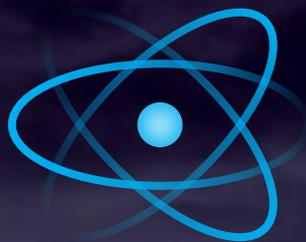


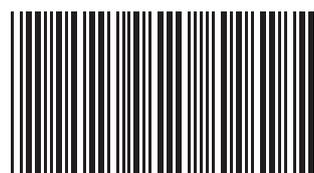
SCIENCE
CURRICULUM LEVELS 2-3



Investigating Wild weather



SCL341 2015/1



Science Curriculum Levels 2–3

The Nature of Science

The Nature of Science strand is the overarching science strand. Through it, students learn what science is, how scientists work, as well as ways science knowledge is created and used.

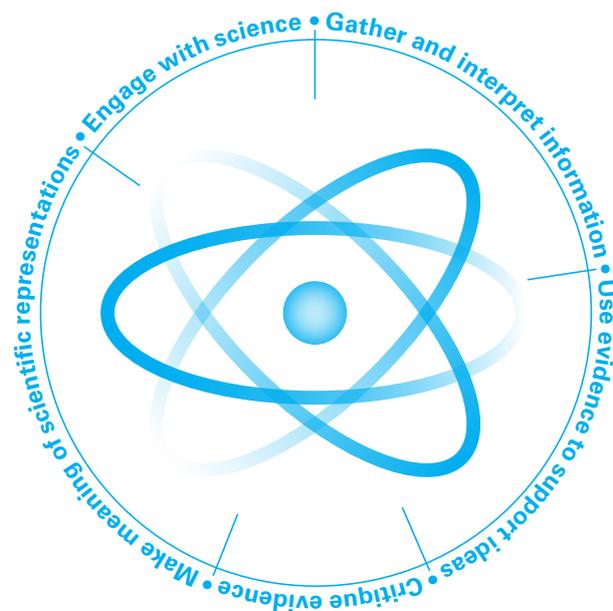
This is done through the context strands of the Living World, Planet Earth and Beyond, the Physical World and the Material World.

It involves:

- understanding about science
- investigating in science
- communicating in science
- participating and contributing.

The skills that scientists use are:

- gather and interpret information
- use evidence to support ideas
- critique evidence
- make meaning of scientific representations
- engage with science.



When you see this icon in the activities, you will know you are practicing and using these nature of science skills.

Key competencies

Key competencies are skills, knowledge and values that help us live, learn and work independently and with others.

The key competencies you will focus on in this topic are:

- thinking
- participating and contributing
- using language, symbols, and texts
- managing self.

As you work through this unit, think about which of these key competencies are being used.

You could:

- talk together about the key competencies you are using, and how you know
- write examples in your journal of how you are using the key competencies.

Making sense of the planet Earth and beyond

The **Planet Earth and Beyond strand** involves the study of Earth systems (land, air, water), the other parts of the solar system, and the universe beyond.

- Recognise that Earth's subsystems of land, water, air, and life are interdependent and that all are important.
- Investigate the water cycle and its effect on climate, landforms and life.

Introduction

In this topic you will investigate:

- what causes weather
- the different seasons we experience and the Māori perspective of seasons
- aspects of the water cycle
- different types of wild weather.

Learning Outcome

At the end of this topic you will be able to state how the four seasons affect our weather, identify the different phases of the water cycle and their impact on the weather, and demonstrate an understanding of the causes and effects of different types of extreme or wild weather.

Learning Intentions

I will:

- describe what weather is
- give reasons for the seasons we experience, recognising that they are caused by the tilt of the Earth's axis
- demonstrate a knowledge and understanding of the Māori view of seasons
- show my understanding of the different parts of the water cycle by recognising what is happening at different stages on the water cycle diagram.

You will:

- complete a 'wild weather mind map' by adding words which describe different types of weather and writing a paragraph to provide information about each type of weather and its causes (The information I find on the 'wild weather treasure hunt' will help me to complete this exercise).
- attempt to make a mini-tornado in a soft drink bottle
- design a word find and crossword using all of the new vocabulary learned in this unit.

