Stackable Instructionally-embedded Portable Science (SIPS) Assessments Project

**Grade 5 Science
Unit 3 Range Performance Level Descriptors
Earth Systems and the Solution of Water Problems
September 2023**

Grade 5 Unit 3 EOU Assessment Performance Expectations

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.]*

5-ESS2-2.Describe and graph the amounts of salt 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.]*

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

3-5ETS1-1. Define a simple design problem that can be solved through the development of an object, tool, process, or system and include several criteria for success and constraints on materials, time, or cost.

3-5ETS1-2. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.

3-5ETS1-3. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.

SIPS Grade 5 Unit 3 Range Performance Level Descriptors

SIPS tasks require students to apply and transfer their science learning through engagement with science and engineering practices (SEPs) and application of the crosscutting concepts (CCCs) to demonstrate their understanding of disciplinary core ideas (DCIs) to make sense of and explain phenomena and/or to design solutions to phenomena-rooted engineering problems.

Level 1	Level 2	Level 3 (Target)	Level 4
A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:	A student performing at this level produces evidence of three-dimensional science learning by their ability to:
• use a provided model to identify Earth's major systems (geosphere, biosphere, hydrosphere, and atmosphere).	• use models to identify Earth's major systems (geosphere, biosphere, hydrosphere, and atmosphere), categorize components that make up those spheres, and identify interactions between two of the four systems.	• develop and use models to identify Earth's major systems (geosphere, biosphere, hydrosphere, and atmosphere), categorize components that make up those spheres, and develop complete explanations of interactions between two systems including at least three of the four systems.	• develop and use accurate and complete models to identify Earth's major systems (geosphere, biosphere, hydrosphere, and atmosphere), categorize multiple components that make up those spheres, and develop scientifically accurate and complete explanations of how the Earth's systems interact.
• identify which Earth systems are interacting in a provided model or scenario representing a specific event or change to Earth's surface.	• identify relationships between components of a model or scenario to describe the result of the interaction between two of Earth's systems.	• explain relevant relationships between components of a model or scenario to describe ways in which two or more of Earth's systems interact to result in a specific event or to affect Earth's surface.	• explain multiple, relevant relationships between components of a model and scenario to describe ways in which Earth's systems interact to result in a specific event and affect Earth's surface.
• use organized data or a graphical representation to identify the relative amounts of total salt water and total fresh water in each of Earth's reservoirs.	• use data about the distribution of salt and fresh water on Earth in graphical representations to describe the relative amounts of each in Earth's reservoirs.	• represent data about the distribution of salt and fresh water on Earth in graphical representations to describe the relative amounts (e.g., volume or percentages) of each in Earth's reservoirs (e.g., oceans, lakes, glaciers, ground water) to provide evidence about the distribution of fresh water and salt water on Earth.	• represent data about the distribution of salt and fresh water on Earth in multiple ways to describe the relative amounts (e.g., volume or percentages) of each in Earth's reservoirs (e.g., oceans, lakes, glaciers, ground water) to provide evidence about the distribution of fresh water and salt water on Earth in consideration of scale and proportion.

• use provided information to determine how human activity affects Earth's environment (i.e., positively, or negatively).	• use provided information to describe how human activity, either positively or negatively, affects the Earth's resources or environments.	• use information and data to determine whether a human activity (e.g., in agriculture, industry, everyday life) positively or negatively affects Earth's resources and environments including a description of how the activity interacts with the environment.	• use information and data to predict how human activity (e.g., in agriculture, industry, everyday life) positively or negatively affects Earth's resources and environments including a description of specific aspects of the activity and their interactions with the environment.
• identify a solution to a problem related to human activity and Earth's resources.	• identify a design problem related to Earth's resources to generate a solution based on some of the criteria and constraints of the design problem and describe how the solution protects Earth's resources.	• define a design problem related to Earth's resources to generate and compare solutions based on criteria and constraints of the design problem and describe how the solution functions to protect Earth's resources.	• define a design problem related to Earth's resources to generate and compare solutions based on criteria and constraints of the design problem and generate a procedure to evaluate how well the solution functions to protect Earth's resources.