K – 5 MLSE - NGSS Crosswalk

(Draft)

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Kindergarten		Next Generation Science Standards	
	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
K.PS1.A.1	Make qualitative observations of the physical properties of objects (i.e., size, shape, color, mass).		N/A
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
K.PS2.A.1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.]	**K-PS2-1.**	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [*Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.*]
K.PS2.A.2	Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop).		
		K-PS2-2.	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.* [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [*Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.*]
	PS3 - Energy		
	A. Definitions of Energy		
K.PS3.A.1	Make observations to determine the effect of sunlight on Earth's surface.	**K-PS3-1.**	Make observations to determine the effect of sunlight on Earth's surface. [Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water.] [*Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.*]
	B. Conservation of Energy and Energy Transfer		
K.PS3.B.1	With prompting and support, use tools and materials to design and build a structure that will reduce the warming effect of	**K-PS3-2.**	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* [Clarification

	sunlight on an area		Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]
	LS1 - From Molecules to Organisms: Structure and Processes		
	C. Organization for Matter and Energy Flow in Organisms		
K.LS1.C.1	Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]	**K-LS1-1.**	Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]
	ESS1 - Earth's Place in the Universe		
	B. **Earth and the Solar System**		
K.ESS1.B.1	Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]	**1-ESS1-2.**	**Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [*Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.*]
	ESS2 - Earth's Systems		
	D. **Weather and Climate**		
K.ESS2.D.1	Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.]	**K-ESS2-1.**	Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [*Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.*]
	E. **Biogeology**		
K.ESS2.E.1	With prompting and support, construct an argument using evidence for how plants and animals (including but not limited to humans) can change the environment to meet their needs.	**K-ESS2-2.**	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

	ESS3 - Earth and Human Activity		
	A. **Natural Resources**		
K.ESS.3.A.1	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	**K-ESS3-1.**	Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]
	B. **Natural Hazards**		
		K-ESS3-2.	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* [Clarification Statement: Emphasis is on local forms of severe weather.]
K.ESS3.B.1	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**K-ESS3-3.**	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
K.ETS1.A.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**K-2-ETS1-1.**	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	B. **Developing Possible Solutions**		
K.ETS1.B.1	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**K-2-ETS1-2.**	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	C. **Optimizing the Solution Process**		
K.ETS1.C.1	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**K-2-ETS1-3.**	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 1		Next Generation Science Standards	
	Physical Science		
	PS3 - Energy		
	A. Definitions of Energy		
1.PS3.A.1	Identify the source of energy that causes an increase in the temperature of an object (e.g., Sun, stove, flame, light bulb).		
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
1.PS4.A.1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]	**1-PS4-1.**	**Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.** [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]
		1-PS4-2.	**Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.**[Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]
		1-PS4-3.	**Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.** [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [*Assessment Boundary: Assessment does not include the speed of light.*]
	C. **Information Technologies and Instrumentation**		
1.PS4.C.1	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.]	**1-PS4-4.**	**Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*** [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.] [*Assessment Boundary: Assessment does not include technological details for how communication devices work.*]

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 1		Next Generation Science Standards	
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		
1.LS1.A.1	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]	**1-LS1-1.**	**Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*** [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]
		1-LS1-2.	**Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.**[Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]
	LS3 - Heredity: Inheritance and Variation of Traits		
	A. **Inheritance of Traits**		
1.LS3.A.1	Make observations to construct an evidence based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.]	**1-LS3-1.**	**Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like,their parents.** [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [*Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.*]
	ESS1 - Earth's Place in the Universe		
	A. **The Universe and its Stars**		
1.ESS1.A.1	Describe the presence of the Sun, Moon, and stars in the sky over time.		