Assessment

Your teacher will give feedback on:

- the activities in the recording journal
- your own wild weather investigation
- the assessments and evaluations on the inside back cover.

How to do the work

Spread this work over two to three weeks, for example an hour a day over three days a week.

Allow time each day for your investigations, observations and recording.

WHEN YOU SEE THESE ICONS:



Check for more information using the internet or other resources. A page with useful sites is included in this resource.

RECORDING JOURNAL



Keep all your results in a journal, this may be electronic or paper.

When you are asked to add results to your journal, if you have made an electronic journal, take a photo or video and add that to the journal.

Make sure you give all journal entries a heading which links them back to the activity.

YOU NEED:

- to read the activities with your supervisor before doing them, so you have the various objects needed to complete them
- your recording journal
- blank sheets of paper or a device for any note taking and recording
- internet access.

Supervisor

Help your student to:

1. read and work their way through this resource
2. discuss/talk about their learning as they go
3. record their observations and learning in their recording journal.

Activity 1

What is weather?

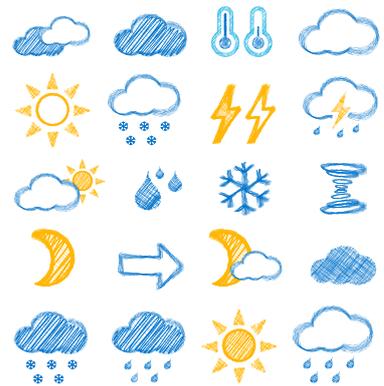


Gather and interpret information

Weather is the word we use to describe what the conditions are like in the atmosphere around Earth.

It includes air temperature, rainfall, air pressure and the amount of cloud.

Weather changes every day because of wind and storms. Our weather also changes with the seasons. What do you think causes the seasons we have on Earth?



The reasons for the seasons

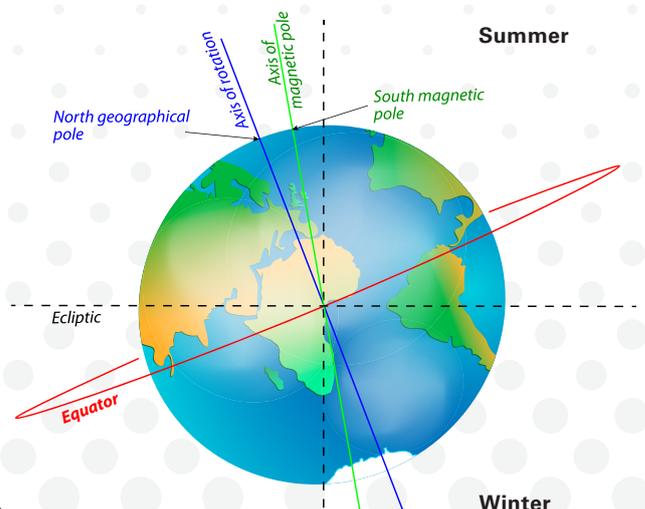


Use the internet to find information about seasons, what causes the seasons to change and YouTube search – Storms by Bill Nye the Science Guy.



Using the information you found on the internet, in your recording journal, write and answer these questions.

1. You now know that the axis of the Earth is tilted slightly. How does this cause the seasons we experience on Earth?
2. What makes the winter cold and summer hot?
3. Investigate the sites www.bobthealien.co.uk/earthyear.htm, A year on Earth, Earth's tilt and the seasons, and www.ecology.com/2011/09/10/tilting-earth-shaping-seasons/, The Tilting of the Earth: Shaping Our Seasons and Climates.
4. Find and copy, or draw your own, a diagram of the Earth showing the tilt of the earth for one of the seasons in the part of the world you live in – The Southern Hemisphere or the Northern Hemisphere.
5. Label where in the world you are, and the season. Say why your diagram shows the season.



The Māori view of the seasons

The seasons were important for Māori and their everyday lives. Māori would rely on the seasons to determine when it was the right time to start digging the soil ready for planting, when food was ready to be harvested, and when to prepare for the warmer and colder months.



Use the internet to find out more information. Search for the story of how Māui and his brothers slowed the Sun.

