



Geography

How is climate change affecting the world?

Year 6

Unit 2

Intent:

The challenge of changing patterns of weather that contribute to longer-term climate change trends across the globe, will undoubtedly be one of the greatest issues to confront primary school pupils during the remainder of the century. This enquiry gives pupils an insight into how changing patterns of weather at different locations around the world are impacting on the lives of real people with whom they can relate. Through the experiences of these individuals and communities, pupils are able to reflect upon how changes to normal and usual weather conditions can have serious implications for these people. They are also able to appreciate that, generally speaking, the poorer the people and communities are that experience changes in weather patterns, the more serious the impact often is. From these specific case studies the pupils are encouraged to look at the concept of global warming, what is contributing to it on a global scale and to generalise about climate change in the longer term. The enquiry culminates in pupils understanding the action that is being taken during this century across the world to reduce fossil fuel consumption (and therefore carbon dioxide emissions) through the development of renewable sources of energy. - David Weatherly, Connected Geography

Pupils should be taught to:

Locational knowledge

locate the world's countries, using maps to focus on Europe (including the location of Russia) and North and South America, concentrating on their environmental regions, key physical and human characteristics, countries, and major cities

identify the position and significance of latitude, longitude, Equator, Northern Hemisphere, Southern Hemisphere, the Tropics of Cancer and Capricorn, Arctic and Antarctic Circle, the Prime/Greenwich Meridian and time zones (including day and night)

Place knowledge

understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region within North or South America Human and physical geography

describe and understand key aspects of:

physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle;

human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water

Geographical skills and fieldwork

use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied

use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world

use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

Prior learning:

ELG	Year 1	Year 2	Year 3	Year 4	Year 5
People, culture and communities	What is the geography of where I live?	Where in the world does my food come from?	Why do so many people live in megacities?	How can we live more sustainably?	What are rivers and mountains?

Key vocabulary (level 1)			
weather	flood	climate	Natural disaster
rainfall	bushfire	temperature	heatwave
Key vocabulary (level 2)			
drought	Greenhouse gas	sustainability	Fossil fuels
floodplain	Global warming	Renewable energy	desertification

Etymology and morphology		
Prefix / Suffix / Root	Meaning	Examples
geography	the study of the physical features of the earth and its atmosphere, and of human activity as it affects and is affected by these, including the distribution of populations and resources and political and economic activities.	From geographia (Greek) - geographie (French) - geography (English 15 th Century).
Settlement	A place of any size where people live. It can be as small as a single house in a remote area such as a farm; a village with a population of 1000 or a conurbations or megalopolis with 10 million or more residents.	1620s, "act of clarifying, fixing, or steadying;" 1640s, "the placing of persons or things in a fixed or permanent position;" from settle (v.) + -ment . The meaning "a colony," especially a new one, "community of subjects of a state settled in a new country; tract of country newly colonized" is attested from 1690s; that of "small village on the frontier" is from 1827, American English.

Idioms and colloquialisms	
	Meaning
Heatwave	a prolonged period of abnormally hot weather.
Greenhouse gas	A gas which stops heat bouncing back into space from the Earth's surface.
Global warming	a gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants.

Misconceptions	
Not true	Teach this
All greenhouse gases are bad.	Naturally occurring greenhouse gases in the atmosphere are vital for the Earth because, without some of these gases, temperatures on the planet would be 20-30°C lower than they are today.
Climate is about the temperature of a place.	Climate <i>noun</i> <ul style="list-style-type: none"> the weather conditions prevailing in an area in general or over a long period. "our cold, wet climate"

Lesson number	Key enquiry question & learning objective	Suggested learning activities	Cumulative questions
1	<p><u>Why is Elhaji cleaning shoes on the streets of Banjul?</u></p> <p>L.O. That identify, describe and explain why communities in The Gambia are being affected by changes in weather patterns.</p>	<p>Connected Geography – lesson 1</p> <ul style="list-style-type: none"> Look at the images of Elhaji and discuss his situation (<i>a 9-year-old boy who works cleaning shoes as a barrow boy at the market in Banjul, the capital city of The Gambia.</i>) Look at other images of Banjul markets and the location of The Gambia on a map. Why is Elhaji working on the streets every day and not a school or home with his family? Discuss, using the resources 1-5 to support discussion. (<i>Extend the thinking of the pupils at this point by explaining that The Gambia is the smallest mainland African country by area and surrounded by Senegal on three sides with the Atlantic Ocean making up the fourth border. At its widest point it measures only 48 km from north to south. Elhaji's family live in the village of Njar on the north bank of the River Gambia close to the border with Senegal over 150 km from Banjul (see map in Resource 6, satellite image in Resource 7 and the photographs of his sister and mother working in the fields in Resources 8 and 9) DW Connected Geography. Summarise the children's ideas on the board.</i>) Using resource 10, children work in groups to sort the information cards into four categories: Information about Elhaji and the life that he now lives in Banjul; Information about the life of his mother and sisters in Njar; Information that provides background about the geography of The Gambia; Information that helps to explain why Elhaji is living and working in Banjul. Discuss which cards were most difficult to sort, could some be in more than one category? (<i>During the past decade, places such as Njar along the north bank of The Gambia River have suffered from increasing unreliability of rainfall during the wet season. This unreliability causes long droughts, crop failures and great poverty and hardship in a</i> 	1 & 2

