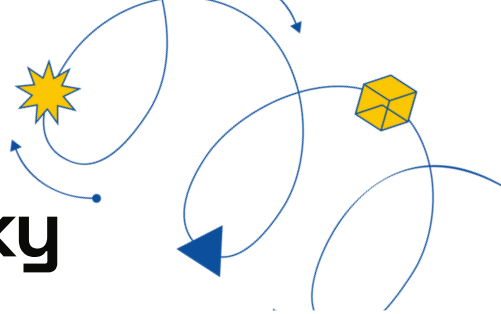


Mini Select: Wonders in the Sky



SCIENCE
ALIVE

Every day we experience different types of weather — but have you ever wondered how each one forms? These striking wonders in the sky are all part of how weather, light, and temperature interact. This mini is perfect for sparking curiosity about scientific ideas like weather, light, seasonal changes, and climate.

OBSERVE:

1. Āta titiro (look carefully) at the three weather images.
2. Encourage ākonga to whakaaro (think) about what they can see. Consider the following pātai (questions):
 - What do you notice first in each image?
 - What objects, shapes, colours, and patterns can you see?
 - What is the light doing in each picture?
3. Encourage ākonga to use precise language to describe what they observe, rather than inferences or opinions, and use questioning to help them focus on the details.
4. Ākonga share their observations (you might choose to write these down).

SELECT:

1. Using their observations, encourage ākonga to find similarities and differences between the weather phenomena.
2. Ākonga āta kōwhiri (carefully select) the image they think might be different from the others.
3. Ask learners to give reasoning with 'I think.... because I notice...'
4. Reflect on thinking:
 - Could there be more than one answer? Why or why not?
 - What new ideas or questions do you have now?

DISCUSS:

- Which weather phenomena do you think lasts the longest? The shortest? Why?
- What kind of weather or temperature do you think is happening in each image? What clues can you find?
- Which weather image is cooler or warmer?

Science Alive Learning Portal

This printable supports an online resource found on the Science Alive learning portal.

Explore hundreds of interactive resources across a range of topics, all completely free.

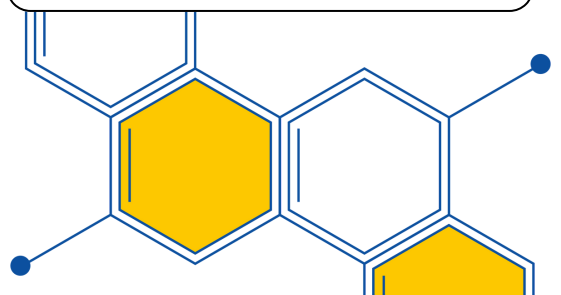


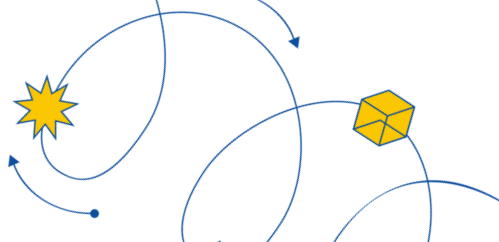
Scan the QR code to visit the lesson library:

www.sciencealive.co.nz

This lesson was developed with generous support from NEX and NZASE.

www.nzase.org.nz





DISCOVER THE SCIENCE:

Snow is a type of **precipitation** that forms in **nimbostratus and cumulonimbus clouds**. It develops when **water vapour freezes** directly into **ice crystals**—without becoming liquid first. These crystals grow by sticking to one another until they become **too heavy and fall to the ground** as snowflakes. This process occurs when the air is both **humid and colder than 0°C**.

Āniwaniwa (rainbows) occur when **sunlight passes through raindrops** in the atmosphere. As sunlight enters a water droplet, it **refracts (bends) and separates** into the seven wavelengths of light—red, orange, yellow, green, blue, indigo, and violet. The light is then **internally reflected** off the back of the droplet and **refracted** again as it exits, creating the visible spectrum. Āniwaniwa are an **optical illusion**—their appearance depends on **your position** and the **angle of the sunlight**.

Te rā (the Sun) is a **powerful star** that sends **light through space** at nearly 300,000 km per second, **reaching Earth in just over 8 minutes**. We see the Sun because of **Earth's rotation on its axis**, exposing different parts of the planet to its light and creating the sunrise and sunset we see here on Earth. What we see as **white light** is actually a **mix of all the colours in the spectrum**.

COMMON MISCONCEPTIONS:

Students' prior knowledge can help them connect with new ideas, but it can also lead to misconceptions if their earlier understanding is inaccurate. Below are some possible misconceptions that may arise from the images used in this mini:

"The Sun moves around the Earth."

The Science: The Earth rotates around on its axis, causing the sun to appear to move across the sky. One full rotation of the Earth takes approximately 24 hours, which is what we call one day.

"You can find the end of a rainbow and move closer to touch it."

The Science: A rainbow is an optical illusion that changes depending on where you are standing. This means that two people, looking at a rainbow from two different locations, will see the rainbow differently.



Connect:

Wonders in the Sky

SCIENCE
ALIVE

MATHEMATICS



Younger ākonga might be intrigued by the weather outside. Take this opportunity to introduce tally charts as a tool for collecting data and track the weather over the course of a week. Turn the collected data into a pictograph or simple bar graph and discuss the findings through guided questioning.

You could encourage older ākonga to investigate rainfall over the period of a week by collecting real data or using the MetService website 'past weather' tab. After collecting their data, learners can graph their results, then write statements to describe patterns, compare rainfall across days, and interpret what the data shows.

SOCIAL SCIENCES



With younger ākonga, you might explore snow further with this BBC Bitesize. Then, take a look at where snow falls in Aotearoa by looking at photos, videos, or maps. Talk about why it snows in some places but not others. Learners could find snowy locations on a map of Aotearoa.

Older ākonga could complete the Science Alive Alternative Energy: Te Kaha o Tamanuiterā lesson, focusing on alternative energy and how the sun, wind, and water can be harnessed to generate electricity. They could then research a local place using solar panels—such as a school, marae, or business—to explore why it was chosen and how it benefits the community.

HEALTH & PE



Encourage younger tamariki to think about sun safety and how to practice it at school, home, and in the community. Discuss wearing hats, using sunscreen, and staying in the shade. Learners can create drawings or posters showing sun safety habits and share how they can stay protected.

Senior ākonga could learn about the importance of wellbeing and create a school-wide rainy-day plan to help tamariki stay active and positive indoors. They could consider ideas for movement, mindfulness, and screen-free activities, then personalise their plan and display it in every classroom for the next rainy day.

FUTURE FOCUS



The skills and knowledge developed in this mini could inspire learners to explore pathways beyond the classroom! If your ākonga were engaged in this activity, it could be a great opportunity to connect with experts or someone from your local community to learn more. You could also explore the skills and school subjects involved in some of the related careers listed below:

- Meteorologist
- Climatologist
- Environmental Scientist