

CLOUD LAB STANDARDS ALIGNMENT

Next Generation Earth and Space Science Performance Standards

The following performance standards are addressed by the Cloud Lab research activities*:

Middle School

Earth's Systems (MS-ESS2)

- ✓ 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-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.

Earth and Human Activity (MS-ESS3)

- ✓ 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.

High School

Earth's Systems (HS-ESS2)

- ✓ 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-ESS2-5—Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

Earth and Human Activity (HS-ESS3)

- ✓ HS-ESS3-1—Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
- ✓ 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.

*Please note standards are referenced from the Next Generation Science Standards.
Find the full standards here: www.nextgenscience.org

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Next Generation Science Standards

Cloud Lab Components

Three Dimensions	Clouds Up Close	Clouds & Weather	Clouds & Climate	Research Challenge
Scientific & Engineering Practices				
1. Asking questions (for science) and defining problems				✓
2. Developing and using models				✓
3. Planning and carrying out investigations				✓
4. Analyzing and interpreting data				✓
6. Constructing explanations (for science) and designing solutions				✓
7. Engaging in argument from evidence				✓
8. Obtaining, evaluating, and communicating information				✓
Crosscutting Concepts				
1. Patterns	✓			✓
2. Cause and effect: Mechanism and explanation	✓	✓	✓	
3. Scale, proportion, and quantity	✓		✓	✓
4. Systems and system models		✓	✓	✓
5. Energy and matter: Flows, cycles, and conservation	✓	✓	✓	✓
6. Structure and function	✓			✓
7. Stability and change		✓	✓	✓
Content Areas				
<i>Physical Sciences</i>				
– PS1: Structure and Properties of Matter	✓	✓		
– PS2: Motion and stability: Forces and interactions				
– PS3: Energy	✓	✓	✓	
– PS4: Waves and their applications in technologies for information transfer				✓
<i>Earth and Space Sciences</i>				
– ESS1: Earth's place in the universe	✓	✓	✓	
– ESS2: Earth's Systems	✓	✓	✓	✓
– ESS3: Earth and human activity	✓	✓	✓	✓
<i>Engineering, Technology, and Applications of Science</i>				
– ETS1: Engineering design				✓
– ETS2: Links among engineering, technology, science, and society				✓