Your notes

GCSE Geography: revision notes

Weather hazards and tropical storms

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Global atmospheric circulation

- The Sun heats the Equator most. Hot air rises there, creating low pressure and heavy rain. It moves towards the poles, cools, and sinks at about 30° north and south, creating high pressure and dry conditions, where the hot deserts are.
- This makes three cells in each hemisphere: the **Hadley cell** (0–30°), the Ferrel cell (30–60°) and the Polar cell (60–90°). Rising air at about 60° gives the UK its wet, changeable weather.
- Surface winds blow from high to low pressure: the trade winds blow towards the Equator, and the westerlies blow towards 60°. The Earth's rotation bends the winds (the **Coriolis effect**), which is why the UK's prevailing wind is from the south-west.

Tropical storms

- **Tropical storms** are called hurricanes in the Atlantic, typhoons in the north-west Pacific and cyclones in the Indian Ocean. They form over oceans of at least 27 °C, between about 5° and 30° north and south of the Equator, mostly in late summer and autumn.
- Warm, moist air rises quickly, cools and condenses, releasing heat that powers the storm. The **Coriolis effect** makes the storm spin. It weakens over land or cooler water, because its supply of warm, moist air is cut off.
- The eye in the centre is calm, with sinking air and clear skies. Around it, the eyewall has the strongest winds and heaviest rain. Bands of rain spiral outwards.

Case study: Typhoon Haiyan, 2013

- Typhoon Haiyan hit the Philippines on 8 November 2013, with winds of over 300 km/h and a **storm surge** of up to 5 m.
- Primary effects: more than 6,000 people died, over a million homes were damaged or destroyed, and the city of Tacloban was devastated, including its airport.
- Secondary effects: around 4 million people were displaced, there were shortages of food, water and shelter, and many people lost their jobs, fishing boats and crops.
- Immediate responses: about 800,000 people were evacuated before the storm, and international aid sent food, water, shelter and medical teams. Aid was slow to reach some remote areas.
- Long-term responses: homes and infrastructure were rebuilt with stronger designs, 'no-build zones' were set up along parts of the coast, and mangroves were replanted to protect against **storm surges**.

Reducing the effects, and climate change

- Monitoring and prediction (satellites and aircraft), warnings and **evacuation** plans, storm shelters, stronger building designs, sea walls and planning where to build all reduce the effects.
- Climate change may make **tropical storms** more intense, change where they occur, and raise sea levels, which makes **storm surges** worse.

UK weather hazards

- The UK's weather hazards include heavy rain and flooding, strong winds, snow and ice, drought and heatwaves. In July 2022, the UK recorded 40 °C for the first time.
- Example: the Somerset Levels floods of 2014. After record rainfall in December 2013 and January 2014, about 600 homes and large areas of farmland were flooded, and villages such as Muchelney were cut off for weeks. Afterwards, the rivers Parrett and Tone were dredged, and a £100 million, 20-year Flood Action Plan was set up.

Global circulation, drought and UK weather (Eduqas)

- The global circulation of the atmosphere makes bands of low pressure (at the equator and around 60°) and high pressure (around 30° and at the poles).
- Low pressure brings hazards such as hurricanes and cyclones; high pressure brings heatwaves and drought, as in Australia and the Sahel. Learn one located example of each, with causes, effects and responses.
- Weather is the day-to-day state of the atmosphere; climate is the average over 30 years or more.

Your notes

- UK temperatures and rainfall vary with latitude, altitude (it gets about 6°C colder for every 1,000 m up) and ocean currents: the North Atlantic Drift keeps the UK mild.
- The west has a **maritime climate** (mild and wet, near the sea); places further from the sea have a more **continental climate** (bigger temperature range, drier). Winter **depressions** bring wind and rain; summer high pressure can bring drought.
- **Micro-climates** are small areas with their own climate, such as a town centre warmer than the countryside.

Your notes

Key terms

Global atmospheric circulation	The worldwide system of winds that moves heat from the Equator towards the poles.
Hadley cell	The circulation cell between the Equator and about 30° north and south.
Tropical storm	A large, spinning, low-pressure storm with very strong winds and heavy rain.
Eye	The calm centre of a tropical storm, with sinking air.
Storm surge	A rise in sea level caused by the strong winds and low pressure of a storm.
Coriolis effect	The bending of winds caused by the Earth's rotation.
Evacuation	Moving people away from danger.
Extreme weather	Weather that is much more severe than usual, such as a record heatwave.
Maritime climate	A mild, wet climate influenced by the sea. (Eduqas)
Continental climate	A climate away from the sea, with hotter summers, colder winters and less rain. (Eduqas)
Micro-climate	The climate of a small area that differs from the area around it. (Eduqas)
Depression	A low pressure weather system bringing cloud, wind and rain. (Eduqas)

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What sea temperature is needed for a tropical storm to form?
2. Why don't tropical storms form right on the Equator?
3. What is the eye of a tropical storm like?
4. Why does a tropical storm weaken over land?
5. What is a storm surge?

6. What are tropical storms called in the Pacific Ocean near Asia?
7. Where does sinking air create high pressure and hot deserts?
8. Which country was hit by Typhoon Haiyan in 2013?

Answers

1. At least 27 °C
2. The Coriolis effect is too weak there to make them spin
3. Calm, with sinking air and clear skies
4. It loses its supply of warm, moist air
5. A rise in sea level caused by strong winds and low pressure
6. Typhoons
7. At about 30° north and south
8. The Philippines

What to do next

Practise 15 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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