Developing & Using Models Activity #5: Measuring Albedo and Climate Modeling

Grades Targeted: High School

General Objective: Students manipulate clouds, albedo and carbon dioxide within a computerized atmospheric model.

Students investigate and analyze each variable's impact on global climate temperature.

Brief Details: Lessons leading up to this modeling activity: Students complete the "Radiant Energy Lab" and "Reflection and Absorption Lab" as needed to build background knowledge regarding energy conversion prior to this activity (lessons included in the resources linked below).

- Measuring Albedo and Climate Modeling Lesson Resources (via Google Drive)

Before launching the "Measuring Albedo Simulation" I also play a short NASA video regarding Polar Ice Modeling:

Related Crosscutting Concepts:

- Patterns
- Cause & Effect
- Scale, Proportion & Quantity
- Systems & System Models
- Energy & Matter
- Stability & Change

Related Disciplinary Core Ideas:

- Core Idea PS1: Matter and Its Interactions
    - PS1.A: Structure and Properties of Matter

- Core Idea PS2: Motion and Stability: Forces and Interactions
    - PS2.A: Forces and Motion
    - PS2.B: Types of Interactions
    - PS2.C: Stability and Instability in Physical Systems
- Core Idea PS3: Energy
    - PS3.A: Definitions of Energy
    - PS3.B: Conservation of Energy and Energy Transfer
    - PS3.C: Relationship Between Energy and Forces
    - PS3.D: Energy in Chemical Processes and Everyday Life
- Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics
    - LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- Core Idea ESS1: Earth’s Place in the Universe
    - ESS1.B: Earth and the Solar System
- Core Idea ESS2: Earth’s Systems
    - ESS2.C: The Roles of Water in Earth’s Surface Processes
    - ESS2.D: Weather and Climate
- Core Idea ESS3: Earth and Human Activity
    - ESS3.C: Human Impacts on Earth Systems
    - ESS3.D: Global Climate Change