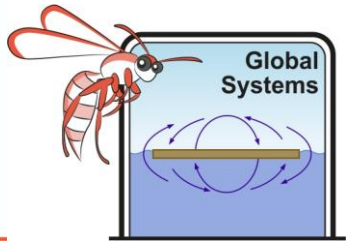
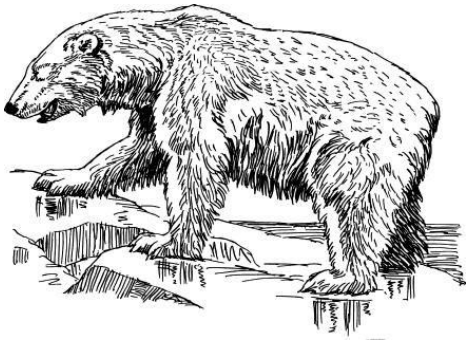


Insulating Effect - Student Activity

<u>Aim</u> **To demonstrate that ice insulates seawater.**

Materials

- Two beakers
- Two thermometers
- Water
- Radiant heat from sunlight, a bar heater or from a microscope lamp



Method

1. Half fill both beakers with water
2. Place the ice disc (prepared by your teacher) in one beaker with the thermometer inserted through to the water below.
3. Place the other thermometer in the ice-free beaker
4. Apply radiant heat from above.
5. Measure temperature increase of the water in the beaker over 20 minutes

Results/observations

Draw up a table for your results
To ensure precision and accuracy, which units shall you use for time and for temperature? _____

Time	Water temperature of container with ice (^{o}C)	Water temperature of container without ice (^{o}C)	Comments

Conclusion
What conclusion can you draw from these results? _____

_____

Discussion
Why do you think ice is a good insulator? _____

_____

How will increased sea ice melt affect polar bears in the northern oceans? _____

_____

ALBEDO: Albedo is the degree to which radiant energy is reflected from a surface. Ice reflects radiant heat from its surface back into space. This is known as the albedo effect. When ice melts heat is retained in the atmosphere causing further melting.
In the geological past Earth has iced over several times. During the “Snowball Earth” times in the Ordovician most of the planet was ice covered. Albedo from the white surface dropped surface temperatures to -40°C. Present surface temperature is 15°C.