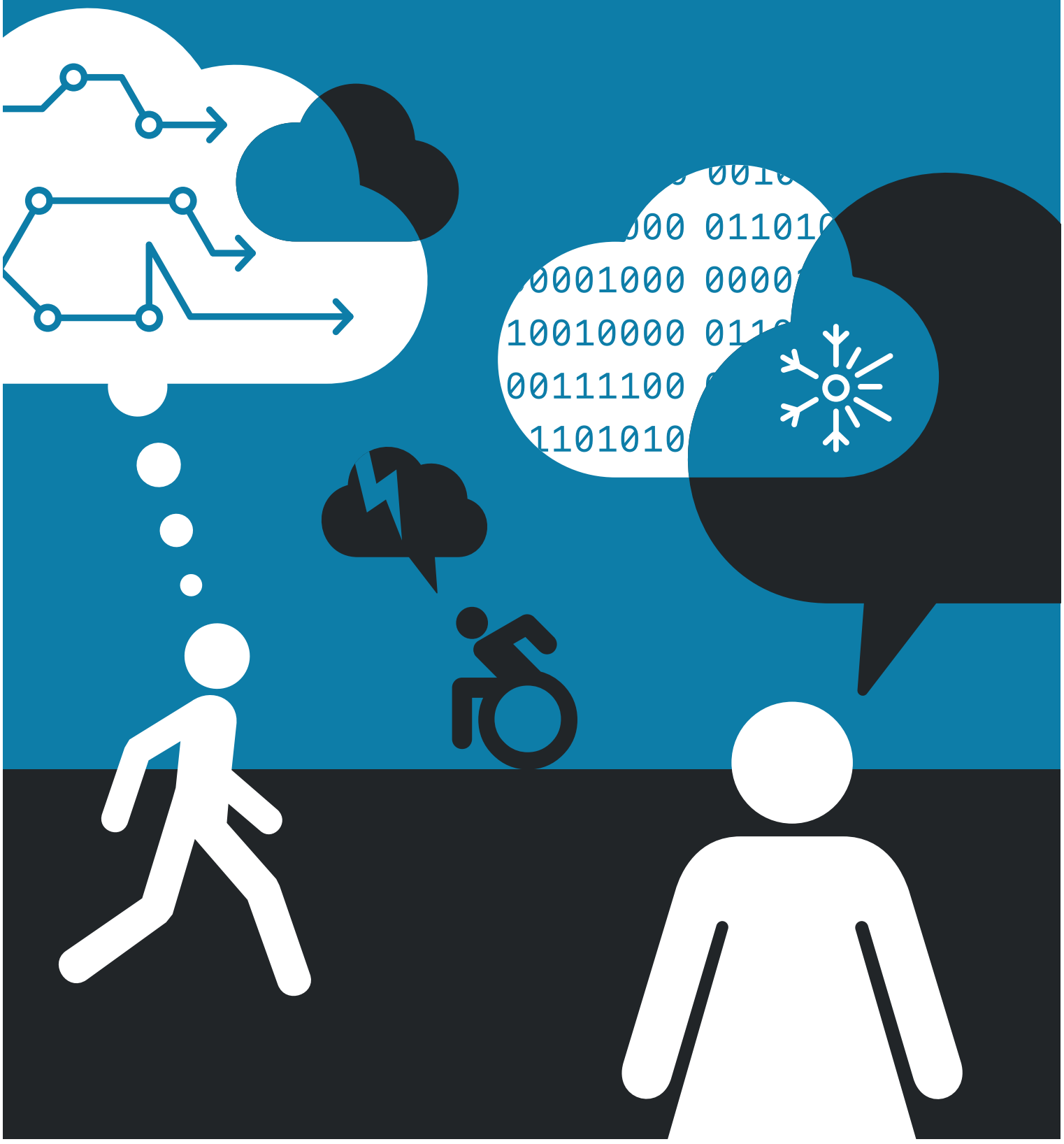
Met Office

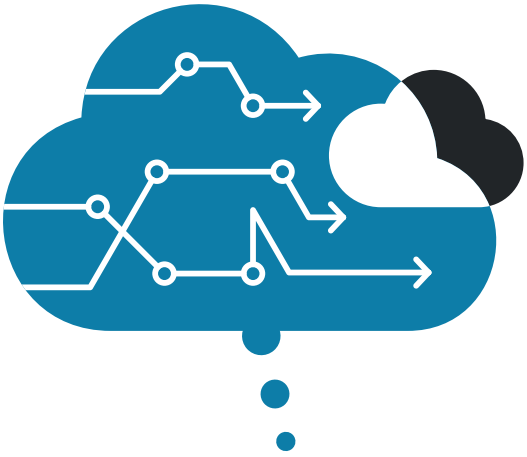
Age range: 11-14

Amazing aurora



Introduction

Overview



What if we were to tell you that space has its own weather? Not like our weather here on Earth, but weather that is made up of particles and energy blown by a wind from the Sun that affects our planet in spectacular ways. Space weather helps produce amazing auroras in the Northern and Southern Hemispheres and leads to other impacts that could affect our day-to-day lives. In this lesson you will explore the aurora through the eyes of different cultures using their folklore to create your own stories about space weather and its impacts.

