

# Earth Odyssey

## **NGSS:**

**MS-ETS1-2:** Evaluate competing design solutions using a systemic process to determine how well they meet criteria and constraints of the problem.

**MS-ETS1-3:** Analyze data from tests to determine similarities and differences among several design solutions to identify best characteristics of each can be combined into a new solution to better meet the criteria for success.

## **CCS: (Common Core Standards)**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**WHST.6-8.7:** Conduct short research projects to answer a question including a self-generated question, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

**RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**RI.7.1:** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

## **ATMO (Atmosphere)**

### **NGSS:**

**MS-PS1-3:** gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

**MS-ESS2-5:** Collect data to provide evidence for how the motions and complex interaction 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.

**CCS:**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical text texts attending to the precise details of explanations or descriptions.

**SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection and research.

**Bio (Biology)**

**NGSS:**

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

**CCS:**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical text texts attending to the precise details of explanations or descriptions.

**SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **CRYO (Cryology)**

### **NGSS:**

**MS-PS3-3:** Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

**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 in the past century.

### **CCS:**

**RST.6-8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical text texts attending to the precise details of explanations or descriptions.

**SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **NRG (Energy)**

### **NGSS:**

**MS-ESS1-1:** Develop and use model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

### **CCS:**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical text texts attending to the precise details of explanations or descriptions.

## **GEO (Geology)**

### **NGSS:**

**MS-PS3-3:** Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

**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.

### **CCS:**

**RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **SAT (Satellite)**

### **NGSS:**

**MS-ETS1-2:** Evaluate competing design solutions using a systemic process to determine how well they meet criteria and constraints of the problem.

**MS-ETS1-3:** Analyze data from tests to determine similarities and differences among several design solutions to identify best characteristics of each can be combined into a new solution to better meet the criteria for success.

### **CCS:**

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical text texts attending to the precise details of explanations or descriptions.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **OCEAN**

### **NGSS:**

**MS-ESS2-4:** Develop a model to describe the cycling of water through the Earth's systems driven by energy from the sun and the force of gravity.

**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 in the past century.

### **CCS:**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **SW (Space Weather)**

### **NGSS:**

**MS-PS2-5:** Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even through the objects are not in contact.

### **CCS:**

**WHST.6-8.7:** Conduct short research projects to answer a question including a self-generated question, drawing on several sources and generating additional related and focused questions that allow for multiple avenues of exploration.

**SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.

## **Pre-Mission Lessons**

### **The Importance of the Sun:**

#### **NGSS:**

**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 the seasons.

**MS-ETS1-1:** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

#### **CCS:**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

**WHST.6-8.7:** Conduct short research projects to answer a question including a self-generated question, drawing on several sources and generating additional related and focused questions that allow for multiple avenues of exploration.

## **Earth's Atmosphere & Carbon Dioxide**

#### **NGSS:**

**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 in the past century.

**CCS:**

**6.EE.B.6:** Use variables to represent numbers and write expressions when solving a real world or mathematical problem; understand that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

**RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.

**MP.2:** Reason abstractly and quantitatively.

## **The Water Cycle:**

**NGSS:**

**MS-ESS2-4:** Develop a model to describe the cycling of water through the Earth's systems driven by energy from the sun and the force of gravity.

**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.

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

**CCS:**

**SL.8.5:** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

**MP.2:** Reason abstractly and quantitatively.

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

# **Remote Sensing and Communications**

## **NGSS**

**MS-ESS2-4:** Develop a model to describe the cycling of water through the Earth's systems driven by energy from the sun and the force of gravity.

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

## **CCS**

**RST.6-8.1:** Cite specific textual evidence to support analysis of science and technical texts.

**WHST.6-8.1:** Write arguments focused on discipline content.

**WHST.6-8.9:** Draw evidence from informational texts to support analysis, reflection, and research.