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 1		Next Generation Science Standards	
1.ESS1.A.2	Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.]	**1-ESS1-1.**	**Use observations of the sun, moon, and stars to describe patterns that can be predicted.** [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [*Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.*]
	SEE **K.ESS1.B	**1-ESS1-2.**	**Make observations at different times of year to relate the amount of daylight to the time of year.** [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [*Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.*]
	ESS2 - Earth's Systems		
	D. **Weather and Climate**		
1.ESS2.D.1	Identify patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation).		N/A
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
1.ETS1.A.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**K-2-ETS1-1.**	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	B. **Developing Possible Solutions**		
1.ETS1.B.1	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**K-2-ETS1-2.**	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	C. **Optimizing the Solution Process**		
1.ETS1.C.1	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**K-2-ETS1-3.**	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 2		Next Generation Science Standards	
	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
2.PS1.A.1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]	**2-PS1-1.**	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.[Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]
2.PS1.A.2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.]	**2-PS1-2.**	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [*Assessment Boundary: Assessment of quantitative measurements is limited to length.*]
		2-PS1-3.	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]
		2-PS1-4.	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
2.PS2.A .1	Analyze data to determine how the motion of an object changed by an applied force or the mass of an object.		N/A
	PS3 - Energy		
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
2.PS4.A.1	Plan and conduct investigations to provide evidence that changes in vibration create change in sound.		N/A
	LS2 - Ecosystems: Interactions, Energy, and Dynamics		

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 1		Next Generation Science Standards	
	A. Interdependent Relationships in Ecosystems		
2.LS2.A.1	Plan and conduct investigations on the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water).		
		2-LS2-1.	Plan and conduct an investigation to determine if plants need sunlight and water to grow. [*Assessment Boundary: Assessment is limited to testing one variable at a time.*]
2.LS2.A.2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	**2-LS2-2.**	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*
	LS4 – Biological Evolution: Unity and Diversity		
	A. Interdependent Relationships in Ecosystems		
	N/A	**2-LS4-1.**	Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [*Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.*]
	ESS1 - Earth's Place in the Universe		
	C. **The History of Planet Earth**		
2.ESS1.C.1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.]	**2-ESS1-1.**	Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [*Assessment Boundary: Assessment does not include quantitative measurements of timescales.*]
	ESS2 - Earth's Systems		
	A. **Earth Materials and Systems**		
2.ESS2.A.1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]	**2-ESS2-1.**	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*[Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]

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	B. Plate Tectonics and Large-Scale Systems		
2.ESS2.B.1	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	**2-ESS2-2.**	Develop a model to represent the shapes and kinds of land and bodies of water in an area. [*Assessment Boundary: Assessment does not include quantitative scaling in models.*]
	C. **The Role of Water in Earth's Surface Processes**		
2.ESS2.C.1	Obtain information to identify where water is found on Earth and that it can be solid or liquid.	**2-ESS2-3.**	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
2.ETS1.A.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	**K-2-ETS1-1.**	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
	B. **Developing Possible Solutions**		
2.ETS1.B.1	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	**K-2-ETS1-2.**	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
	C. **Optimizing the Solution Process**		
2.ETS1.C	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**K-2-ETS1-3.**	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

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	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
3.PS1.A.1	Predict and investigate that water can change from a liquid to a solid (freeze), and back again (melt), or from a liquid to a gas (evaporation), and back again (condensation) as the result of temperature changes.		N/A
	PS1 - Matter and Its Interactions		
	B. Chemical Reactions		
3.PS1.B.1	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.		
	PS2 - Motion and Stability: Forces and Interactions		
	B. Types of Interaction		
	SEE 4.PS2.A.2	**3-PS2-1.**	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [*Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.*]
	SEE 4.PS2.A.1	**3-PS2-2.**	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predictfuture motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.] [*Assessment Boundary: Assessment does not include technical terms such as period and frequency.*]
3.PS2.B.1	Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the	**3-PS2-3.**	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one

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	force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.]		magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [*Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.*]
		3-PS2-4.	Define a simple design problem that can be solved by applying scientific ideas about magnets.* [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		
	B. Growth and Development of Organisms		
3.LS1.B.1	Develop a model to compare and contrast observations on the life cycle of different plants and animals. [Clarification Statement: Changes organisms go through during their life form a pattern.]	**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. [Clarification Statement: Changes organisms go through during their life form a pattern.] [*Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*]
		3-LS2-1.	Construct an argument that some animals form groups that help members survive.
	LS3 - Heredity: Inheritance and Variation of Traits		
	A. **Inheritance of Traits**		
3.LS3.A.1	Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]		
		3-LS3-1.	Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification

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			Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [*Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.*]
		3-LS3-2.	Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]
	B. **Variation of Traits**		
3.LS3.B.1	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and finding mates. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]	**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. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]
3.LS3.C.1	Construct an argument with evidence that in a particular ecosystem some organisms — based on structural adaptations or behaviors — can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	**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. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]
	D. Biodiversity and Humans		
3.LS3.D.1	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. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]	**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.* [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [*Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.*]

