizes the importance of the practices of science where the content becomes a vehicle for teaching the processes of science.

Why NGSS?

The NGSS were developed in an effort to create unified standards in science education that consider content, practices, pedagogy, curriculum, and professional development. The standards provide all students with an internationally benchmarked education in science.

Correlation of NGSS Performance Expectations to Earth and Space Science

The Correlation Table lists a Performance Expectation that integrates a combination of Science and Engineering Practices, Discliplinary Core Ideas, and Crosscutting Concepts.

Performance Expectations

are tasks to evaluate student's knowledge. Each Performance Expectation is correlated to an Applying Practices activity written specifically for the purpose. These activities can be found in the resources for the section listed.

Science and Engineering Practices

are skills that scientists and engineers use in their work. Each Practice is correlated to a part of the Science and Engineering Practices Handbook, which can be found in the program resources.

Disciplinary Core Ideas

are the content knowledge students will need to learn. These are correlated to the main student text.

Crosscutting Concepts

are themes that appear throughout all branches of science and engineering. These are not directly correlated but are found implicitly in the other correlations listed on the page.

Find it here!

Code	Title/Text	Location
MS-LS1	**From Molecules to Organisms: Structures and Processes**	
MS-LS1-1	**Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.** Clarification Statement: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living things, and understanding that living things may be made of one cell or many and varied cells.	Refer to the Project-Based Activity titled "It's Alive! Or is it?"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Planning and Carrying Out Investigations Planning and carrying out investigations in 6-8 builds on K-5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions.	
	• Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	**Student Edition:** Launch Lab 9, 43, 707 MiniLab 54, 103 Skill Practice 59 Lab 106-107
Disciplinary Core Ideas		
LS1.A	**Structure and Function**	
	• All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).	**Student Edition:** 10, 44, 98-100 **Teacher Edition:** GQ 10, 43, 99; SCB 40E; VL 99
Crosscutting Concepts		
	Scale, Proportion, and Quantity	
	• Phenomena that can be observed at one scale may not be observable at another scale.	**Student Edition:** Launch Lab 43 MiniLab 54 Skill Practice 59
	Connections to Engineering, Technology and Applications of Science **Interdependence of Science, Engineering, and Technology**	
	• Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems.	**Student Edition:** Launch Lab 43 Skill Practice 59

Earth & Space iScience

Code	Title/Text	Location
MS-ESS1	**Earth's Place in the Universe**	
MS-ESS1-1	**Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.** Clarification Statement: Examples of models can be physical, graphical, or conceptual.	Refer to the Project-Based Activity titled "Patterns in the Sky"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Developing and Using Models Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	
	• Develop and use a model to describe phenomena.	**Student Edition:** Launch Lab 735 MiniLab 738, 744 Skill Practice 733 Lab 750-751 **Teacher Edition:** IWB 722D; TD 727, 747
Disciplinary Core Ideas		
ESS1.A	**The Universe and Its Stars**	
	• Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models.	**Student Edition:** 727, 737-739, 743-747, 801 **Teacher Edition:** GQ 722, 727, 738, 739, 747, 801; IM 722H; RWS 801; SCB 722F, 798E; VL 737, 739
ESS1.B	**Earth and the Solar System**	
	• This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year.	**Student Edition:** 727-731, 743-747 **Teacher Edition:** GQ 728, 729, 744; IM 722H; SCB 722E-F; VL 727, 729, 731, 745, 746

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Patterns	
	• Patterns can be used to identify cause-and-effect relationships.	**Student Edition:** Launch Lab 735, MiniLab 738, Skill Practice 733, Lab 750-751 **Teacher Edition:** DI 745, 747
	Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**	
	• Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation.	**Student Edition:** Launch Lab 735, MiniLab 738, Skill Practice 733, Lab 750-751 **Teacher Edition:** DI 731

LOCATION ABBREVIATION KEY

AC	Activity	**FF**	Fun Fact	**RS**	Reading Strategy	**TA**	Technology Activity
CD	Cultural Diversity	**GQ**	Guiding Questions	**RWS**	Real-World Science	**TD**	Teacher Demo
CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
DI	Differentiated Instruction	**MS**	Math Skills				

Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS1	**Earth's Place in the Universe** *continued*	
MS-ESS1-2	**Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.** **Clarification Statement:** Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students' school or state). **Assessment Boundary:** Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth.	Refer to the Project-Based Activity titled "Gravity Glue"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Developing and Using Models Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	
	• Develop and use a model to describe phenomena.	**Student Edition:** MiniLab 726, 765, 772 Skill Practice 775 Lab 790-791 **Teacher Edition:** TD 765
Disciplinary Core Ideas		
ESS1.A	**The Universe and Its Stars**	
	• Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.	**Student Edition:** 825-829 **Teacher Edition:** GQ 825, 827; SCB 798F; VL 824
ESS1.B	**Earth and the Solar System**	
	• The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.	**Student Edition:** 726, 761-765, 769-773, 777-781, 785-788 **Teacher Edition:** GQ 726, 762, 763, 769, 772, 779, 780, 781, 784, 787; IM 758H; SCB 758E-F; VL 765
	• The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.	**Student Edition:** 43-44 *Careers in Science* 767 **Teacher Edition:** GQ 43, 44; IM 38H; SCB 38E; VL 43

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Systems and System Models	
	• Models can be used to represent systems and their interactions.	**Student Edition:** Skill Practice 775 **Teacher Edition:** AC 763, 789
	Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**	
	• Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation.	**Student Edition:** MiniLab 726, 765, 827 Skill Practice 775

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS1	**Earth's Place in the Universe** *continued*	
MS-ESS1-3	**Analyze and interpret data to determine scale properties of objects in the solar system.** **Clarification Statement:** Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object's layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models. **Assessment Boundary:** Assessment does not include recalling facts about properties of the planets and other solar system bodies.	Refer to the Project-Based Activity titled "PBI: Planetary Bureau of Investigation"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Analyzing and Interpreting Data Analyzing data in 6-8 builds on K-5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.	
	• Analyze and interpret data to determine similarities and differences in findings.	**Student Edition:** MiniLab 765, 772 Skill Practice 775 Lab 790-791 **Teacher Edition:** AC 769; DI 709, 737
Disciplinary Core Ideas		
ESS1.B	**Earth and the Solar System**	
	• The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.	**Student Edition:** 707-712, 726, 761-765, 769-773, 776-781, 785-788 **Teacher Edition:** FF 763; GQ 726, 762, 763, 769, 770, 771, 772, 773, 778, 779, 780, 781, 784, 786, 787; IM 758H; SCB 758E-F; VL 708, 709, 773, 779, 780, 786
Crosscutting Concepts		
	Scale, Proportion, and Quantity	
	• Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.	**Student Edition:** MiniLab 726, 765, 772 Lab 790-791 **Teacher Edition:** AC 763, 789; TD 777, 785
	Connections to Engineering, Technology, and Applications of Science **Interdependence of Science, Engineering, and Technology**	
	• Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems.	**Student Edition:** MiniLab 685 **Teacher Edition:** DI 709

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS1	**Earth's Place in the Universe** *continued*	
MS-ESS1-4	**Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.** **Clarification Statement:** Emphasis is on how analyses of rock formations and the fossils they contain are used to establish relative ages of major events in Earth's history. Examples of Earth's major events could range from being very recent (such as the last Ice Age or the earliest fossils of homo sapiens) to very old (such as the formation of Earth or the earliest evidence of life). Examples can include the formation of mountain chains and ocean basins, the evolution or extinction of particular living organisms, or significant volcanic eruptions. **Assessment Boundary:** Assessment does not include recalling the names of specific periods or epochs and events within them.	Refer to the Project-Based Activity titled "Puzzles Rock!"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6-8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.	
	• Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	Refer to the Project-Based Activity titled "Puzzles Rock!"
Disciplinary Core Ideas		
ESS1.C	**The History of Planet Earth**	
	• The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.	**Student Edition:** 327-333, 337-341, 363-367 *Careers in Science* 335 **Teacher Edition:** GQ 332, 333, 336, 337, 338, 339, 341, 364, 367, 375; IM 324H, 360H; SCB 324E-F; VL 341
Crosscutting Concepts		
	Scale, Proportion, and Quantity	
	• Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.	**Student Edition:** Launch Lab 337 MiniLab 339 Skill Practice 343 Lab 352-353