		<p><i>country where most people rely on farming for their livelihoods. The wet southwesterly rain-bearing Trade Winds that blow over the Atlantic Ocean before reaching The Gambia can no longer be relied upon to give the country the rainfall it requires – Resources 11 and 12 are provided here for teacher reference and background.) - DW Connected Geography</i></p> <ul style="list-style-type: none"> • Give each child a small image of Elhaji cleaning shoes and they write an explanation to answer the question: Why is Elhaji cleaning shoes on the streets of Banjul? Their answers should focus on the impact of the changing weather patterns in The Gambia. 	
2	<p><u>Why can't Olivia afford to insure her home?</u></p> <p>L.O. Tbat evaluate a range of evidence and make judgements about the impact that climate change is having on people in Victoria, Australia.</p>	<p>Connected Geography – lesson 2</p> <ul style="list-style-type: none"> • Have a brief discussion with the children to establish their understanding of what house insurance is and why people have it. Could link to car and holiday insurance and how it works. Resource 15 is an image of Olivia and her children outside their home. <i>(The principle of paying an annual premium (the amount she has to pay the insurance company each year) to an insurance company, is that the company will compensate you for any financial losses incurred should, for example, your car be damaged in an accident or your home be burgled and items of value stolen. Having insurance to drive a car is a legal</i> 	3 & 4

requirement. Explain that having insurance to cover damage to a home and the property within it is one of the most common types of insurance that is taken out.) DW Connected Geography

- Use the images from Connected Geography – children discuss what evidence they can see within them to answer the lesson question – why can't Olivia afford to insure her home? *However, Olivia has found that the premium to insure her home is now five times what it was just three years ago. Each year the premium rises and now she has reached the point where she can no longer afford the cost. From now on she will have no insurance cover at all. Why have these increases occurred?* DW Connected Geography Resources 16, 17 and 18.
- Explain that Olivia lives in Kinglake, Victoria, Australia – look at map for location. The people here have noticed changes to the weather patterns.
- Resources 19 and 20 show how many bushfires have occurred in locations in Australia. Resource 21 images show the aftermath of bushfires. The changing weather has meant an increase in the number of bushfires that occur. [Black Saturday bushfires 2009](#)
- Look at the information in Resources 22 and 23 which shows the number of heatwaves and bushfires across certain decades. What do the children notice about the correlation of the number of heatwaves and the number of bushfires? Could this affect the premiums that insurance companies charge? How? Why?

(The insurance companies argue that it is clear that both heatwaves and bushfires are becoming more frequent and lasting longer, as a result of weather conditions in Victoria becoming warmer and drier and this will continue throughout the century. Average summer

		<p><i>temperatures in Victoria are now 1 °C higher than they were 100 years ago and autumn and winter rainfall has decreased by between 10 and 20 per cent over most of the state during the same period. From the insurance companies' perspective this means that the risk of damage to property as a result of bushfires is becoming much greater and, as a result, they have no option but to increase their premiums to cover the possible costs of another natural disaster such as Black Saturday) - DW Connected Geography</i></p> <ul style="list-style-type: none"> • Children could create a line graph plotting the number of heatwaves and the number of bushfires and explain the correlation between them. They could explain the impact that the heatwaves and bushfires are having on the people living in the areas where they most frequently occur. 	
3	<p><u>Why are people living in coastal areas making flood plans?</u></p> <p>L.O. Tbat understand why some coastal communities are having to make flood resilience plans.</p>	<p>Connected Geography – lesson 3</p> <ul style="list-style-type: none"> • Look at a map of Kent and locate Deal Map of Kent example children describe the location of Deal (<i>note proximity to the coast</i>). Are there other bodies of water nearby? (<i>River Stour. There is a river which runs between the school and Sholden – through the new build development near the school and around by Holyroos – possible brief fieldtrip opportunity to observe the river near the school and photograph the flat land around it. Possible fieldtrip opportunity to the coast to observe the flood defences and barriers</i>) • Discuss with the children whether they have experienced severe weather regarding rainfall? The two following links can be used to show local news reports of flooding in Deal Albert Road - Deal Flooding in Deal • You could use the Connected Geography resources for ancillary question 3 to generate discussion about Starcross on the Rive Exe and why and how they 	5 & 6

have created flood defences there. Use the OS maps to look closely at location and surrounding features.

Find places using grid references. *(The Environment Agency has told the Parish Council at Starcross that during the rest of this century, sea levels are going to increase by about one metre. Also that the village should expect more frequent, more severe and longer-lasting winter storms with wave heights at least 30 cm taller than they are now, which will at times cause powerful tidal surges and flooding as the railway embankment is overtopped.) - DW Connected Geography.*

- [Deal flood map](#) Using this link, you can access the Deal flood map and find the schools postcode by clicking one of the red circles above Middle Deal Road. Why is this area at high risk of flooding? - link to fieldtrip opportunity to look at the river which runs near the school. Councils need to build new homes for people to live in and the population of our country is growing. The new houses have been built on a floodplain - this causes extra risk of flooding to these homes. What measures are in place to protect them? A small well has been built to drain water. Near Hollyroos there are examples of sluices and flood gates and a pump station which help to control the flow of water to lower lying land.
- Children could annotate pictures from the local area taken on their walk to show what defences are in place locally to try to protect people from the effects of flooding.
- Children could create their own flood plans for Deal – how could they improve what is already in place?
- [Flood plans for Dover District](#) There may be some very useful information in this document about local flood plans and risks.

