Extreme Weather in the UK

Teachers notes

These lesson objectives are intended for the **KS3 Geography curriculum**, specifically focusing on the topic of **weather and climate**. However, the content can be tailored to suit different key stages, accommodating varying levels of prior knowledge and understanding.

The lesson on **Extreme Weather in the UK** can be worked through at any pace, and it can be split into multiple lessons if needed. This flexibility allows you to adjust the flow based on the class's understanding and time constraints. If some sections require more in-depth exploration, feel free to extend them over additional lessons to ensure students fully grasp the concepts before moving on.

The worksheets can be filled in during the lesson, as homework, or in individual sections, depending on the pace of the lesson.

Lesson Aim:
The aim of this lesson is to explore the various extreme weather events prevalent in the UK, focusing on the mechanisms of flood warnings and Met Office weather warnings, and to analyse the impacts of the 2023-24 storm season. Students will understand the significance of these warnings in promoting preparedness and response to extreme weather.

Lesson Objectives:
- Understand the concept of extreme weather and identify various types of extreme weather events in the UK.
- Identify the different types of flood warnings issued by the Environment Agency and their significance.
- Analyse the impacts and characteristics of the storms during the 2023-24 season, including how they relate to the wider context of extreme weather in the UK.

Assumed Prior knowledge:
- Familiarity with basic weather concepts from previous lessons.
- Students should have a general understanding of the typical weather patterns and conditions in the UK.

Resources needed:
  - Lesson 2 Worksheet (Fill the blanks exercise, Crossword puzzle)
  - 2023/24 Storm Season Top Trumps (https://thefloodhub.co.uk/wp-content/uploads/2024/08/2023-24-Storms-1.pdf)
  - Scissors

All the blank worksheets for this lesson can be found as a separate download within the 'Lesson 2' page of The Flood Hub KS3 Geography Weather and Climate Learning section. The answers for the worksheets can be found at the end of this document.

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Notes for Each Slide:
Teachers should decide what students should copy into their workbooks. While most content is provided on the worksheet, any additional information can be recorded in the workbooks.

Slide 1 - Learning Objectives
- Slide containing the learning objectives of the lesson, read each objective out loud to the class, ensuring that students understand what they will learn by the end of the lesson.

Slide 2 - Starter Activity (5 mins)
- Ask students to discuss in pairs or small groups about any extreme weather events they've heard about or experienced in the UK and how do these events differ from regular weather, and what impact do they have on people and communities?
- **Prompt:** Encourage students to think about events which are in the news? Reflecting back on the last lesson and considering the extremes of different weather types. For example, what does extreme rain become? What about extreme sun? Extreme temperatures? Extreme wind?

Slide 3 - Weather in the UK fill the blank activity
- Talk through the slide which provides an overview of typical UK weather patterns, highlighting regional differences.
- **TASK**: Students will fill in the blanks on their worksheets

Slide 4 - Weather in the UK fill the blank answers
- Go through the fill-in-the-blank answers, discussing each point. Encourage students to ask questions to ensure they understand the regional weather differences in the UK.

Slide 5 - Extreme weather definition
- Read the definition of extreme weather aloud from the board, emphasising how it differs from regular weather

Slide 6 - Extreme weather definition
- **TASK:** Students write the definition in the space on their worksheets.

Slide 7 - Storms
- Explain to the students that since 2015, the Met Office has implemented a system for naming severe storms in the UK. This practice is important for public safety and effective communication regarding severe weather.
- Discuss how naming storms helps to make storms more relatable to the public and raise awareness of their potential impacts.

Slide 8 - Summer vs winter storms
- Explain the differences between summer and winter storms, focusing on their characteristics and typical weather patterns in the UK.

Slide 9 - Storms
- Introduce the significance of the 2023-24 storm season as there were 12 named storms this season, the highest number recorded since the naming system began, indicating a trend towards more frequent storm activity.
- Highlight that the increase in both the frequency and severity of storms suggests that extreme weather is becoming more common in Western Europe, possibly linked to climate change.

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Slide 10 - Top trumps card activity

- **TASK:** Instruct the students to carefully cut out the Top Trumps cards to ensure they are all usable for the activity, then to work in pairs or small groups to encourage discussion and collaboration.
- Students should compare the storms based on various attributes such as strength, impact on communities, duration, and any notable features.
- Encourage students to discuss which storm they believe had the most significant effect and why, prompting them to use evidence from the cards to support their opinions.
- Walk around the classroom while students are working to listen in on discussions, ask guiding questions, and encourage deeper thinking about the impacts of each storm.
- After the activity, bring the class back together for a brief discussion. Ask each group to share their findings and conclusions, highlighting any interesting insights or differing opinions.

