

CHAPTER 3: Weather and Climate Change

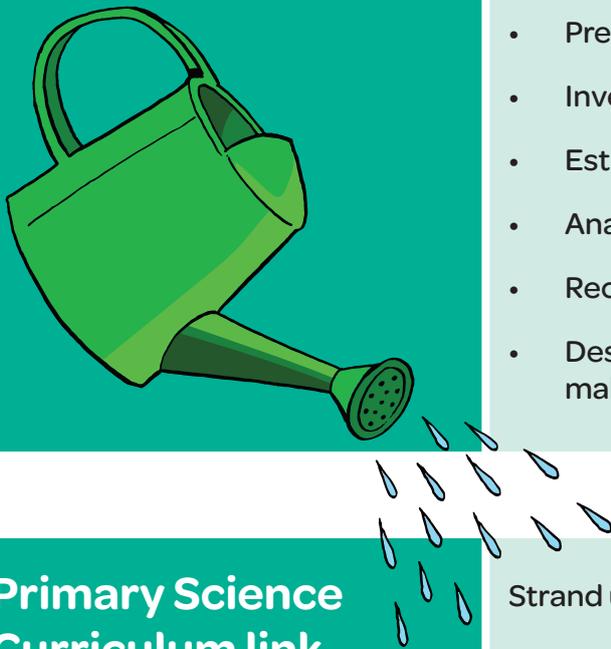
Aim

The aim of this chapter is to introduce children to the concepts of weather and climate.

Overview of Chapter

Children discuss the term weather and record weather data over 5 days. Children learn about climate and the difference between climate and weather. They are then introduced to the concept of climate change.

Working Scientifically Skills



Through discussing, engaging with and reflecting on the investigations in this chapter the children will be applying and developing the following scientific and designing and making skills:

- Observing
- Predicting
- Investigating and experimenting
- Estimating and measuring
- Analysing (Interpreting)
- Recording and communicating
- Designing and making: exploring, planning, making and evaluating

Primary Science Curriculum link

Strand unit: Weather; climate and atmosphere

Lesson 1 – Exploring weather

Lesson link

Junior and Senior Infants Programme
Chapter 4 Lesson 2: Recording temperature

1st and 2nd Class Programme
Chapter 4 Lesson 1: Observing a thermometer and Lesson 2:
Recording and taking the temperature

Resources

IWB 6 / PowerPoint 6: Rain gauges

IWB 7 / PowerPoint 7: Cloud cover

Materials to make a rain gauge:

2 litre empty bottle, 10ml plastic syringe (available from pharmacies) or 100ml graduated cylinder, metre stick, thread, container to collect the rain (e.g. a clean jam jar).

Materials to make anemometer:

Scissors, 4 small paper/plastic cups, 2 strips of stiff cardboard (same length), ruler, stapler, large drawing pin/thumb tac, sharpened pencil with eraser on the end, blu-tack or modelling clay, hard surface - cardboard or tile, stop watch.

Thermometers.

Teacher note: In this lesson children collect weather data for a period of 5 days. They should include data regarding temperature, cloud cover, wind speed and rainfall. They should graph their data, analyse and interpret their results.

Activity type: Discussion

With the children discuss the question “What is weather?” Record the children’s responses.

Questions to promote discussion

- 1 Look outside the window – what is the weather like today? (*cloudy, sunny, hot, cold, rain, fresh, muggy, windy*).
- 2 Does the weather stay the same all year long? What words would you use to describe the weather in Ireland during the spring, summer, autumn and winter?

Read, show or listen to a recent weather forecast with your class www.met.ie or www.rte.ie/weather

- 3 What factors do meteorologists talk about?
- 4 How far into the future do meteorologists predict the weather?
- 5 What does this tell us about the weather?

Teacher note: Explain to your class that weather is the current atmospheric conditions: temperature, rainfall, wind and humidity. Weather is what is happening right now, likely to happen tomorrow or in the very near future. Link the words on the board to each of these terms e.g. temperature = hot, cold; rainfall = rain; wind = windy, breezy, no wind; humidity = muggy, fresh.