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems**	
MS-ESS2-1	**Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.** **Clarification Statement:** Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials. **Assessment Boundary:** Assessment does not include the identification and naming of minerals.	Refer to the Project-Based Activity titled "Rockin' Around the Park"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Developing and Using Models Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	
	• Develop and use a model to describe phenomena.	**Student Edition:** Launch Lab 119, 133, 149 MiniLab 115, 120, 153, 238 Skill Practice 156 **Teacher Edition:** AC 133, 155; DI 127, 257; TD 83, 239
Disciplinary Core Ideas		
ESS2.A	**Earth's Materials and Systems**	
	• All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.	**Student Edition:** 50-54, 81-83, 114-115, 119-121, 126-129, 133-134, 136, 149-154, 238-239, 257, 532-533 *Careers in Science* 47 **Teacher Edition:** GQ 83, 114, 119, 128, 134, 532; SCB 38E, 108E, 214F, 406E, 524E; VL 83, 115, 121, 257
Crosscutting Concepts		
	Stability and Change	
	• Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale.	Refer to the Project-Based Activity titled "Rockin' Around the Park"

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems** *continued*	
MS-ESS2-2	**Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.** Clarification Statement: Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate.	Refer to the Project-Based Activity titled "When on Earth... ?"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6-8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.	
	• Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future.	**Student Edition:** *It's Your Turn* 117, 185, 267 Launch Lab 177, 179, 187, 196, 293 MiniLab 179, 198, 227, 256, 272, 375, 392 Skill Practice 194, 275 Lab 202-203
Disciplinary Core Ideas		
ESS2.A	**Earth's Materials and Systems**	
	• The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.	**Student Edition:** 42, 149-154, 160-161, 177-183, 187-192, 195-200, 217-221, 235-236, 252-257, 261-265, 268-274, 276-280, 306-314, 365-366, 372-373, 375, 379-381, 383, 388-389, 391 **Teacher Edition:** FF 129, 181; GQ 42, 182, 197, 269, 364, 379, 381, 383, 388, 389; IM 174H; SCB 146E-F, 174E-F, 214E-F, 250E-F; VL 178, 183, 199
ESS2.C	**The Roles of Water in Earth's Surface Processes**	
	• Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.	**Student Edition:** 176-183, 186-192, 195-200 **Teacher Edition:** GQ 174, 176, 177, 178, 179, 180, 186, 187, 188, 189, 190; VL 188, 189, 199, 200; SCB 174E-F

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Scale, Proportion, and Quantity	
	• Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.	**Student Edition:** Launch Lab 187, 196 MiniLab 179, 198, 227, 375, 392 Skill Practice 194 Lab 202-203 **Teacher Edition:** DI 199; TD 201

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DI	Differentiated Instruction	**MS**	Math Skills				

Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems** *continued*	
MS-ESS2-3	**Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.** **Clarification Statement:** Examples of data include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches). **Assessment Boundary:** Paleomagnetic anomalies in oceanic and continental crust are not assessed.	Refer to the Project-Based Activity titled "Movin' Mountains"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Analyzing and Interpreting Data Analyzing data in 6-8 builds on K-5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.	
	• Analyze and interpret data to provide evidence for phenomena.	**Student Edition:** Launch Lab 217 MiniLab 221, 227, 264 Lab 242-243
	Connections to Nature of Science **Scientific Knowledge is Open to Revision in Light of New Evidence**	
	• Science findings are frequently revised and/or reinterpreted based on new evidence.	**Student Edition:** Launch Lab 217 **Teacher Edition:** DI 219, 221; TD 219, 221
Disciplinary Core Ideas		
ESS1.C	**The History of Planet Earth**	
	• Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. *(HS.ESS1.C GBE), (secondary to MS-ESS2-3)*	**Student Edition:** 224-229, 233-236, 262-263 **Teacher Edition:** GQ 226, 227, 262, 263, 264; IM 214H; SCB 214E-F; VL 226, 236, 263, 265
ESS2.B	**Plate Tectonics and Large-Scale System Interactions**	
	• Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.	**Student Edition:** 217-221 *Careers in Science* 223 **Teacher Edition:** FF 219; GQ 217, 218, 219, 220; SCB 214E; VL 218, 219, 220
Crosscutting Concepts		
	Patterns	
	• Patterns in rates of change and other numerical relationships can provide information about natural systems.	**Student Edition:** MiniLab 227, 264 Skill Practice 231

