

New York State Science Learning Standards Dynamic Earth

5th Grade

- **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.
- **5-ESS2-1.** Develop a model using an example to describe ways to geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Disciplinary Core Ideas:

- PS1.A: Structure and Properties of Matter
- PS3.D: Energy in Chemical Processes and Everyday Life
- LS2.A: Interdependent Relationships in Ecosystems
- LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- ESS2.A: Earth Materials and Systems
- ESS3.C: Human Impacts on Earth Systems

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Scale, Proportion, and Quantity
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems
- Systems and System Models
- Energy and Matter

Middle School

- **MS-LS1-6.** Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- **MS-LS2-3.** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- **MS-ESS2-2.** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying temporal and spatial scales.
- **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.
- **MS-ESS2-5.** Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
- **MS-ESS3-5.** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Disciplinary Core Ideas:

- PS2.B: Types of Interactions
- PS3.B: Conservation of Energy and Energy Transfer
- LS1.C: Organization for Matter and Energy Flow in Systems
- LS2.B: Cycle of Matter and Energy Transfer in Ecosystems
- ESS1.B: Earth and the Solar System
- ESS2.A: Earth's Materials and Systems
- ESS2.B: Plate Tectonics and Large-Scale System Interactions



Middle School (cont'd)

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Scale, Proportion, and Quantity
- Systems and System Models
- Energy and Matter
- Interdependence of Science, Engineering, and Technology
- Influence of Science, Engineering, and Technology on the Natural World

High School

- **HS-ESS2-2.** Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to Earth's systems.
- **HS-ESS2-4.** Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.
- **HS-ESS2-6.** Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
- **HS-ESS2-8.** Evaluate data and communicate information to explain how the movement and interaction of air masses result in changes in weather conditions.
- **HS-ESS3-5.** Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
- **HS-LS2-5.** Develop a model to illustrate the role of various processes in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

Disciplinary Core Ideas:

- PS3.B: Conservation of Energy and Energy Transfer
- PS3.D: Energy in Chemical Processes and Everyday Life
- LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- ESS1.A: The Universe and Its Stars
- ESS2.A: Earth Materials and Systems
- ESS2.B: Plate Tectonics and Large-Scale System Interactions
- ESS2.C: The Roles of Water in Earth's Surface Processes
- ESS2.D: Weather and Climate
- ESS3.C: Human Impacts on Earth Systems
- ESS3.D: Global Climate Change

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Energy and Matter
- Stability and Change
- Systems and System Models
- Influence of Science, Engineering, and Technology on Society and the Natural World
- Interdependence of Science, Engineering, and Technology