Explain to the children that they are going to record the weather. First they are going to learn how to take accurate recordings of temperature, rain, cloud cover and wind.

3rd and 4th class could link with Junior and Senior infants classes using **Chapter 4 Lesson 2: Recording Temperature** from Junior and Senior Infants Programme. Junior and Senior infants classes could collect temperature data, while the 3rd and 4th class could collect information on cloud cover, rainfall and wind. Alternatively use the instructions below to collect temperature data with your class.

Activity type: Discussion

Learning how to record temperature accurately

Ask the children to discuss what it is they are recording when they think about temperature (for example air or ground temperature). What other aspects or characteristics of the weather might influence air temperature (cloud cover, rainfall and wind). Children can collect information about these too.

Introduce children to the thermometer. Discuss with the children how their temperature measurements can be collected accurately. Then in groups ask the children to discuss factors that they think should be kept constant when they are recording the daily temperature.

Teacher note: The following factors should be taken into account to ensure accurate daily readings:

- Time of day and location
- Distance from a building
- Shelter (e.g. trees, hedges etc.)
- Distance off the ground
- Number of measurements
- Length of time outside before measuring temperature

Activity type: Design and make

In groups the children design and make the rain gauges that they will use to record the rainfall over a five day period.

Exploring

Use **IWB 6 / PowerPoint 6** to discuss the structure and functions of a rain gauge.

Questions to promote discussion

- 1 What do you see in the pictures?
- 2 What are they used for?
- 3 What are they made from?

Tell the children that they are going to design and make their own small rain gauge. Show the children the materials that are available to them and discuss the criteria that their designs must meet.

Some suggested criteria for a rain gauge

It must be able to stand by itself.

Think about what the rain gauge measures: how can you record the level in the rain gauge?

Planning and making

After the whole class discussion on materials and criteria, the children work in small groups. They discuss their designs and make detailed drawings of them. They then make their rain gauges.

Evaluating

Each group evaluates their designs and places their rain gauges outside.

Activity type: Discussion

Use **IWB 7 activities / PowerPoint 7** to help the children understand how cloud cover can be measured. Discuss with the children how they could record cloud cover.

Teacher note: If percentages have not been covered the children could sequence the pictures in **IWB 7 / PowerPoint 7** from no cloud cover to most cloud cover.

Activity type: Design and make

Learning how to record wind speed

The children can design and make an anemometer to measure wind speed. For information on how to make an anemometer go to the Greenwave website www.primaryscience.ie/greenwave_introduction.php

Activity type: Recording

Divide the class into groups and ask each group to record one particular aspect of the weather, for example temperature, rainfall, cloud cover and / or wind speed. Encourage each group to discuss how they are going to ensure they take accurate recordings each day.

Recordings take place over a five day period. When the children have collected the data each group decides on how they would like to present the data they have collected (e.g. line / bar graph/ pictorially). Each group reports their data to the whole class group.

The children could be asked to identify any patterns they see between the temperature data and the other weather elements measured (cloud cover, wind, precipitation).

Extension

The following website might be useful:

www.trocaire.org/getinvolved/education/creating-futures

Lesson 2 – Introducing climate and climate change

Resources

IWB 8/ PowerPoint 8: Temperature in Ireland

Internet access to view:

Weather and climate video www.youtube.com/watch?v=ztWHqUFJRTs

The Story of Energy video www.seai.ie/teaching-sustainability/primary-school/resources-for-teachers/

Teacher note: In this lesson children investigate the difference between weather and climate and are introduced to the concept of climate change. They start with a homework activity which asks them to question parents and grandparents about their experience of weather. If children's parents have a different country of origin, collecting information on their lives can be used as a comparison climate zone to Ireland. You will need a map/ Google maps for this.

Activity type: Research

Questions to promote discussion

- 1 How could you find out information on Ireland's weather in the past?
- 2 Who might you ask?