Slide 11 - Strong winds

- Explain what extreme winds are and why they are considered a serious weather event and that they occur due to significant pressure differences in the atmosphere, resulting from high-pressure and low-pressure systems.
- Highlight the potential consequences of extreme winds, including:
  - Damage to buildings and infrastructure, which can lead to costly repairs and safety hazards.
  - Uprooted trees that can block roads, damage property, and pose risks to people.
  - Disruption of power supplies, which can affect homes, businesses, and essential services.

Slide 12 - Thunderstorms

- Explain that thunderstorms are a common weather phenomenon in the UK, particularly during the summer months.
- Emphasise the dangers posed by thunderstorms, particularly lightning strikes, which can cause damage to buildings, start fires, and pose serious risks to safety.

Slide 13 - Droughts

- Begin by explaining what a drought is - a prolonged period of below-average rainfall that can significantly impact the environment and society.
- Discuss the factors that contribute to drought, such as prolonged periods without rain, climate patterns, and changes in weather systems. Highlight how human activities, like excessive water use and land management practices, can exacerbate drought conditions.
- Emphasise the consequences of drought, including water shortages that affect households, agriculture, and industry.
- Discuss the potential for crop failures due to insufficient water, leading to food shortages and economic impacts for farmers and communities.

Slide 14 - Floods

- Begin by defining what floods are - situations where water inundates land that is typically dry.
- Discuss the main factors that lead to flooding:
  - Heavy Rain: Explain how prolonged or intense rainfall can saturate the ground and lead to surface runoff.
  - River Overflow: Describe how rivers can overtop their banks during periods of heavy rain or snowmelt, contributing to flooding in adjacent areas known as the floodplain.
  - Storm Surges: Discuss storm surges caused by severe weather events like hurricanes, which can push seawater onto land and exacerbate flooding.
- Emphasise the serious consequences of floods, including: damage to homes, infrastructure damage and safety risks.

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Slide 15 - Flood warnings

- Explain the importance of flood warnings in helping communities prepare for potential flooding events.
- Discuss the role of the Environment Agency in England, highlighting its responsibility for monitoring weather conditions and issuing flood warnings based on data from various sources.
- Present the different methods people use to receive flood warnings, including text and email alerts, the 'Check for Flooding' service on their website, local radio and television broadcasts, social media updates, community warning systems, and communications from emergency services.
- Emphasise how timely flood warnings give people the opportunity to prepare, such as gathering emergency supplies, implementing flood defences, and evacuating if necessary.

Slide 16 - Different flood warnings

- Describe the different levels of flood warnings issued by the Environment Agency, explaining what each level means and the actions people should take upon receiving one of these warnings.

Slide 17 - Flood warnings

- **TASK:** Instruct the students to fill in the flood warning section on their worksheets based on what they have learned about each warning level.
- Encourage students to think about practical and specific actions they would take e.g. checking supplies, installing property flood resilience, creating an evacuation plan...

Slide 18 - Extreme heat spells

- Briefly explain that extreme heat spells are prolonged periods of unusually high temperatures, often accompanied by high humidity, and they can have serious impacts on both people and the environment. Such as:
  - Heat-related Health Risks: Emphasise the health dangers such as dehydration, heat exhaustion, and sunburn.
  - Environmental Impact: Discuss how extreme heat can dry out vegetation, leading to wildfires.
  - Link to Other Weather Events: Mention that heat spells can sometimes lead to secondary weather events like thunderstorms, as hot air rises rapidly, potentially causing storms.

Slide 19 - Extreme cold spells

- Explain that extreme cold spells are prolonged periods of very low temperatures, often seen during the UK winter, and can cause significant disruption to daily life. For example:
  - Weather Conditions: Emphasise that these cold spells bring freezing temperatures, heavy snow, and ice, which can create dangerous conditions for walking and driving.
  - Health Risks: Highlight the health risks associated with extreme cold, such as hypothermia and an increased likelihood of illness, especially among vulnerable groups like the elderly.
  - Safety Measures: Discuss safety precautions people can take, such as wearing warm clothing, being careful when walking or driving, and making sure homes are properly heated.

Slide 20 - Weather warnings

- Ask the students if they've ever seen or heard weather warnings before, either on the news, through apps, or social media.
- Highlight that the Met Office issues warnings for various weather conditions to help people stay safe and prepared.

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Slide 21 - Weather warning levels

- Read the information from the board out loud to the class, making sure to emphasise how the different levels of warnings—Yellow, Amber, and Red—are linked to the severity of the weather and the potential impacts they can have.

Slide 22 - Crossword activity

- **TASK:** instruct the class to complete the crossword puzzle on their worksheets.
- Walk around the room to support students if they get stuck. Provide hints or remind them to think about key terms discussed in the lesson, such as “thunderstorms” or “drought.”

Slide 23 - Blank Crossword activity

- Work together as a class to complete the blank crossword on the slide. As students suggest answers, fill them in on the crossword displayed on the board or screen.
- The correct answers are on the complete worksheet below or page 25 of the PowerPoint.