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	ESS2 - Earth's Systems		
	D. **Weather and Climate**		
3.ESS2.D.1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.]	**3-ESS2-1.**	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [*Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.*]
3.ESS2.D.2	Obtain and combine information to describe climates in different regions of the world.	**3-ESS2-2.**	Obtain and combine information to describe climates in different regions of the world.
	ESS3 - Earth and Human Activity		
	B. Natural Hazards		
3.ESS3.B.1	Make a claim about the merit of an existing design solution (e.g. levies, tornado shelters, sea walls, etc.) that reduces the impacts of a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	**3-ESS3-1.**	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lighting rods.]
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
3.ETS1.A.1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**3-5-ETS1-1.**	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
	B. **Developing Possible Solutions**		
3.ETS1.B.1	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**3-5-ETS1-2.**	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
	C. Optimizing the Solution Process		
3.EST1.C.1	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved	**3-5-ETS1-3.**	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 4		Next Generation Science Standards	
	Physical Science		
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
4.PS2.A.1	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	**3-PS2-2.**	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predictfuture motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.] [*Assessment Boundary: Assessment does not include technical terms such as period and frequency.*]
4.PS2.A.2	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.]	**3-PS2-1.**	**Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.** [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [*Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.*]
	B. Types of Interaction		
4.PS2.B.1	Plan and conduct a fair test to compare and contrast the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth).		N/A
4.PS2.B.2	Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object.		N/A
	PS3 - Energy		
	A. Definitions of Energy		
4.PS3.A.1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	**4-PS3-1.**	**Use evidence to construct an explanation relating the speed of an object to the energy of that object.** [*Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.*
	B. Conservation of Energy and Energy Transfer		

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 3		Next Generation Science Standards	
4.PS3.B.1	Provide evidence to construct an explanation of an energy transformation(e.g. temperature change, light, sound, motion, and magnetic effects)		N/A
		4-PS3-2.	**Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.** [*Assessment Boundary: Assessment does not include quantitative measurements of energy.*]
		4-PS3-3.	Ask questions and predict outcomes about the changes in energy that occur when objects collide. [Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.] [Assessment Boundary: Assessment does not include quantitative measurements of energy.]
4.PS3.B.2	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.]	**4-PS3-4.**	**Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*** [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.] [*Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.*]
	C. Relationship Between Energy and Forces		
4.PS3.C.1	Use models to explain that simple machines change the amount of effort force and/or direction of force. [Clarification Statement: memorization of a simple machine is not the focus, concept builds on the application of force and motion .]		
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
4.PS4.A.1	Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move. (Boundary: The terms amplitude and wavelength should not be assessed.) [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.]	**4-PS4-1.**	**Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.** [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.] [*Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, non-periodic waves, or quantitative models of amplitude and wavelength.*]

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 3		Next Generation Science Standards	
		4-PS4-2.	**Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.**[*Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.*]
		4-PS4-3.	**Generate and compare multiple solutions that use patterns to transfer information.*** [Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse code to send text.]
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		
4.LS1.A.1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.]	**4-LS1-1.**	**Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.** [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.] [*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*]
	D. Information Processing		
4.LS1.D.1	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. [Clarification Statement: Emphasis is on systems of information transfer.]	**4-LS1-2.**	**Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.** [Clarification Statement: Emphasis is on systems of information transfer.] [*Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.*]
	ESS1 - Earth's Place in the Universe		
	C. **The History of Planet Earth**		
4.ESS1.4	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in	**4-ESS1-1.**	**Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.** [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 3		Next Generation Science Standards	
	the walls and a river in the bottom, indicating that over time a river cut through the rock.]		rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.] [*Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.*]
	ESS2 - Earth's Systems		
	A. **Earth Materials and Systems**		
4.ESS2.A.1	Plan and conduct scientific investigations or simulations to provide evidence how natural processes (e.g. weathering and erosion) shape Earth's surfaces.		N/A
		4-ESS2-1.	**Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.** [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] [*Assessment Boundary: Assessment is limited to a single form of weathering or erosion.*]
	B. Plate Tectonics and Large-Scale Systems		
4.ESS2.B.1	Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]	**4-ESS2-2.**	**Analyze and interpret data from maps to describe patterns of Earth's features.** [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]
	ESS3 - Earth and Human Activity		
	A. **Natural Resources**		
	N/A	**4-ESS3-1.**	**Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.** [Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.]

