



Ice, ice baby

This simple experiment shows the importance of sea ice to the environment



Suitable for Scouts

You will need

- two same-sized containers you can put in the freezer
- measuring jug
- water
- teaspoon
- tray
- table salt
- food colouring

Instructions

Before you start

Ask the young people if they know what sea ice is and why they think it's important to study it. Explain that as ice forms, the salinity and density of the surface water increase. As ice melts it sends fresh water into the upper ocean. This decreases the salinity and density of the water, and the lighter, less dense water forms a fresh layer at the surface.

Did you know?

Sea ice (frozen seawater) is one of the most important indicators scientists have to study climate change and its possible consequences. They use satellite images taken from space to track how much sea ice there is. The more sea ice, the more light is reflected back into space, helping prevent global warming. The salt content of water influences the freezing point: the higher the salt content, the lower the freezing point.

Time needed
30 minutes
(across 2 days)

Badge



UK Space Agency partners the Scout Astronautics Activity Badge

Partner



Outcomes

Young people will explore how scientists use satellite images to measure sea ice, and how this can be used to track global warming. They'll find out how sea ice behaves compared to freshwater ice and the impact this has on the environment and sea life.

More information

For more badge resources and activities go to scouts.org.uk/supporters/uk-space-agency.

Take it further

For more fascinating STEM resources and activities, head over to stem.org.uk/esero.



Day 1

1 Fill each of the two containers with about 200ml of tap water.

2 In one of the containers, add 1.5 teaspoons of salt and stir until all the salt has dissolved.

3 Label the containers so you know which is which and put them both in the freezer overnight.

Day 2

1 Remove the 2 ice blocks from the containers and place them on the tray with the top side up. Describe their appearance in the table. The freshwater ice should be clear and fairly see-through. The saltwater ice should be more cloudy, with a less tight structure.

2 What do you think will happen if you add food colouring to the ice blocks? Will the food colouring behave the same way on both blocks? Write your prediction in the table.

3 Add some drops of food colouring to the block of freshwater ice and observe what happens. Write your observations in the table. The food colouring should not penetrate the ice, but run off it.

4 Add food colouring to the block of saltwater ice and observe what happens. Write your observations in the table. The food colouring should absorb into the ice and form visible channels, called 'brines'.

What's a brine?

Brines are channels or pockets which form inside blocks of frozen sea ice during freezing. Brines trap microorganisms like plankton. Algae also grows on the bottom of the sea ice, which provides food for small sea life and even whales. In the spring, when there's light for photosynthesis and the water warms, sea ice melts and releases algae cells and tiny animals back to the sea, which become food for larger animals.

	Freshwater ice	Saltwater ice
Description of ice before adding food colouring		
Prediction of what will happen when food colouring is added to the ice		
Description of ice after food colouring has been added		