

Brunswick School Department  
Science  
Grade 8: Earth Systems

Adopted:

**Unit Overview**

This unit examines the relationship between most of Earth's systems and how the cycling between them moves energy and materials to create short and long term changes to the Earth. Particular emphasis is placed on the cycling of systems through convection currents in the Earth's mantle, the atmosphere and the oceans. This follows the Earth History Unit and builds a solid foundation for understanding the flow of matter on Earth.

**Essential Understandings**

- The Earth cycles materials (i.e. rock cycle, hydrologic cycle, atmospheric cycle, cryospheric cycle)
- Materials in the Earth's lithosphere are moved around through convection currents.
- Plate tectonics is a theory that is synthesized into the Continental Drift theory.
- Atmospheric and oceanic circulation and density have a relationship to the formation of regional climates.
- The Earth cycles materials by using and giving off energy.
- Short and long term changes affect the cycling of matter on the Earth.

**Priority Standards and Performance Indicators**

(as based on Next Generation Science Standards)

P.S. S-5 Demonstrate an understanding of stability and change.

d. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. (For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand).

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**Next Generation Science Standards Addressed in this Unit**

- 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-ESS3-1. 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.
- 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
- MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

**Examples of Formative / Summative Assessments**

- Labs
- Quizzes
- Writing Prompts
- Earth’s Mass probe (cycling of matter)
- Fossil Secrets in the Rockies

**Sample Texts and Materials/Resources**

Astrobiology Text (required)