



GCSE Case Study: Storm Babet

Background:

Storm Babet, an **extratropical cyclone**, hit the UK on **18th October 2023**. It was one of the most severe storms in recent years, causing widespread flooding and damage. The storm claimed the lives of seven people and was the second Met Office named storm of the 2023-24 season.

- Storm Babet brought 150-200mm of rain to the wettest areas of eastern Scotland, leading to two Met Office red warnings for rain.
- In Angus, Scotland, 19th October 2023 was the wettest day on record since 1891.
- This period was the third-wettest independent 3-day stretch for England and Wales on record.
- Babet also brought strong winds, gusting over 58 mph across northeast England and much of Scotland.
- Gusts reached 121 mph at Kincardineshire, Scotland.

Causes:

- **Strong Jet Stream:** A powerful jet stream steered the storm towards the UK. (The jet stream is a core of strong winds around 5 to 7 miles above the Earth's surface, blowing from west to east.)
- **Warm Sea Surface Temperatures:** Elevated temperatures in the North Atlantic provided additional energy to the storm.
- **Low Pressure Area:** A significant low-pressure system over the UK helped draw the storm in.
- **Blocking High Pressure:** A high-pressure area over Scandinavia prevented the storm from moving eastwards, prolonging its impact over the UK.

Locations affected:

- **Northern Ireland:** Derry: Experienced extensive damage due to flooding..
- **Midlands:**
 - Derby and Nottingham: Rivers exceeded record levels, causing significant flooding.
 - Retford, Nottinghamshire: Evacuation orders were issued for parts of the town.
- **Scotland:**
 - Brechin, Angus: Became accessible only by boat at one point due to severe flooding.
 - Aberdeen: Major roads were closed as flood defences were overtopped by the river South Esk.
- **Northern England:** Leeds, Sheffield, and York: Roads and railways were shut down due to flooding.

Impacts:

Social Impacts

- **Fatalities and Injuries:** 7 people died across the UK due to flooding and wind-related incidents.
- **Displacement:** Hundreds of people were rendered homeless due to flooding and property damage. 1,250 properties in England were flooded.
- **School Closures:** Numerous schools across Cheshire, Norfolk, Suffolk, Yorkshire, Scotland and North Wales, were closed due to a "danger to life".
- **Evacuations:** Over 10,000 people were evacuated from their homes and forced to stay in temporary accommodation. Disrupting their daily life.

Economic Impacts

- **Infrastructure Damage:** Significant damage to roads, bridges, railways, and airports, leading to transportation disruptions. Leeds Bradford Airport was closed on 20th October after a large plane skidded off the runway whilst landing.



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- **Business Losses:** Many businesses suffered due to flooding and power outages, resulting in job losses and economic downturns.
- **Cost of Damages:** Estimates calculate the costs of damage due to Storm Babet to be between £450m - £650m.
- **Agricultural Damage:** Flooding damaged crops and farmland, killed livestock, and resulted in significant financial losses for farmers, leading to disruptions in food supplies.
- **Power Outages:** Around 100,000 customers initially lost power, affecting homes and businesses.

Environmental Impacts

- **Landslides:** Heavy rains from Storm Babet triggered landslides, causing damage to forests and natural habitats. For example, a slope near houses at the base of Chilwell Quarry collapsed due to the intense rainfall in October.
- **Flooding:** Widespread flooding damaged rivers, lakes, and wetlands, displacing wildlife.
- **Soil Erosion:** Intense rainfall increased soil erosion and disrupted local habitats, affecting wildlife and potentially reducing biodiversity.
- **Debris and Waste:** The storm caused extensive damage and debris, including hazardous materials. Over 750 tonnes of debris were removed from Sunderland's promenades and beaches after recent storms including Storm Babet.
- **Pollution:** Flooding spread pollutants from roads, industrial sites, and farms into rivers, contaminating water sources with harmful chemicals and affecting aquatic life.

Reducing the risk:

- **Early Warnings:** The Met Office issued two red warnings for heavy rain in eastern Scotland from October 19th to 21st, with amber warnings across Scotland, Northern Ireland, Wales and northern England.
- **Flood Protection:** The Environment Agency (EA) issued flood alerts, deployed sandbags, and sent over 300,000 warnings. They protected 96,000 properties and deployed 25 pumps.
- **Emergency Response:** Local authorities and emergency services implemented response plans to manage the storm's effects.
- **Evacuations and Rescues:** Emergency services facilitated evacuations and rescue operations, including airlifting workers from a North Sea drilling platform.

Is the weather in the UK is becoming more extreme?

- **Intensity of the Storm:** Storm Babet brought intense rainfall and high winds, leading to widespread flooding, landslides, and significant damage across the UK. The severity of the storm, including the issuance of rare red weather warnings and the 7 lives lost, highlights the increasing intensity of storm events in the region.
- **Frequency of Severe Weather Events:** Storm Babet is part of a pattern of recent severe storms in the UK, such as Storm Ciara and Storm Dennis in 2020. The frequency of such extreme weather events suggests a trend towards more volatile weather conditions, which many experts link to climate change.
- **Widespread Impacts:** The extensive damage caused by Storm Babet, including flooding of homes, disruption to transportation, and economic losses, underscores the growing risk and impact of extreme weather in the UK. The scale of the storm's effects reflects the increasing vulnerability of infrastructure and communities to such events.