My NASA Data - Mini Lesson/Activity Valuing Albedo

Grade Band

• 6-8

Time

• 30 minutes

Overview

Students will watch a short video that explains albedo and how it plays an important role in Earth's Energy Budget. Applying what they learned from the video, students will analyze a bar graph that lists the albedos of common surfaces found on Earth to answer critical thinking questions.

Student Directions

Albedo is the fraction of light that a surface reflects. If it is all reflected, the albedo is equal to 1. If 30% is reflected, the albedo is 0.3. The albedo of Earth's surface (atmosphere, ocean, land surfaces) determines how much incoming solar energy, or light, is immediately reflected back to space. This can have an impact on climate.

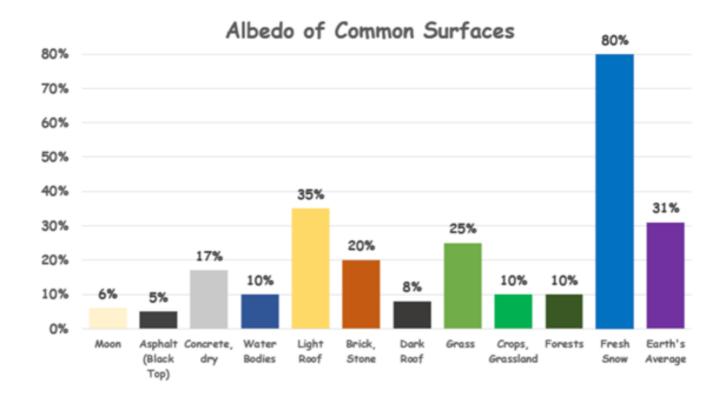
Review the video Climate Bits: Albedo and answer the following questions.

Video: ClimateBits: Albedo

ClimateBits: Albedo	https://www.	youtube.com/watch?v=d1U7X1k3d0Y	Source: ClimateBits

Steps:

- 1. Check with your instructor on how to submit your answers.
- 2. How does albedo play an important role in Earth's Energy Budget?
- 3. What reflects the most sunlight and has the biggest impact on Earth's albedo?
- 4. Contrast lighter colors and darker colors in terms of reflection.
- 5. How do humans modify Earth's albedo and impact the global energy balance?
- 6. View the bar graph Albedo of Common Surfaces.
 - 1. Identify the surface with the highest albedo. What does this indicate about the reflectivity of this surface?
 - 2. Name the surface with the lowest albedo. What does this indicate about the reflectivity of this surface.
 - 3. What are two other surfaces that have low albedos?
 - 4. Describe the relationship between color of a surface and its reflectivity
 - 5. Predict what would happen to Earth's Energy Budget if the snow started to melt.



Albedo of Common Surfaces. Source: NASA | https://mynasadata.larc.nasa.gov/sites/default/files/inline-images/Bar%20Graph.png

Sources:

1. ClimateBits: Albedo. (2017, January 10). YouTube. Retrieved September 7, 2022, from https://www.youtube.com/watch?v=d1U7X1k3d0Y

Teacher Note

Teachers, these mini lessons/student activities are perfect "warm up" tasks that can be used as a hook, bell ringer, exit slip, etc. They take less than a class period to complete. Learn more on the "My NASA Data What are Mini Lessons?" page.

Teachers who are interested in receiving the answer key, please complete the <u>Teacher Key Request</u> and <u>Verification Form</u>. We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.

NGSS Three Dimensional Learning

NGSS Disciplinary Core Ideas

ESS2A: Earth Materials and Systems

Crosscutting Concepts

Stability and Change

Science and Engineering Practices

• Developing and Using Models

Google Docs Interactive Files

Valuing Albedo Student Sheets