What does this have to do with Earth? Just like Saturn’s moons, Earth also reflects sunlight back into space, and on and on. Sunlight bounces into space, and on and on...

During the ice age, massive ice sheets covered much of Earth’s land. Earth’s albedo is around 30 percent. This number has changed during Earth’s history. However, Earth is covered by many different surfaces, like oceans, ice, forests, and fields. Each of these surfaces has a different albedo. On average, ice’s albedo is higher and so temperatures stayed low. Once it starts, this sort of effect can be hard to stop. First, temperatures drop down. This causes ice to form, and that ice spreads across the land. The reflective ice bounces lots more sunlight back into space, and temperatures drop down even more. More ice forms, more sunlight bounces into space, and on and on. This causes ice to form, and that ice spreads across the land.

Stephen Whitt has been with COSI since 1993, performing shows and demonstrations, writing exhibit signs and show scripts, and co-directing COSI’s floor faculty. He has written over 40 articles for children’s science magazines, and his first book, called The Turtle and the Universe was published by Prometheus Books in 2008.

Stephen Whitt
Director of Experience Programs
Teaching and Learning COSI

http://creativecommons.org/licenses/by-sa/3.0/

Flesch-Kincaid RL = 5.8

Find this story and others at:
Phoebe (FEE-bee) is the smaller and darker moon. Its dark, dusty surface (as dark as black ink) absorbs around 94 percent of the Sun’s light. But it still isn’t warm. Phoebe is so far from the Sun that its daytime temperature is a chilly -261 degrees Fahrenheit.
Far off in our solar system is the beautiful planet Saturn. Along with its lovely rings, Saturn is also surrounded by over 50 moons. Two of these moons tell an interesting story that can teach us something about our own planet Earth.

Scientists have a word for how much or little light a surface reflects. They call it albedo. Shiny, ice-covered Enceladus reflects a lot of light. It has a very high albedo (around 99 percent). Dark, dust-covered Phoebe doesn’t reflect very much light. It has a very low albedo (around 6 percent).

Today temperatures aren’t dropping. Instead, global warming is making temperatures rise. This means that ice is melting, especially in the Arctic. Arctic ice covers dark ocean water. As temperatures rise, the ice melts, and more water is exposed to the Sun.

Global Warming. Photo courtesy of Stijn Vogels, Flickr.

Enceladus (in-SELL-uh-dus) is larger and much brighter. This moon is covered with ice, so it reflects 99 percent of the Sun's light back into space. Even though it is about the same distance from the Sun, it is much colder than Phoebe. The daytime temperature is around -330 degrees Fahrenheit!

Why the difference? You can find out yourself with a simple experiment. Make a small hole in a pair of tennis balls (get an adult to help with this), and insert a thermometer into each hole. Cover one tennis ball with white fabric, the other with black. Label the light ball “Enceladus” and the dark one “Phoebe” and place both “moons” under a warm lamp. Watch for a few minutes to see how the temperatures change.