This link will give you more information about the seasons and weather in Māori mythology.

www.teara.govt.nz/en/tawhirimatea-the-weather



Using the information you gathered from the internet, write down and answer these questions in your recording journal.

1. What did Māui and his brothers do to slow the sun?
2. Which season did they make longer and why would they want to do this?
3. Write one sentence about the importance of Summer, Autumn, Winter and Spring to Māori.



Activity 2

The water cycle



Make meaning of scientific representations

Weather is part of the **water cycle**.



Use the internet to find out more information about the water cycle and how it works. The link below will take you to an interactive water cycle.

<http://water.usgs.gov/edu/watercycle-kids-int.html>

Hover over the labels for more information.

Water evaporates up into the atmosphere. It forms clouds which move around and, after a while, forms (condenses) water (rain) again. Rain falls to the ground.

This part of the water cycle makes our weather: rain, snow, storms and floods. This is how weather and the water cycle are linked together.

How well do you know the water cycle?

On the diagram on the next page you will see four letters – A, B, C and D.

Next to each letter on the diagram, write the correct word to describe what is happening in each part of the water cycle. Choose the word from this list:

Transpiration

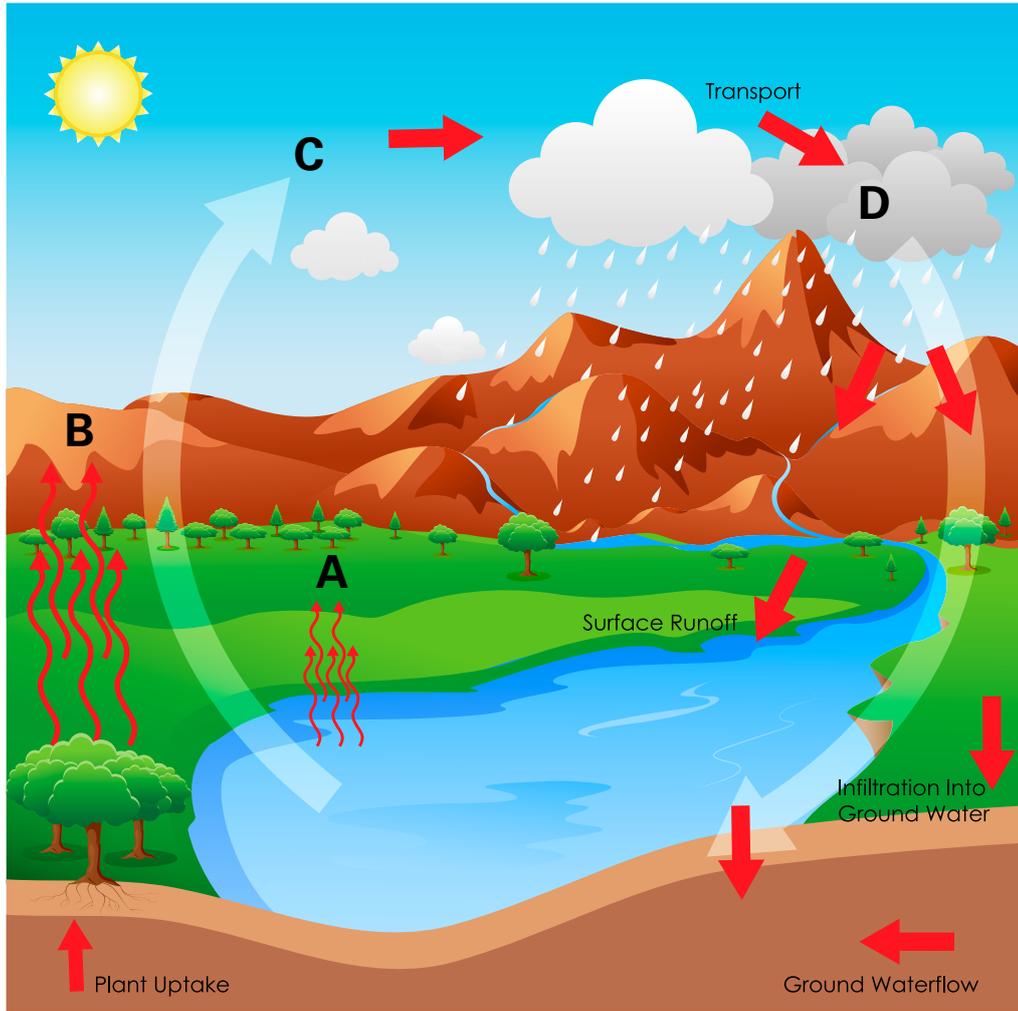
Condensation

Precipitation

Evaporation.