Time required

80 minutes (or more depending on presentation lengths)

Materials required

- Amazing aurora slides
- Access to the internet (for online search)
- Amazing aurora story

Learning objectives

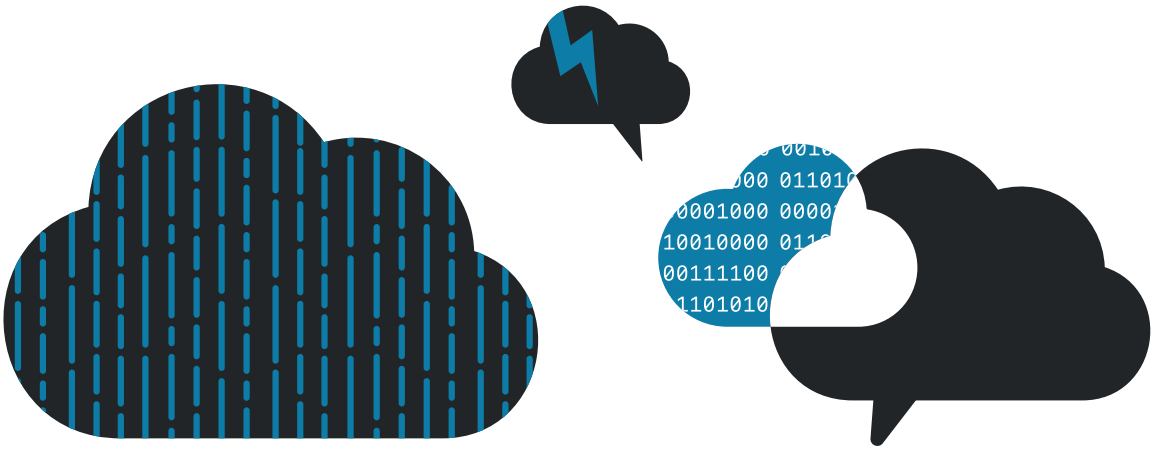
This lesson enables pupils to:

- Be able to tell and retell stories based on cultures and folklore of the aurora using your imagination
- Be able to adapt a story and writing to fit a purpose and audience
- Be able to prepare and give a short presentation to a familiar group

Curriculum Links

- **English literacy and language** – written and verbal communication/creative writing
- **Geography/social studies/the world around us** – maps and locations
- **Computing/ICT** – understanding how information can help make decisions
- **Science/sciences and technology** – new developments in science/develop knowledge and understanding of topical science.
- **Art and design/expressive arts** – storytelling

Activity steps



Ice breaker

Start the lesson as a whole class, ask your pupils to discuss in pairs:

- What kind of things do you find in the sky?
- What kind of things do you see in the night sky compared to in the day?

Get them to come up with a list of things that they might see in the sky in the daytime and at night. Examples could be clouds, birds, sun, moon, stars, aeroplanes etc.

Groupwork

5 minutes

01

Tell the class that there are other things that we see in the sky, particularly when its dark.

Show the pupils the image of the Aurora Borealis and discuss with the class that this is a very special effect that happens in the sky and can be seen by eye when the sky is dark, but is only usually seen from a few places around the world. You can also visit this link to watch a video of the aurora.

Ask the class if any of them recognise what these are? Yes, this is called an aurora.

Ask the pupils:

- What do you think this effect looks like?
- How does it make you feel?
- What does it remind you of?
- Have any of you seen these lights before?

Get the pupils to share their ideas with the class and write them on the whiteboard for the class to refer to later.

Groupwork

10 minutes

Slides 2-3

Activity steps

Show the pupils the map of the world on slide 3 and ask the class if they know of any places around the world where you would see the aurora? Using the map, play a game with the class. Ask a volunteer to come up to the map and see if they can point to where the countries are on the map that you will reference (Scotland, Finland, Canada, Alaska, Norway).

As the pupils are pointing to the countries, ask the class to think about what they notice about the places you are mentioning. Hopefully the pupils will notice that they're all in the Northern Hemisphere.

Referring to the map, explain to the pupils that this effect in the night sky is called the 'Aurora Borealis' when it occurs in the Northern Hemisphere, and they're often called the 'Northern Lights'. Refer to the list that was made at the start of the session, add 'Aurora Borealis' to the list. Aurora can happen at any time of the day and during any season, but your best chance to see them is when it's dark and there's a clear sky. So, don't forget to check the weather forecast and wrap up warm if you're aurora-hunting!

Tell the class that aurora are not just limited to the Northern Hemisphere. They can also be seen in the southern part of the globe, the Southern Hemisphere. Ask the pupils if they know where Antarctica is? Again, ask a volunteer to come up and locate it on the map. Explain to the class that when the lights happen in the Southern Hemisphere it's called the 'Aurora Australis', or 'Southern Lights'. Ask the class if they know of any places where they might see aurora here? (southern Argentina and Chile, southern parts of New Zealand and Tasmania)

02

Show slide 4, the map of Finland. Tell the class that a long time ago the Finnish people created a story explaining for origins of the Aurora Borealis.