Slide 24 - Crossword answers

- Confirm that students have the correct answers on their worksheets and provide any necessary corrections.

Slide 25 - Recap

- Encourage students to reflect individually on their knowledge and experiences related to flooding and severe weather in preparation for the next lesson.

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Fill in the blanks:

wet, north, wetter, regional, warm, west, mild, drier, east, wet, south

The weather in the UK is characterised by __wet__ , __warm__ summers and __wet__ , __mild__ winters. However, there are __regional__ differences. The __north__, influenced by the Atlantic Ocean, is __wetter__ and windier, especially in the northwest. In contrast, the __south__ is __drier__ and more sheltered, with less rainfall. The __west__ is cooler than the __east__, experiencing colder winters and cooler summers. These variations are due to geographical factors like latitude, proximity to the ocean and prevailing wind patterns.

Extreme Weather: is any weather that is unusual or unexpected. This can include severe or unseasonal weather. In the UK, warnings are issued if extreme weather is expected to help people prepare and stay safe.

Flood warnings - fill in the list with key actions you should take during each warning level

During a **Flood Alert**, I would ... stay vigilant, make early preparations for a potential flood. I would monitor the situation through weather forecasts and the environment Agency check for flooding service. I would check my flood plan was filled in and my flood kit was complete if I needed it.

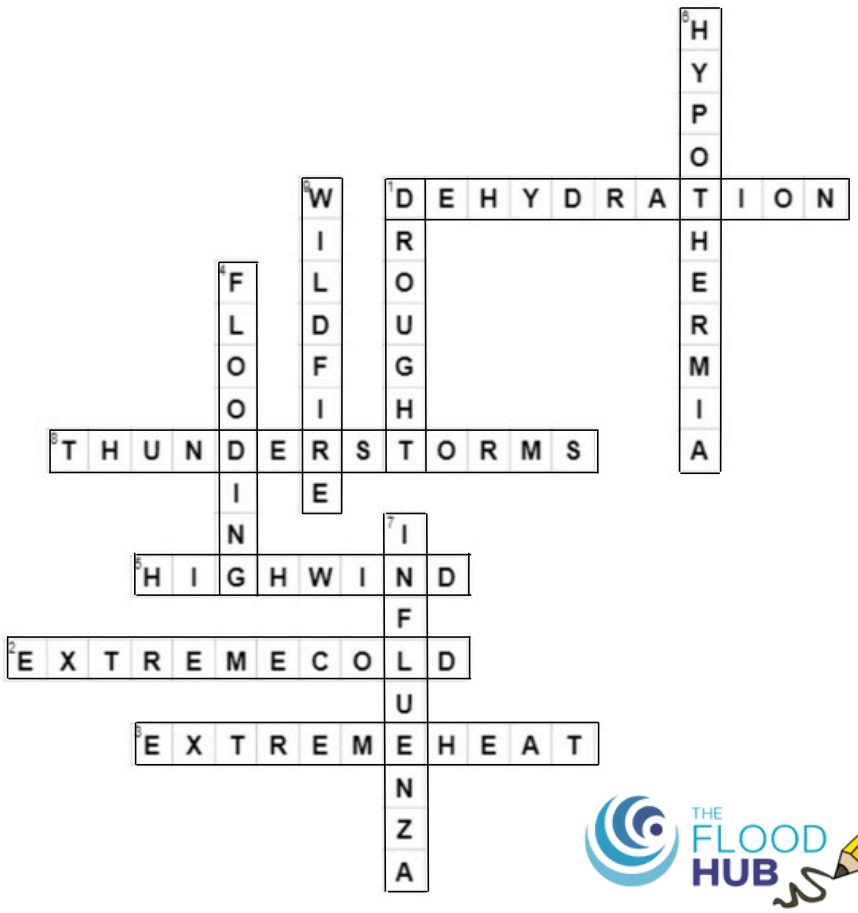
During a **Flood Warning**, I would ... carry out my flood plan and put and property flood resilience into place e.g. install flood barriers, move valuable things onto higher levels. Action is required to protect myself andf my property.

During a **Severe Flood Warning**, I would ... Prepare to evacuate and listen to the emergency services guidance would get my flood kit and turn off my utilities.

Crossword Puzzle:

Across:
1. Condition caused by lack of water, common in hot weather. (11)
2. Prolonged period of very low temperatures. (7,4)
3. Unusually high temperatures. (7,4)
5. Strong gusts of moving air. (4,4)
8. Violent atmospheric disturbances with lightning and thunder. (13)

Down
1. Prolonged dry period causing water shortages. (7)
4. Water covering dry land after heavy rain or river overflow. (8)
6. Dangerously low body temperature due to cold exposure. (11)
7. Viral respiratory illness that spreads during cold spells and winter months. (9)
9. Uncontrolled fire spreading rapidly through vegetation. (8)



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