Write your answers in your recording journal.



Next to the list you have just made in your recording journal, write the correct statement you have chosen from the statement list below.

This statement describes what is happening in A, B, C or D in the water cycle diagram.

Statement list:

- Water vapour in the air gets cold and turns into a liquid which forms clouds.
- Water from plant leaves rises up into the sky (atmosphere).
- Water from lakes, rivers, streams and oceans is heated by the sun, turns into water vapour and rises up into the sky (atmosphere).
- Clouds can't hold water any longer and the water falls back to earth as rain, hail or snow.

Activity 3

Types of weather



Gather and interpret information

Use evidence to support ideas



No matter where you live, you are surrounded by the weather every day.

There's 'normal' weather like sun, rain and wind and there is 'wild' or 'extreme' weather which happens occasionally. These types of wild weather conditions include tornadoes, hail, thunder and lightning, hurricanes, snow, storms and floods.

In Māori mythology, Tāwhirimātea is the atua of winds, clouds, rain, hail, snow and storms – The weather.



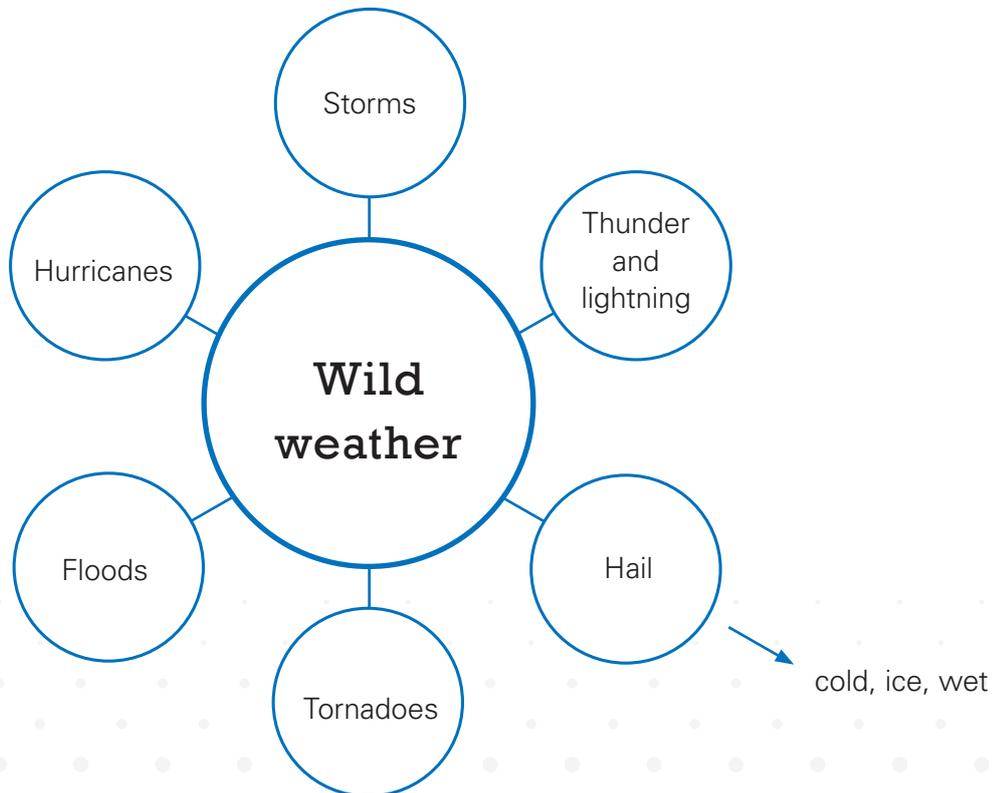
Use the internet to find out more information about Tāwhirimātea.

