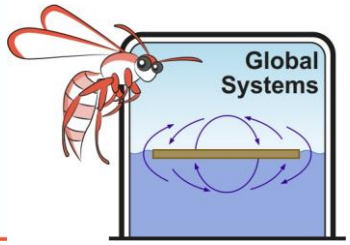


Sea Ice Thickness - Student Activity

Sea ice regulates exchanges of heat, moisture and salinity in Polar Regions. It insulates the relatively warm underlying seawater except where cracks (leads) permit loss. In the Arctic sea ice can build up over many years and be well over 3m thick whereas in the Antarctic sea ice melts and reforms every year. Ice in the Antarctic Ocean averages only 0.5m thick and varies greatly with the seasons.

Aim **To observe if the thickness of ice affects the rate of its melt**

Materials per student

- Two containers. One tall and narrow and another wide and flat
- Water
- Freezer
- Timer/watch
- Basin or pneumatic trough

Method

1. Place the same volume of water in each container and freeze until solid.
2. Remove both blocks of ice and float in water at room temperature.
3. Measure how long it takes the blocks to melt.

Which units shall you use to measure time to ensure precision? _____

Which is the dependent variable? _____

Which is the independent variable? _____

Observations

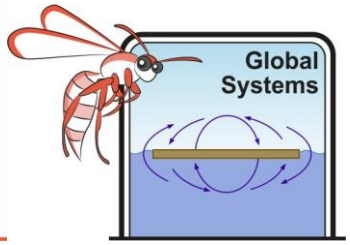
The thick block (Arctic ice) took _____

The thin block (Antarctic ice took _____

Conclusion

Did the thickness of the ice affect its rate of melting? _____

_____



Sea Ice Thickness - Student Activity

Discussion

How could this activity be improved? There are several answers._____

_____

_____

How does this activity relate to penguins? There are several answers.

_____

_____

_____

_____

An Adélie penguin

Extension

Design an experiment to find out the effect that increasing air temperature and water temperature will have on rate of melt.

Some climate change modelling suggests that temperatures will increase by 4°C in the next one hundred years. Design an experiment to find out the effect that increasing air temperature one degree every 25 years will have on rate of sea ice melt.

You may wish to use the headings below to rough out your experiment.

Aim _____(1 mark)

Dependant Variable _____(1 mark)

Independent variable _____(1 mark)

Which variables will be controlled? _____(3 marks)

Materials (Selected for accuracy and precision) _____

_____(4 marks)

Method _____

_____

_____(4 marks)

Results/observations Should readings be represented as a graph or a table? If a graph is chosen, which style of graph should it be? Remember to include units. _____(4 marks)

Remember to include your rough draft with your final copy. Total /18 marks