LOCATION ABBREVIATION KEY

AC	Activity	**FF**	Fun Fact	**RS**	Reading Strategy	**TA**	Technology Activity
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CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems** *continued*	
MS-ESS2-4	**Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.** **Clarification Statement:** Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical. **Assessment Boundary:** A quantitative understanding of the latent heats of vaporization and fusion is not assessed.	Refer to the Project-Based Activity titled "Campers in the Mist"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Developing and Using Models Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	
	• Develop a model to describe unobservable mechanisms.	**Student Edition:** Launch Lab 451 **Teacher Edition:** TD 533
Disciplinary Core Ideas		
ESS2.C	**The Roles of Water in Earth's Surface Processes**	
	• Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land.	**Student Edition:** 455, 532-533 **Teacher Edition:** GQ 454, 455, 532, 533; IM 524H; SCB 524E; VL 454, 455, 533
	• Global movements of water and its changes in form are propelled by sunlight and gravity.	**Student Edition:** 455, 531-533, 581-583 **Teacher Edition:** GQ 532, 533, 583; SCB 524E, 560F; VL 533
Crosscutting Concepts		
	Energy and Matter	
	• Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.	**Teacher Edition:** TD 533

LOCATION ABBREVIATION KEY

AC	Activity	**FF**	Fun Fact	**RS**	Reading Strategy	**TA**	Technology Activity
CD	Cultural Diversity	**GQ**	Guiding Questions	**RWS**	Real-World Science	**TD**	Teacher Demo
CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems** *continued*	
MS-ESS2-5	**Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.** **Clarification Statement:** Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation). **Assessment Boundary:** Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.	Refer to the Project-Based Activity titled "Weather Wardrobe"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Planning and Carrying Out Investigations Planning and carrying out investigations in 6-8 builds on K-5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions.	
	• Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions.	**Student Edition:** MiniLab 492 Skill Practice 469 Lab 476-477 **Teacher Edition:** AC 471
Disciplinary Core Ideas		
ESS2.C	**The Roles of Water in Earth's Surface Processes**	
	• The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.	**Student Edition:** 427-430, 451-455, 459-467, 581-585 *Science and Society* 457 **Teacher Edition:** GQ 427, 430, 450, 454, 455, 460, 461, 462, 463, 584; IM 448H; SCB 448E-F, 560F; VL 428, 430, 455, 584, 585
ESS2.D	**Weather and Climate**	
	• Because these patterns are so complex, weather can only be predicted probabilistically.	**Student Edition:** 471-474, 509 **Teacher Edition:** GQ 471, 472, 474

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Cause and Effect	
	• Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**Student Edition:** Launch Lab 427, 451 MiniLab 453, 461 Skill Practice 469 Lab 476-477 **Teacher Edition:** AC 473; TD 453

