

## Mars for Earthlings

### LESSON 7: Life-Hosting Rocks

#### *In-Class Activity 2*

Life Hosting Rocks\_MFE

*Understanding Albedo*

#### **Last Chance Canyon**

*Scenario:* You are planning to hike Last Chance Canyon in the Guadalupe Mountains National Park. It is arid, no winds, and about 95°F. If you had the following options for attire, which would you choose and why?

- Sleeveless cotton shirt
- White long-sleeve cotton shirt
- Black long-sleeve cotton shirt

#### **Surface Albedo & Rocks**

Observe the interactive Earth Surface Albedo Map (produced by NASA-CERES) provided by your instructor.

1. What do the colors indicate?
2. Why do some “surfaces” have a higher albedo than others (ocean, desert, forest cover etc.)?
3. Rank the hand samples according to their albedo effect provided by your instructor. How are you making your rankings?
4. Do you think an albedo map of the surface of Mars would be as variable as Earth? Overall, would Mars have a higher albedo than Earth? Why or why not?

#### **Using JMARS to view Albedo**

Explore TES imagery in JMARS.

1. Add the MOLA colorized elevation map for use as context if desired.
2. Add New Layer → Maps By Instrument → TES → TES-Albedo → View graphic data
3. Zoom to a window (2 or 4) that allows you to differentiate familiar terrain. You can change the transparency of the TES-Albedo map to see the underlying MOLA colorized map to find major geographic regions of interest.



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4. Describe the albedo map of Mars? Does anything surprise you? What could distort the data?
5. Are albedo maps a good indicator of lithology? Would it depend on different circumstances or environmental conditions?

### Using Light Grapher:

Directions (\*Note: This section of the lesson requires a webcam):

1. Click "Run Light Grapher"
2. Select the appropriate camera and allow access
3. Click "capture data"

<http://kepler.nasa.gov/education/ModelsandSimulations/lightgrapher/>

6. Use the hand sample of basalt and sandstone provided by your instructor. Use Light Grapher to see the change in "light" as you pass the sample in front of your webcam. What is the result? How do they compare?
7. Try other objects with varying color and compare.
8. How is this activity an analogy for the albedo effect?