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 3		Next Generation Science Standards	
4.ESS3.A.1	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.]	**4-ESS3-2.**	**Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*** [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.] [*Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.*]
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
4.ETS1.A.1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**3-5-ETS1-1.**	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
	B. **Developing Possible Solutions**		
4.ETS1.B.1	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**3-5-ETS1-2.**	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
	C. Optimizing the Solution Process		
4.ETS1.C	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**3-5-ETS1-3.**	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 5		Next Generation Science Standards	
	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
5.PS1.A.1	Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.]	**5-PS1-1.**	Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]
5.PS1.A.2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.]	**5-PS1-2.**	**Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.** [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [*Assessment Boundary: Assessment does not include distinguishing mass and weight.*]
	PS1 - Matter and Its Interactions		
	B. Chemical Reactions		
5.PS1.B.1	Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting, filtration, magnets, screening).		
5.PS1.B.2	Conduct an investigation to determine whether the combining of two or more substances results in new substances.	**5-PS1-4.**	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
	PS2 - Motion and Stability: Forces and Interactions		
	B. Types of Interaction		
5.PS2.B.1	Support an argument that the gravitational force exerted by Earth on objects is directed toward the planet's center. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.]	**5-PS2-1.**	**Support an argument that the gravitational force exerted by Earth on objects is directed down.** [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [*Assessment Boundary: Assessment does not include mathematical representation of gravitational force.*]

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 5		Next Generation Science Standards	
	PS3 - Energy		
	D. Energy in Chemical Process and Everyday		
5.PS3.D.1	Use models to describe that energy stored in food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. [Clarification Statement: Examples of models could include diagrams, and flow charts.]	**5-PS3-1.**	**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.** [Clarification Statement: Examples of models could include diagrams, and flow charts.]
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
5.PS4.A.1	Develop a model to describe that objects can be seen only when light is reflected off them or when they produce their own light.	**4-PS4-2.**	**Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.**[*Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.*]
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		
5.LS1.A.1	Compare and contrast the major organs/organ systems (e.g. support, reproductive, digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes.		
	C. Organization for Matter and Energy Flow in Organisms		
5.LS1.C.1	Support an argument that plants get the materials (i.e. carbon dioxide, water, sunlight) they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. Clarification Statement: [Do not assess photosynthesis.]	**5-LS1-1.**	**Support an argument that plants get the materials they need for growth chiefly from air and water.** [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]
	LS2 - Ecosystems: Interactions, Energy, and Dynamics		
	B. Cycles of matter and Energy Transfer in Ecosystems		
5.LS2.B	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is	**5-LS2-1.**	**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.**[Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 5		Next Generation Science Standards	
	changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.]		changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]
	ESS1 - Earth's Place in the Universe		
	A. **The Universe and its Stars**		
5.ESS1.A.1	Support an argument that relative distances from Earth affects the apparent brightness of the sun compared to other stars.	**5-ESS1-1.**	**Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.**[*Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).*]
	B. **Earth and the Solar System**		
5.ESS1.B.1	Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]		
5.ESS1.B.2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.]	**5-ESS1-2.**	**Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [*Assessment Boundary: Assessment does not include causes of seasons.*]
	ESS2 - Earth's Systems		
	A. **Earth Materials and Systems**		
5.ESS2.A.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.]	**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.*]

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Grade 5		Next Generation Science Standards	
	C. **The Role of Water in Earth's Surface Processes**		
5.ESS2.C.1	Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	**5-ESS2-2.**	**Describe and graph the amounts and percentages of 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.*]
	ESS3 - Earth and Human Activity		
	C. **Human Impacts on Earth's Systems**		
5.ESS3.C.1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**5-ESS3-1.**	**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**
	ETS1 - Engineering Design		
	A. **Defining and Delimiting Engineering Problems**		
5.ETS1.A.1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	**3-5-ETS1-1.**	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**
	B. **Developing Possible Solutions**		
5.ETS1.B.1	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	**3-5-ETS1-2.**	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**
	C. Optimizing the Solution Process		
5.ETS1.C.1	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**3-5-ETS1-3.**	**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**