LOCATION ABBREVIATION KEY

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS2	**Earth's Systems** *continued*	
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.** **Clarification Statement:** Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps and globes, or digital representations. **Assessment Boundary:** Assessment does not include the dynamics of the Coriolis effect.	Refer to the Project-Based Activity titled "As the Water Churns"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Developing and Using Models Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.	
	• Develop and use a model to describe phenomena.	**Student Edition:** Launch Lab 418 MiniLab 429, 501, 585 Skill Practice 425, 432, 494 Lab 440-441 **Teacher Edition:** AC 429, 583; TD 421
Disciplinary Core Ideas		
ESS2.C	**The Roles of Water in Earth's Processes**	
	• Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents.	**Student Edition:** 569, 583, 585 **Teacher Edition:** GQ 583, 585; SCB 560F; VL 583, 585
ESS2.D	**Weather and Climate**	
	• Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.	**Student Edition:** 417-423, 427-430, 466, 486-492, 495-501, 584 *Careers in Science* 503 **Teacher Edition:** GQ 427, 428, 429, 430, 488, 489, 584; SCB 406E-F; VL 421, 428, 430, 466, 489, 584
	• The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents.	**Student Edition:** 430, 466, 489, 500-501, 584-585 *Science and Society* 457 **Teacher Edition:** FF 489; GQ 430, 489, 500, 501, 584, 585; RWS 585; SCB 484E-F; VL 430, 500, 584

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Systems and System Models	
	• Models can be used to represent systems and their interactions-such as inputs, processes and outputs-and energy, matter, and information flows within systems.	**Student Edition:** Launch Lab 418 MiniLab 501, 585 Skill Practice 425, 494 Lab 440-441 **Teacher Edition:** AC 429, 583; DI 489; TD 421

LOCATION ABBREVIATION KEY

AC	Activity	**FF**	Fun Fact	**RS**	Reading Strategy	**TA**	Technology Activity
CD	Cultural Diversity	**GQ**	Guiding Questions	**RWS**	Real-World Science	**TD**	Teacher Demo
CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
DI	Differentiated Instruction	**MS**	Math Skills				

Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS3	**Earth and Human Activity**	
MS-ESS3-1	**Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.** Clarification Statement: Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).	Refer to the Project-Based Activity titled "Where in the world...?"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6-8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.	
	• Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	**Student Edition:** Lab 166-167 **Teacher Edition:** AC 625; DI 531
Disciplinary Core Ideas		
ESS3.A	**Natural Resources**	
	• Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.	**Student Edition:** 82-83, 94-98, 160-164, 409, 527-530, 607, 625-627, 643-649, 668-672 *Careers in Science* 85 **Teacher Edition:** GQ 96, 97, 163, 164, 406, 524, 528, 546, 547, 625, 626, 627, 643, 644, 645; SCB 524E, 640E-F; VL 96, 164, 529, 530, 644"
Crosscutting Concepts		
	Cause and Effect	
	• Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**Student Edition:** Lab 166-167
	Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World**	
	• All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.	**Student Edition:** Launch Lab 643 **Teacher Edition:** DI 97; TA 663; TD 97

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CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
DI	Differentiated Instruction	**MS**	Math Skills				

Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS3	**Earth and Human Activity** *continued*	
MS-ESS3-2	**Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.** Clarification Statement: Emphasis is on how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur suddenly and with no notice, and thus are not yet predictable. Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of the natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts).	Refer to the Project-Based Activity titled "Shake, Rattle, and Roll!"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Analyzing and Interpreting Data Analyzing data in 6-8 builds on K-5 and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.	
	• Analyze and interpret data to determine similarities and differences in findings.	**Student Edition:** MiniLab 198 Lab 202-203, 316-317 **Teacher Edition:** DI 301
Disciplinary Core Ideas		
ESS3.B	**Natural Hazards**	
	• Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.	**Student Edition:** 196-198, 302, 309, 314, 464-467 **Teacher Edition:** CIS 299; GQ 196, 198, 302, 309, 314, 465, 467; RWS 303; VL 302
Crosscutting Concepts		
	Patterns	
	• Graphs, charts, and images can be used to identify patterns in data.	**Student Edition:** Lab 202-203, 316-317 **Teacher Edition:** DI 301
	Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World**	
	• The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time.	Refer to the Project-Based Activity titled "Shake, Rattle, and Roll!"

