

WithOnePlanet

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Investigate

Lesson 4
Teacher notes
It's raining carbon!

Years

1 to 2



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INQuIRY     

It's raining carbon!

Lesson 4: Teacher notes

This document provides the teacher with the details of the lesson.

At a glance

To provide students with hands-on, investigation experiences of how changes in the amount of carbon in the atmosphere can affect changes in the weather.

Lesson focus

The *Investigate* phase is designed to provide students with hands-on experiences of the science phenomenon. Students explore ideas, collect evidence, discuss their observations and keep records. The *Investigate* phase ensures all students have a shared experience that can be discussed and explained.

In the *Investigate* phase students develop a literacy product to represent their developing understanding. They discuss and identify patterns and relationships within their observations. Students consider the current views of scientists and deepen their own understanding.

Assessment guide

This assessment guide supports teachers in identifying the types of assessment that are appropriate for this lesson.

Formative assessment is an important aspect of the *Investigate* phase. It involves monitoring students' developing understanding and giving feedback that extends their learning. It involves monitoring students' developing understanding of:

- > how changes in the amount of carbon in the atmosphere can affect changes in the weather.

You will also monitor their developing science inquiry skills

Summative assessment of the science inquiry skills is another important focus of the *Investigate* phase. Rubrics can be used to gauge the level of student achievement on performance tasks.

Key lesson objectives

Science

Students will be able to:

- > observe the weather and reflect on past weather events
- > explain what air is and what it is made up of
- > link changes in the weather to changes in carbon dioxide levels in the air.

Literacy

Students will be able to:

- > contribute to discussions about the air, its components and how these can affect the weather
- > record their observations, ideas and descriptions in drawings and words using experimental report templates.

This lesson also provides opportunities to monitor the development of students' general capabilities.

Teacher background information

Weather – short-term changes in the climate on a local scale – can change from day to day and seasonally. Weather can be described in terms of the amounts and behaviours of sunshine, water and air (including wind). Different types of weather sustained over longer time periods can also be described using more generalised terms such as drought. Extreme weather events, including droughts, but also including acute weather events such as hurricanes, cyclones and flash floods can result from particular environmental conditions. One such condition is the amount of greenhouse gas present in the atmosphere. As atmospheric greenhouse gas concentrations rise, so do the frequency and severity of extreme weather events.

Equipment

For the Class

- > A large-format copy of the *What makes the weather change? - Group worksheet*.

For each Student

- > Students will each require a copy of the *What's the weather? - Student worksheet*.

Preparation

- > Find a natural setting in which to conduct the lesson.

Lesson steps

1. This lesson is best conducted outside in a natural setting.
2. Invite students to draw a picture of today's weather on the *What's the weather? - Student worksheet* in the box called *Today's weather*. Ask students to explain what they drew to the student sitting next to them.
3. Ask students to think about a recent time when the weather was different and then draw a picture of this on the *What's the weather? - Student worksheet* in the box called *Different weather*. Ask students to show their pictures and describe the weather that they have drawn.
4. Ask students if they have ever experienced themselves or seen images or videos of cyclones, big storms, floods, hurricanes or other similar wet weather events. Ask for students to describe these sorts of weather events, using the following prompt questions:
 - > What was happening to the air/wind during that weather event?
 - > Was there any water involved? What was happening to the water?
 - > Was there any sunshine involved?
 - > What was happening to the trees?
 - > What else was happening?
5. Ask students to draw a picture of some wet weather on the *What's the weather? - Student worksheet* in the box called *Wet weather*. Ask students to show their pictures and describe the weather that they have drawn.

6. Ask students if they have ever experienced themselves or seen images or videos of very dry weather events, such as droughts and dust storms. Ask students to describe these sorts of weather events, using the following prompt questions:
 - > What was happening to the air/wind during that weather event?
 - > Was there any sunshine involved? What was the sun doing to the land?
 - > What was happening to the trees and the animals?
 - > What else was happening?
7. Ask students to draw a picture of some dry weather on the *What's the weather? - Student worksheet* in the box called *Dry weather*. Ask students to show their pictures and describe the weather that they have drawn.
8. Facilitate a discussion about the possible causes of changes in the weather using the following prompt questions. Record students' responses on the *What makes the weather change? - Group worksheet*.

NOTE: This is a difficult task for students, so they may not have many responses at this stage.

- > Do changes in the amount of sunshine affect the weather?
 - > Do changes in the amount of clouds in the sky affect the weather? What causes the number of clouds to change?
 - > Do changes in the air affect the weather? How can the air change?
9. Explain to students that scientists have found that changes in the air can cause big changes in the weather. Ask students if they know what air is made up of. Some prompt questions you could use are:
 - > What parts of the air do we breathe in/do our bodies use? (oxygen)
 - > What parts of the air do we breathe out/do our bodies remove? (carbon dioxide)
 10. Explain to students that as its name indicates, the part of the air called carbon dioxide contains CARBON. Scientists have found that the more carbon dioxide there is in the air, the more often bad wet and dry types of weather happen. Explain to students that this doesn't mean that these types of weather will be the ONLY weather that occurs; it means that these types of weather will happen more often.