

Weather and Climate

Weather

Weather and climate are two very different things. What do you think the difference is between weather and climate?

Weather is what is happening outside right now. Take a look out of the window. Is it sunny? Windy? Rainy?



Climate

Climate is the **general** picture of a country's weather conditions. It is based on how they have been for 30 years or more.

How would you describe Britain's climate?

Global climate zones with similar plants (flora), animals (fauna) and climate are called biomes. There are places in the USA, Canada and South America with a similar climate to Britain.



What makes weather?

What four things are taken into account when people are looking at the weather?

Temperature

Precipitation

Humidity

Atmospheric pressure



Studying weather

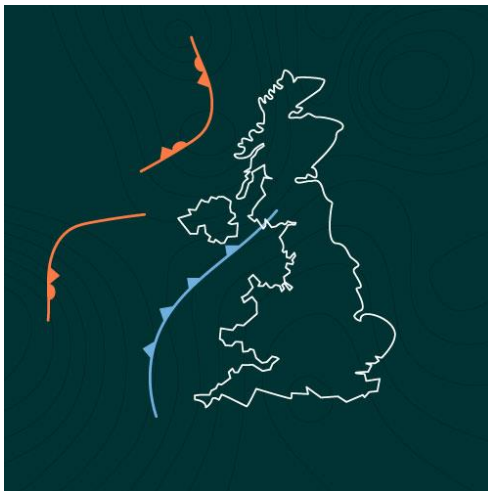
The science of predicting weather and climate is called meteorology. So, the people who do this are called.....?

They use synoptic charts to look at atmospheric conditions such as temperature, wind speed and pressure to predict future weather.

Isobars

The lines on this weather map connect places of equal atmospheric pressure. The closer the isobars are, the windier it is.

Have a look at this weather map of Britain. Where is it most windy?



How geography can affect weather and climate

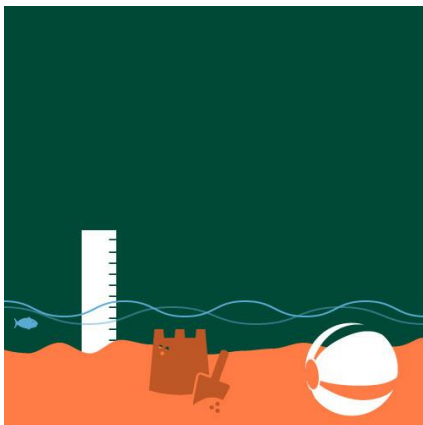
What geographical factors do you think can affect climate and the weather?

Answers:

- 1) Where we are on the map The nearer we are to the equator, the warmer we are as the sun's rays are more direct at the equator.
- 2) How **high** we are above sea level. Temperatures tend to be cooler at higher levels of altitude. On average about one degree Celsius for every 100 metres of altitude.
- 3) **Where** we are on the map. The nearer we are to the equator, the warmer we are as the sun's rays are more direct at the equator.



- 4) How **high** we are above sea level. Temperatures tend to be cooler at higher levels of altitude. On average about one degree Celsius for every 100 metres of altitude.



- 5) If we live in a **mountainous** area. You may wonder why there is snow on top of mountains. Air cools as it travels up a mountain, but cannot hold as much moisture as warm air. When the air becomes saturated it releases its moisture as rain. At high altitudes rain often freezes and falls as snow or ice. Likewise **valleys** can be warm and dry, such as Death Valley in California.
- 6) If we live near **water**. A large body of water can alter the humidity in the surrounding air and influence the temperature of air currents.
- 7) If we live on the **coast**. The wind will carry air off warm ocean currents, creating higher temperatures along coastal areas. When this warm air meets cooler air on land, it can lead to higher precipitation.
- As the sea heats up and cools down much more slowly than land, places on the coast tend to be cooler in summer and warmer in winter than inland locations sharing the same altitude and latitude.

How weather and climate can affect geography

As well as geography having a bearing on the weather, the weather can have a bearing on geography.

Erosion occurs through three agents: wind, water and ice. These elements can carry away rock, sediment and soil, changing the face of a landscape considerably.

Compare these maps/pictures. How do you think the weather was responsible for how the land looks?



The ice age

Over the earth's 4.6 billion year history we have had a number of ice ages, but the last one happened around 15,000 years ago. More than a third of the earth was covered in ice.

No-one knows exactly why these ice ages occurred, but one theory is the earth tilted away from the sun so the atmosphere became much colder.

What effect do you think the ice had on the earth?

The evidence

We know about ice ages as there is geographical evidence to prove it on the land we see today.

The large, slow-moving sheets of ice called glaciers scoured and scratched at rocks, and left certain deposits behind such as moraines, till, and erratics.

The glaciers carved out dramatic valleys and made unusual rock formations.

See our Mapschool section on glaciation for more information.

Climate change

Our climate is slowly changing.

In the last 100 years, scientists have noticed a steep climb in global temperature (more than one degree Fahrenheit / 0.8 degree Celsius). This trend is called **global warming**.

What does that mean for our planet?

- 1) **Agriculture:** Crops are expected to decrease worldwide, although the growing season in some areas such as Britain will increase.



- 2) **Water and ice:** More glaciers and ice caps will melt, and floods and droughts will become more common. Rainfall is predicted to become heavier.



- 3) **People:** Cultures will migrate to avoid flood, famine or drought.



- 4) **Sea level:** Sea level rise has become faster over the last century and if warming continues they will rise further.

If Antarctica's ice sheets melted, the world's oceans would rise by 60 to 65 metres (200 - 210ft) – everywhere.

