

Saltwater vs. Freshwater

Time: 30 minutes to prepare, hourly temperature recordings.

Introduction The seas around our coastline and around the world affect our weather and climate. In summer, the coastal areas are often cooler than those areas further inland. In the winter, the sea can make the coastal areas slightly warmer.

Saltwater from the sea and freshwater from our rivers, streams and underground aquifers behave in different ways. This lesson is aimed at showing how this happens.

Learning Objective:

To understand that salt water takes longer to freeze than fresh water.

Resources

1. Two similar sized glass bowls
2. Salt
3. A tablespoon
4. Water and measuring jugs
5. A large freezer
6. Two thermometers

1 At the beginning of the lesson (preferably first thing in the morning) present the class with the challenge of today's lesson to see if salt water takes longer to freeze than fresh water, and put out two glass bowls of the same size.

2 Ask the children to put a litre of cold water into each of the glass bowls. Add five tablespoons (or their agreed amount) of salt to one bowl and stir gently. Then ask the teams to measure the temperature of each one to ensure they are the same and record these temperatures.

3 Next, place both the bowls very carefully into a freezer. Agree with the class how often you will revisit them and record the temperatures throughout the day. Hourly intervals should be fine during the day and then one 24 hour recording for the following morning.

4 Ask the children to estimate what the temperature will be at each hourly interval and after 24 hours. Do the children think one will freeze faster than the other or at the same time? Why? How will the teams measure the temperature when the water has frozen?

5 Check on the water with the class every hour and record the temperatures.

Differentiation

It may be helpful to guide the learners as to what a certain temperature feels like and how to read it on a thermometer. Go to particular places inside and out, and guess the temperature. Can you send pairs out to put a thermometer in a particular spot and then 20 minutes later go and guess the temperature there... before checking the thermometer! Record what you read. Which places in the school site are particularly hot or cold? Why?

Success Criteria

The children understand that freshwater freezes faster than salt water, and that salt water therefore retains its heat...and cold...longer. This has an affect on the coastal areas close to the salty sea. Coastal areas stay milder in the winter and cooler in the summer.

