How Fast Will It Melt?

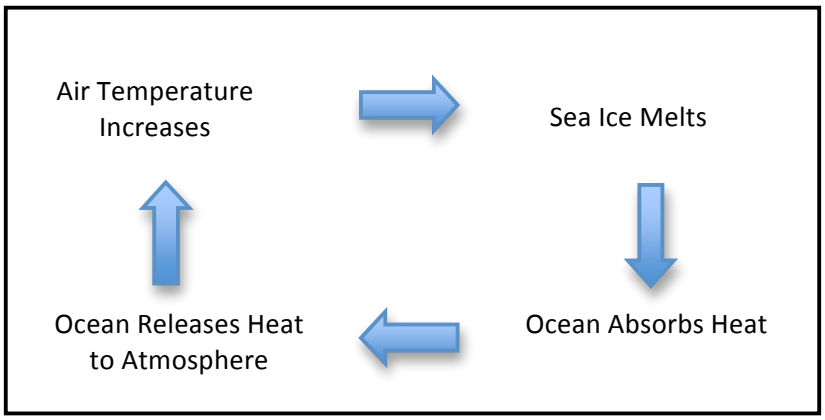
Learn about the process of ice melting in the Arctic!

Background Info

Energy from the sun, or **solar radiation**, is either absorbed by the Earth's surface or reflected back into the atmosphere. The amount of solar radiation that is reflected from a surface is called **albedo**. Snow covered surfaces, such as the polar ice caps reflect between 80-90% of light energy away from their surface and therefore have a high albedo. Darker colored surfaces reflect less solar radiation and retain a greater amount of heat. Albedo can be observed on a small scale too, you may have noticed the affects of albedo with the temperature increase in an asphalt parking lot compared with surrounding grass.

Albedo is an important concept to address when discussing climate change because of the increased rates of melting of sea and land ice. At the Earth's poles vast areas that were once highly reflective have been replaced by a darker colored ocean. The dark surface then retains more heat and contributes to further melting. Scientists call this cycle a **positive feedback loop** because each process is encouraging the other.

Both albedo and positive feedback loops play an important role in the rates of ice melting in the Arctic Ocean in particular. The bright white reflective surface of the ice reflects heat away from the Earth's surface. As the climate changes and air temperature increases, sections of the ice sheet melt, and the white surface is replaced with the darker blue of the ocean. This dark blue surface absorbs more heat and increases rates of melting. which leads to a faster rate of melting. The rules of the "How Fast Will It Melt?" game are designed to show visitors that as you replace the lighter colored ice pieces with the darker colored ocean we will begin to loose the ice sheet at a faster rate.



This diagram illustrates how positive feedback loops affect the rate of iceberg melting.

Credits

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