Ask your parents and grandparents about the weather during their life time. Questions could include:

- 1 When you were younger was the weather in the summer hotter / sunnier?
- 2 When you were younger was the weather during the winter colder / wetter?
- 3 Do you think the weather has stayed the same?
- 4 How do you think the weather has changed?
- 5 Can you remember any times when the weather caused problems?

Activity type: Record, communicate and discuss

Create a class collage of quotes from parents and grandparents.

Questions to promote discussion

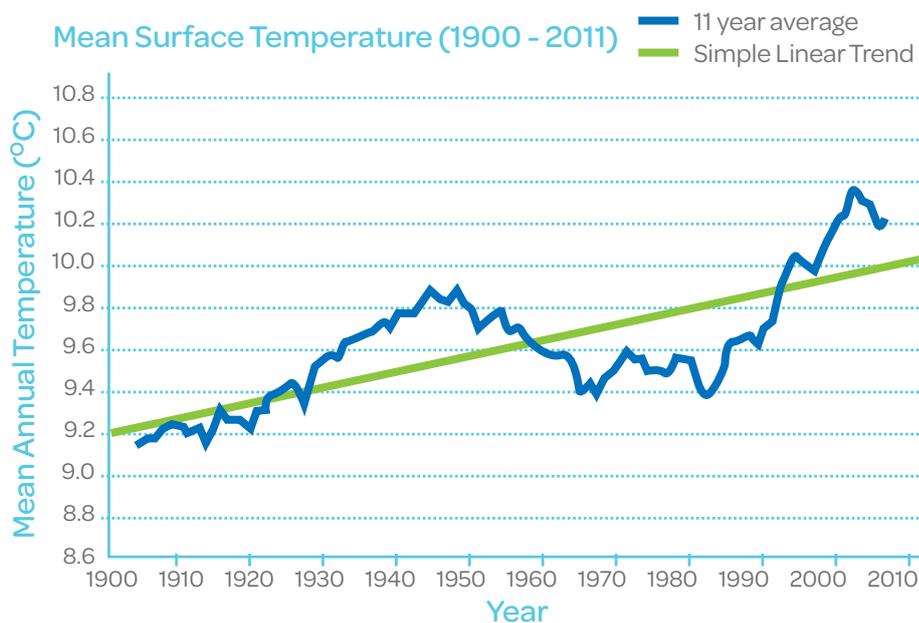
- 1 What does the information tell us about the climate / Irish climate?
- 2 Does the Irish climate ever get very hot like a desert?
- 3 Does it ever get very cold like the North Pole?

Activity type: Observe, interpret and discuss

Teacher note: Explain to the children that climate refers to the average weather conditions in a place over many years, usually at least 30 years (US Environmental Protection Agency).

Watch **Weather and Climate** video www.youtube.com/watch?v=ztWHqUFJRTs

Use **IWB 8/ PowerPoint 8** to discuss temperature in Ireland. The graph shows information about how the average air temperature in Ireland has increased from 1900-2011. Ask the children to think about what this graph is telling us about the Irish climate.



Source:
Met Éireann & Dr
Ned Dwyer, UCC

Teacher note: From the graph we can say that air temperature is getting hotter. Air temperature and the other factors of weather are also changing. Changes in our weather indicate that our climate is changing.

Watch **The Story of Energy** video www.seai.ie/teaching-sustainability/primary-school/resources-for-teachers/

Questions to promote discussion

- 1 Why do you think the climate is changing?
- 2 What is causing the climate to change?

Extension

Use **Guzzler Explains Climate Change worksheet** to review the main learning points of this lesson; this can be downloaded from:

www.seai.ie/teaching-sustainability/primary-school/resources-for-teachers/

Increased air temperature is thought to be linked to earlier growing seasons. Your class can join in the **Greenwave project** which records when spring comes to Ireland with plant and animal observations, visit www.primaryscience.ie/greenwave_introduction.php

SEAI's Lesson plan **Hot House, CO₂ / Climate Change Poster** and **Energy / CO₂ poster** go into more detail on climate change, carbon dioxide and the greenhouse effect. Go to www.seai.ie/teaching-sustainability/primary-school/resources-for-teachers/ to download from the resources section or to order.