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS3	**Earth and Human Activity** *continued*	
MS-ESS3-3	**Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*** **Clarification Statement:** Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).	Refer to the Project-Based Activity titled "Who's moving in next door?"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6-8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.	
	• Apply scientific principles to design an object, tool, process or system.	**Teacher Edition:** AC 665
Disciplinary Core Ideas		
ESS3.C	**Human Impacts on Earth Systems**	
	• Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.	**Student Edition:** 434-438, 508, 546-550, 589-594, 621, 646, 664-665 *Science and Society* 457, 615 *Careers in Science* 416 **Teacher Edition:** CD 193, 199, 437; GQ 191, 195, 435, 438, 508, 548, 549, 590, 591, 592, 646, 664; RWS 439; VL 191
	• Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.	**Student Edition:** 97, 434-438, 510, 546-550, 589-594, 643-649, 653-657, 672, 684 *Green Science* 667 **Teacher Edition:** CD 437, 439; CIS 657; GQ 510, 649, 662, 665

Note: Correlation continues on the next page

Earth & Space iScience continued

Code	Title/Text	Location
Crosscutting Concepts		
	Cause and Effect	
	• Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation.	**Student Edition:** Launch Lab 434, 589 MiniLab 437, 548, 594 Skill Practice 659 Lab 202-203, 674-675 *It's Your Turn* 615 **Teacher Edition:** DI 665; TA 647; TD 549
	Connections to Engineering, Technology, and Applications of Science	
	Influence of Science, Engineering, and Technology on Society and the Natural World	
	• The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time.	**Teacher Edition:** DI 437

LOCATION ABBREVIATION KEY

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CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
DI	Differentiated Instruction	**MS**	Math Skills				

Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS3	**Earth and Human Activity** *continued*	
MS-ESS3-4.	**Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.** **Clarification Statement:** Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.	Refer to the Project-Based Activity titled "7 Billion and Counting"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Engaging in Argument from Evidence Engaging in argument from evidence in 6-8 builds on K-5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).	
	• Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	**Student Edition:** Lab 632-633
Disciplinary Core Ideas		
ESS3.C	**Human Impacts on Earth Systems**	
	• Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.	**Student Edition:** 97, 434-438, 510, 546-550, 589-594, 627, 630, 643-649, 653-657, 684 *Green Science* 667 **Teacher Edition:** CIS 657; CD 437, 439; FF 645; GQ 510, 627; SCB 604E-F
Crosscutting Concepts		
	Cause and Effect	
	• Cause and effect relationships may be used to predict phenomena in natural or designed systems.	**Student Edition:** Lab 632-633
	Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World**	
	• All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.	**Student Edition:** Lab 632-633 **Teacher Edition:** TA 631
	Connections to Nature of Science **Science Addresses Questions About the Natural and Material World**	
	• Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes.	**Student Edition:** Lab 632-633

LOCATION ABBREVIATION KEY

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Earth & Space iScience continued

Code	Title/Text	Location
MS-ESS3	**Earth and Human Activity** *continued*	
MS-ESS3-5	**Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.** **Clarification Statement:** Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.	Refer to the Project-Based Activity titled "Question the Experts"
The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education:*		
Science and Engineering Practices		
	Asking Questions and Defining Problems Asking questions and defining problems in grades 6-8 builds on grades K-5 experiences and progresses to specifying relationships between variables, and clarifying arguments and models.	
	• Ask questions to identify and clarify evidence of an argument.	**Student Edition:** Launch Lab 505 MiniLab 509 Lab 512-513 **Teacher Edition:** DI 507
Disciplinary Core Ideas		
ESS3.D	**Global Climate Change**	
	• Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.	**Student Edition:** 506-510, 592-594, 612-613, 621, 627, 630 **Teacher Edition:** FF 507; GQ 505, 506, 507, 509, 510, 592, 593, 612; IM 604H; SCB 484F; VL 505, 507, 593, 612
Crosscutting Concepts		
	Stability and Change	
	• Stability might be disturbed either by sudden events or gradual changes that accumulate over time.	**Student Edition:** Launch Lab 505 MiniLab 509 Skill Practice 659 **Teacher Edition:** DI 509

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CIS	Careers in Science	**IWB**	Interactive Whiteboard Strategy	**SCB**	Science Content Background	**VL**	Visual Literacy
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