Wild weather mind map



Copy the mind map into your recording journal. Next to each type of wild weather, write down all of the weather words you can think of, to help describe this particular weather. The first one has been done for you.

Leave a generous amount of space around your mind map. You are going to add more information (paragraphs) to it later.



Wild weather treasure hunt



Use the internet or library to find out more information about the different types of wild weather.



The 'treasure' you are hunting for is information about each type of wild weather! You will be using this information to write a paragraph (in your own words) describing the important features of each wild weather type, on your mind map.

Here are some websites for you to look at.

Videos about the weather	www.sciencekids.co.nz/videos/weather.html
Amazing hail storm	www.sciencekids.co.nz/videos/weather/hailstorm.html
How does hail form	www.faqkids.com/420-hail-form.html
Extreme weather	www.discovery.com/video-topics/other/extreme-weather.htm
Floods	www.kidcyber.com.au/topics/floods.htm

On YouTube search for, and watch – Bill Nye the Science Guy – Storms

When you have found the information you need, complete your wild weather mind map.

- On your mind map you should have written a number of words which describe each type of wild weather.
- Next to these words, you will write a paragraph describing what each weather type is like and what causes it.
- You could use information from the helpful websites above, to help you.
- You should put the information you present, into your own words.

Wild weather – true or false



In your recording journal, write down the statement number and whether it is true (T) or false (F). You will find the information to help you decide, by visiting the websites from the wild weather treasure hunt.

1. Winds which get increasingly stronger and blow, over loose material like dirt, cause dust storms.
2. Thunderstorms and dust storms have very different causes.
3. Thunderstorms usually happen during winter.
4. Storms form when warm air, containing lots of water, rises up into the sky and cools down.
5. Tornadoes usually form over the sea and are larger than hurricanes.
6. Lightning forms in a thunderstorm and is a powerful electrical blast.
7. Cyclones and typhoons are just other names for hurricanes in different parts of the world.
8. Hurricanes are massive, powerful storms which form over the land.
9. Hail is formed when a strong wind blows water droplets up into the clouds where they freeze.
10. Snowflakes form when a very cold water droplet sticks to something like a dust particle then other droplets stick to this to form a snow crystal.
11. Sleet is just another name for snow.
12. Floods are only caused by overflowing rivers.



Make a tornado in a bottle

You need

- Two x 2 litre soft drink bottles – empty and clean
- Brown 'duct' tape (used to seal cardboard boxes)
- 1 teaspoon of any cooking oil
- A few drops of any coloured food colouring

Method

Fill one of the bottles 2/3 full of water. Carefully pour the cooking oil on top of the water and then add four or five drops of food colouring. **Do not** shake or mix up.

Place the other bottle, which is empty, on top of the first bottle so that the bottle tops are facing each other and are touching.

Wrap duct tape around the two touching bottle tops until they are sealed and you are sure that no water will leak out.

Quickly turn the two bottles over so that the bottle with the water in is on the top and **immediately**, swirl the bottles in a circle – do this quite fast.

A tornado should form in the top bottle as water rushes into the bottom bottle. The oil and food colouring should help you to see this more easily.



In your recording journal write down whether your tornado in a bottle turned clockwise or anti-clockwise.

If you lived in the Northern Hemisphere, would your tornado still turn in the same direction?

DIY weather station

Have you ever wanted to be like a Meteorologist and take accurate weather measurements? You can easily make a number of special instruments to do this, using common household items. You will amaze your family and friends with your scientific weather information!



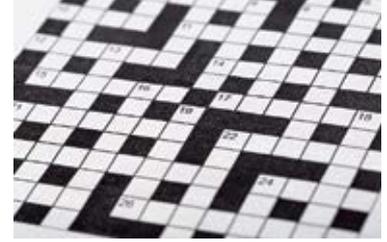
To build your own weather station, have a look at this website.

http://oceanservice.noaa.gov/education/for_fun/BuildyourownWeatherStation.pdf

Wild weather crossword

Not only does wild weather contain lots of new words (vocabulary) to learn how to spell, it contains words which you need to understand the meaning of.

By going to the helpful website list, you can make a crossword puzzle which will help you to not only spell the wild weather words correctly but also understand what these words mean!



