Teacher Resource

Northern Hemisphere Heatwave

Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. Name some of the countries in the Northern Hemisphere that have been affected by recent heatwaves. Find on a map.
2. What affect are heatwaves having on the environment and on people?
3. What natural weather phenomena is partly to blame for the heatwave?
    a. El Nino
    b. La Nina
4. What is the definition of a heatwave?
5. What can cause a heatwave?

Activity: Class Discussion

After watching the BTN Northern Hemisphere Heatwave story, facilitate a class discussion, using the following questions to get the discussion started. Use a mind map to record your student's responses.

- What words would you use to describe a heatwave? Use a mind map to record your responses.
- Why causes heatwaves?
- What impact do heatwaves have on people and places?
- How can we protect ourselves from heatwaves?
- Have you ever experienced a heatwave? Describe how it affected you.
- What do you want to learn about heatwaves?

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KEY LEARNING
Students will investigate what heatwaves are, what causes them and how they impact people and places.

CURRICULUM
Geography – Year 5
The impact of bushfires or floods on environments and communities, and how people can respond.

Geography – Year 7
Evaluate sources for their reliability and usefulness and select, collect and record relevant geographical data and information, using ethical protocols, from appropriate primary and secondary sources.

Interpret geographical data and other information using qualitative and quantitative methods, and digital and spatial technologies as appropriate, to identify and propose explanations for spatial distributions, patterns and trends, and infer relationships.

Science – Year 6
Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives.

The growth and survival of living things are affected by physical conditions of their environment.

Sudden geological changes and extreme weather events can affect Earth's surface.

Activity: Glossary

Ask students to think of words they associate with the word HEATWAVE. Record students' ideas on a mind map with the word HEATWAVE in the middle. Below are some suggested words.

HEATWAVE	EXTREME WEATHER	METEOROLOGIST
AIR PRESSURE	TEMPERATURE	EL NINO

Ask students to clarify their understanding of the key words by writing down what they think the word means. Swap definitions with a partner and ask them to add to or change the definition. Check them using a dictionary or other source.

Activity: Research project

Discuss the information raised in the BTN Northern Hemisphere Heatwave story. What questions were raised in the discussion and what are the gaps in students' knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic.

What do I **know**?	What do I **want** to know?	What have I **learnt**?	**How** will I find out?

Students will develop their own question/s to research or select one of the questions below.

- What extreme weather are people experiencing in the Northern Hemisphere? What impact are the heatwaves having on people and the environment?
- What is a heatwave? Use scientific words to help explain this extreme weather event.
- How are heatwaves in Australia and other parts of the world similar or different?
- How do experts predict when a heatwave is going to occur?
- How are heatwaves dangerous?
- How are heatwaves measured?
- How can we prepare for heatwave conditions and reduce the impact of heat stress? Create a public awareness campaign that targets people living in heatwave prone areas.
- Which areas in Australia do you think would be most at risk of experiencing a heatwave? Highlight on a map.
- What is the difference between La Nina and El Nino and when they occur? Define the terms La Nina and El Nino and explain using your own words.

Activity: Six Hat Thinking

As a class, use Edward De Bono's Six Hat Thinking to explore the issues raised in the BTN Northern Hemisphere Heatwave story. Make your own coloured hat cut outs and place on the floor. Students will take it in turns answering questions in relation to what they already know about the issue, what they have learned from the story and what they want to learn further about the topic. Ask students to respond to the following questions:

- How did the BTN Northern Hemisphere Heatwave story make you feel?
- What do you know about heatwaves?
- What have you learnt from the story?
- Were there any positives from the story? If so, what were they?
- What are some of the negatives or challenges that you learnt from the story?
- Why is it important to find out more about heatwaves and staying safe and healthy during a heatwave?
- What questions were raised during this activity?
- What do you want to learn further about this topic?

Activity: How hot is your school?

The ABC's Craig Reucassel visits a school in Western Sydney where the classrooms get very hot in the summer months. The students conduct an investigation to measure the temperatures in different locations around the school, and they think about solutions to cool down their learning environment.

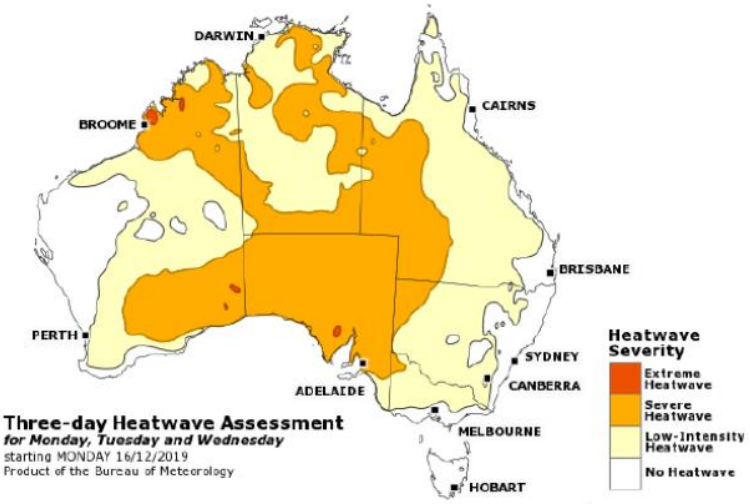
As a class watch the Big Weather: How Hot is Your School? video and then students will respond to the following.

1. When was the last time you experienced extreme heat? Describe some of the ways your body reacts to extreme heat.
2. What are some of the solutions to keep classroom temperatures down proposed by the students and Dr Sebastian Pfaustch?
3. How would you describe the heating and cooling systems in your own learning environment? What impact do you think the temperature has on your ability to learn?
4. Visit the CSIRO website to learn more about Australia's changing climate and extreme heat.

Activity: Act Like a Meteorologist

Students will start to think like a meteorologist and analyse the map below, which was produced by the Bureau of Meteorology. Students will then respond to the following questions:

- What features do you see on this map? Make a list.
- What does the map tell us?
- What does it measure?
- What does the colour coding tell us?
- What area does it cover?
- What period of time does this map cover?
- What is the purpose of this map?



BOM Map: Example of a heatwave assessment map and text

Further investigation

- What is a heatwave? How does the Bureau of Meteorology define a heatwave?
- How is a heatwave measured? Who measures heatwaves? What instruments are used to measure heatwaves?
- How is a heatwave assessment map different to a heatwave forecast map? Explain using your own words.

Activity: BTN stories

These BTN stories look at the impact extreme weather has on people and the environment. After watching any one of the BTN videos ask students to respond to the discussion questions (to find the teacher resources go to the related BTN Classroom Episode and download the Episode Package).

Heatwaves

Europe Heatwave

American Heatwave

Extreme Weather

Mt Resilience AR App

Weather Science

Useful Websites

- Extreme heat sweeps the world from Europe to the US and Japan – ABC News
- The World's Hottest Day – BTN Newsbreak
- 'Unbearable' Cerberus heatwave sweeps across Europe – CBBC Newsround
- El Nino – National Geographic
- What is El Niño and how does it impact Australia? – Bureau of Meteorology
- American Heatwave – BTN
- Heatwave Knowledge Centre – Bureau of Meteorology
- Why heatwaves happen and where they come from – ABC News
- How hot is your school? – ABC Education
- What is El Nino? – BTN
- How to survive a heatwave – ABC Education
- Weather Science – BTN