Read the story of the "Amazing Aurora" and ask the class afterwards:

- How did the story make you feel?
- Do you believe that the Northern Lights could be made could be made by a magical fox?


Groupwork


15 minutes


Slides 4-5

Activity steps

Explain to the class that this kind of story is often called folklore. What is folklore? Folklore can be a story, song, belief or custom that different cultures develop and may associate with their own group identity. Folklore is not always written down and often passed through generations through word of mouth. Some fairy tales come from folklore.

Explain to the class that it's not just Finnish folklore that talks about animals darting across the sky causing the Northern Lights (show slide 5). The Inuit of Alaska described the lights as the dancing souls of their favourite animals: seals, beluga whales, salmon or caribou.

Split the class into small groups and explain to them that you would like them to go away and research their own folklore tales and facts from other cultures about the aurora. They should use the internet to do this

03

Bring the class back together and ask the pupils to reflect on the stories and information that they have collated. Ask the pupils if they found out anything interesting that they would like to share with the class?

Using their collection of stories and folklore that the pupils have gone away and researched, tell the class that you would like them to start thinking and planning their own creative expressions on the stories and tales they have collected.

The class can work in pairs, small groups or individually on how they would like to represent their thoughts and ideas. Give the class some starter ideas, would it be through a story, video or a drama piece? Explain to the class that they need to also think carefully about their audience. Who are they wanting to show this to? Their classmates, teachers, the public, to an audience in a theatre?

Get the class to start planning their response.


Individual/groupwork


25 minutes


Slide 6

Activity steps

04

When the pupils have drafted or completed their stories, invite them to showcase all or part of their work to the class.

During the performances, ask the class to think about how it makes them feel, what did they like about the interpretations?

Also, allow them to ask questions if there is sufficient time afterwards.

Groupwork

10-15 minutes

Slide 7

05

Bring the lesson to a close by telling the pupils that we know what causes these magnificent lights in the sky and it is all to do with the behaviour of the Sun, the nature of Earth's magnetic field and atmosphere, and our location in the solar system.

Show them a picture of the Sun in space on slide 8 and discuss with the pupils that we get weather in space, just like we do on Earth.

On Earth, our weather is influenced by things like temperature, availability of water and the movement of air.

Space weather is different. The Sun doesn't only give out heat and visible light, it also gives out lots of charged particles and magnetic field. Show slide 9, sometimes there are even storms on the Sun which mean even more particles and energy are ejected out into space.

These particles travel across the solar system, carried by the solar wind – this is space weather. If there are lots of particles and a strong solar wind and they get blown towards the Earth, they can interact with the magnetic shield that surrounds our planet. It is this interaction that causes the beautiful aurora.

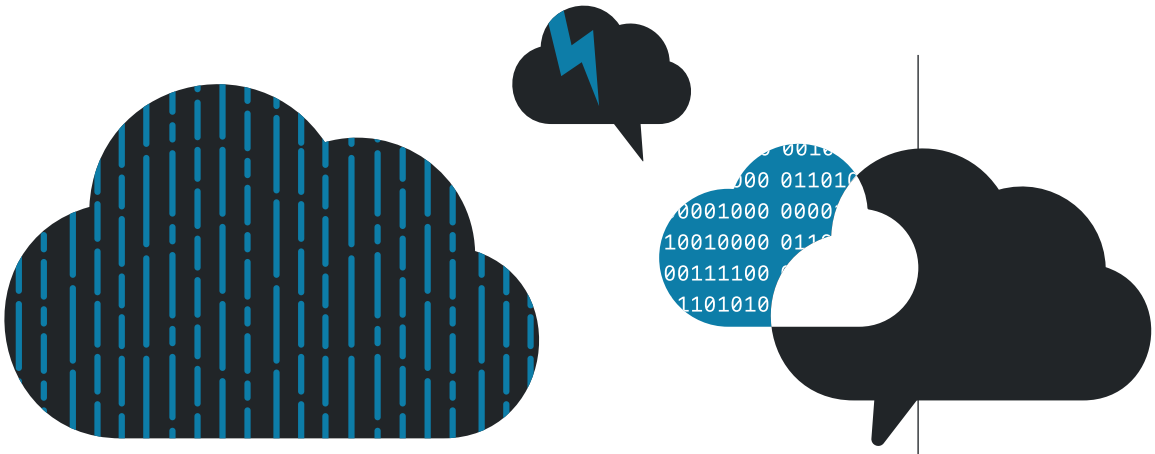
The Met Office has its own Space Weather forecasters just like it has weather forecasters for the weather here on Earth. It can help us forecast when the best time is to see aurora (show slide 10).

Groupwork

10 minutes

Slides 8-11

Activity steps



But space weather forecasts are not only important for aurora-watching. When the solar wind is really strong, the charged particles can also interact with all sorts of technology, both here on Earth and out in space (slide 11). A big space weather event can cause power cuts, it can stop satellites working and it can knock-out many types of communications. This is why it's really important that organisations like the Met Office work with governments, industry and defence to provide forecasts so that they can make plans to minimise the risk of a space weather event.