

## Observing seasonal changes

### What's the science?

The Earth is tilted on its axis. As we orbit the Sun over the course of a year, sometimes the northern hemisphere is closer to the Sun, sometimes the southern. This is what causes our seasons. When the seasons change, we experience different temperatures, weather, changes to plant life and animal behaviour. Global warming means that the Earth's temperature is increasing, causing unexpected weather changes, like heavy rainfall or wildfires.

### What are scientists doing about it?

A key part of the scientific method is observing over time. In the Antarctic, there are minimal influences from people and animals, so it's the perfect place to measure changes to the Earth's temperature. Scientists take the same measurements every day to look for patterns and anomalies (unusual data). Regular measurements have shown the surface temperature of the Earth is rising. This is climate change which is caused by human activity.

### How could you explore this in the classroom?

- ▶ Do a 'notice walk' to observe the sky (is it sunny? cloudy? raining?), feel the temperature (is it warm? chilly? freezing?) and consider what you can hear (birds? wind in the trees?). Learners can write a stanza of a poem using "I see... I hear... I feel...". Link to literacy by repeating the activity each term and reviewing the completed poems at the end of the year.
- ▶ Choose an area in or near the school where you can see some plants and sky. Take a photo or short video. Ask the learners to take the same image each week or month. Collate at the end of the year so they can observe the changes all together. What do they notice?
- ▶ Fill a metal tray with natural found objects and water, then freeze. Place the tray outside and time how long it takes to melt. Record the data in a table. Repeat each term. Learners could present the data in graphical format. Ask them how long it takes to melt in winter compared to summer? How do the leaves look different in autumn to spring? Make a season disk for each season and compare.

#### Curriculum links

Literacy; ICT; numeracy; observing over time; comparing, recording and handling data; seasonal changes; materials

## Unexpected weather

### What's the science?

Climate change is being caused by increased pollution from human activity. The last seven years have recorded the hottest temperatures on record. This has upset the expected weather patterns in some regions, causing extreme floods, droughts, storms, heatwaves and fires. Floods are caused because the increased temperature in the atmosphere means the air can hold more water, but when it cools, the additional rainfall can cause flash floods.

### What are scientists doing about it?

Atmospheric chemists analyse data on rainfall to spot patterns and present data in graphs. They use this information to raise awareness of the problems being caused by climate change and predict what could happen to our weather in the coming years. Activists like Greta Thunberg encourage governments to take action to reduce pollution to help slow the warming of the Earth.

### How could you explore this in the classroom?

- ▶ Establish with the learners what expected weather looks like in your area that term. Then discuss what would be considered as unexpected. They could present their ideas on a mindmap. (Nothing is out of bounds: flooding is unexpected, as are fish falling from the sky!) Learners could ask adults at home if they remember experiencing unexpected weather. Link to literacy by asking learners to write up what they have discovered.
- ▶ Use the Katie Morag story '*An island home*' to explore geography links by comparing weather in different localities.
- ▶ Observe the weather outside and use numeracy skills to set up a wet-play tally to add to throughout the year. Do some months have more wet play than others? Was there a day in the summer where the school had an unexpected wet play? Has the winter been warmer than usual?
- ▶ Set up a rain water collection tank outside your classroom. This could simply be a reused water bottle with some measurements marked on the side. Ask the learners to inform you when the water reaches a certain level. Does it ever overflow? Is that expected or unexpected?

#### Curriculum links

Literacy; ICT; numeracy; observing over time; measuring and recording; seasonal changes