Once you have finished making the crossword, try it out! Add it to your recording journal.

Your turn

Wild weather investigation

Wild weather can have a major impact, such as flooding and the loss of homes and land.

Investigate a wild weather event either in your area or some other chosen area of the world.

Explain:

- what the wild weather event was
- where it was
- what caused the wild weather event
- the results of the wild weather
- the impact.

To help plan and organise your thinking, use toolbox TB21 Cause and Effect.

Present your findings in any format you choose. Understanding for readers will be clearer if you include images, diagrams, maps, explanations of scientific words and other visual, aural and written support.

Wild weather – helpful websites

Activity 1 What is weather page 3

The reasons for the seasons

What causes the seasons to change

www.youtube.com/watch?v=Udvlep63cXk

The Māori view of the seasons

How Māui and his brothers slowed the sun

www.youtube.com/watch?v=jbM3PwcGi0g

What is weather?

www.econet.org.uk/weather/whatis.html

Activity 3 Types of weather page 7

Weather links

www.weatherwizkids.com/?page_id=5

www.weatherwizkids.com/?page_id=117

Tāwhirimātea

<http://en.wikipedia.org/wiki/T%C4%81whirim%C4%81tea>

Wild weather word find

Make a word find

http://puzzlemaker.discoveryeducation.com/WordSearchSetupForm.asp?campaign=flyout_teachers_puzzle_wordcross

<http://worksheets.theteacherscorner.net/make-your-own/word-search/>

Wild weather crossword

Make a crossword

http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp?campaign=flyout_teachers_puzzle_crisscross

www.puzzle-maker.com/CW/





Acknowledgements

Every effort has been made to acknowledge and contact copyright holders.
Te Aho o Te Kura Pounamu apologises for any omissions and welcomes more accurate information.

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Earth axis diagram, 42871528

Dafodils, 2848247

Kids drawing in sand, 14210559

Happy snowboarder, 40574274

Autumn trees, 2661213

Water cycle diagram, 36430362

Treasure chest, 16175975

Tornado, 32689776

Water whirlpool, 32262640

Crossword, 42068224

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Assessment and Evaluation

SCL341

Tick the boxes that best match your learning.

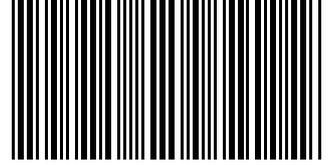
Name	Student ID No.
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I can	Not attempted	Had a go	Succeeded	Did very well	Did an excellent job
Gather and interpret information about the relationship between the tilt of Earth's axis and the seasons we experience.		Correctly answers one question.	Correctly answers two questions.	Correctly answers three questions.	Correctly answers all four questions.
Make meaning of scientific representations related to a diagram of the water cycle.		Correctly labels (names) one of the parts – A, B, C, D of the water cycle.	Correctly labels (names) two of the parts – A, B, C, D of the water cycle.	Correctly labels (names) three of the parts – A, B, C, D of the water cycle.	Correctly labels (names) ALL of the parts – A, B, C, D of the water cycle.
Gather and interpret information about the different types of wild weather.		Mind map drawn and appropriate words added to describe at least four types of weather.	Each part of the wild weather mind map completed with appropriate words to describe each type of weather (6) and (correct) paragraphs written to describe the key features of 1–3 types of weather or a brief sentence written for all six.	Each part of the wild weather mind map completed with appropriate words to describe each type of weather (6) and (correct) paragraphs written to describe the key features of four or five types of weather.	Each part of the wild weather mind map completed with appropriate words to describe each type of weather (6) and (correct) paragraphs written to describe the key features of each type of weather.
Use evidence to support ideas about wild weather.		Correctly identifies 1–3 statements as being T or F.	Correctly identifies 4–7 statements as being T or F.	Correctly identifies 8–11 statements as being T or F.	Correctly identifies all 12 statements as being T or F.

Student comment

Supervisor comment
Comment on your student's observational skills.
Any other comments

Teacher feedback



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**STUDENTS – PLACE STUDENT ADDRESS LABEL BELOW OR
WRITE IN YOUR DETAILS.**

FULL NAME _____

ID NO. _____

ADDRESS _____

www.tekura.school.nz