<p>4</p>	<p><u>Why do Lars and Sofie disagree about how nice the weather is?</u></p> <p>L.O. Tbat make personal judgements about the implications of changing weather patterns on the people of Greenland.</p>	<p>Connected Geography – lesson 4</p> <ul style="list-style-type: none"> • Look at the images of Lars and Sofie (resource 32 and 33) and explain that they disagree about the weather. Using just the images, children discuss what they think the weather where Lars and Sofie live might be like. Where might they live? What kind of climate? • Show image of Greenland (resource 34) What do the children know about Greenland? What is the landscape like? What is the climate like? You can use images in resource 35 and the following clip Greenland images video • Investigate the average annual rainfall (mm) and temperature (°C) of Greenland compared to the UK UK averages The Greenland averages can be found in the Connected Geography planning, Ancillary question 4. Children could create a line graph using four different colours for comparison. • <i>(With an average monthly temperature of -18 °C and only 467 mm of precipitation (below 250 mm is officially designated as a desert), all falling as snow, Greenland is extremely cold and dry – a polar climate. The Greenland Ice Sheet covers 1 710 000 sq km – the second largest ice sheet on Earth, after the Antarctic Ice Sheet. It covers 80 per cent of Greenland and extends 2400 km north–south and 1100 km east–west. It has an average thickness of 2135 m. However, the weather is changing quickly and it is over this that Lars and Sofie disagree. Since the 1970s the average temperature in Greenland has increased by 2 °C. As a result, the ice sheet is melting.) - DW Connected Geography</i> • Using resources 36, 37 and 38 look carefully at how the ice sheet is melting – melting is quickest around the coastline where the ice is thinner and it’s slower inland where the ice is thicker. Where the temperature is getting warmer, each year since 1979, 	<p>7, 8 & 9</p>
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		<p>the number of days of melt across Greenland has increased. Lars and Sofie disagree as to whether this is a good thing or not. Read their personal accounts (resources 39 and 40). Compare and contrast their viewpoints. Who do the children agree with? What do they think? How would they feel if they lived in Greenland?</p> <ul style="list-style-type: none"> • Children could explain what is happening in Greenland due to the rising temperatures and explain their own viewpoint about the changing weather. 	
5	<p><u>Why are people all over the world noticing that the weather they are used to is changing?</u></p> <p>L.O. Tbat understand what global warming is and how it is caused.</p>	<ul style="list-style-type: none"> • Review what the children have learned so far about changing weather patterns and its impact on people around the world (Elhaji, Olivia, Lars and Sofie, the people of Starcross and other coastal towns). • Look at the map in resource 41 and discuss what is shows. What is happening to the temperature of the land and oceans? Use this map alongside the political map in resource 42 and identify specific locations and countries that are likely to experience the greatest increases in land surface temperature. Which countries in the Southern Hemisphere are going to see the highest average temperature changes? How is Antarctica going to fair? What will be the consequences of temperature increases here? In the Northern Hemisphere what are the implications for the sea ice of the Arctic Ocean and the North Pole? • Encourage the children to cross reference the two maps especially for The Gambia (Elhaji), Australia (Olivia), the United Kingdom (the people of Starcross) and Greenland (Lars and Sofie). Do any of the pupils 	<p>Briefly revisit questions 1-9 10, 11 & 12</p>

know what geographers are calling this warming of the earth? Global Warming. The average temperature of the earth is rising, a process called global warming. Global warming is causing changes to normal weather conditions in places all over the world. As a result it is having serious effects on people's lives. Global warming is causing:

- Ice sheets, sea ice and glaciers around the North Pole and South Pole and in high mountain ranges to thaw.
- More extreme weather events around the world such as long heat waves and droughts in some places and short intense storms with very heavy rainfall and flooding elsewhere.
- Sea levels to rise

- Identify specific countries in both the Northern and Southern Hemispheres where both evidence and signs of global warming have been identified. Record their findings.
- What is causing global warming? Look at images of the Mauna Loa Observatory in Hawaii (resource 45). Since 1960, geographers have been measuring how much carbon dioxide (CO₂) is in the atmosphere. Resource 46 shows their measurements. Discuss what it shows.
- Explain what global warming is and what is causing it – see Connected Geography plans

[Climate change and global warming](#)

[Climate Change Nasa for kids](#)

Discuss why the amount of carbon dioxide in the atmosphere is increasing? Burning fossil fuels (petroleum oil, gas and coal) releases carbon dioxide, which is stored within the fossils, into the atmosphere. [Formation of fossil fuels](#)

		<ul style="list-style-type: none"> Children could draw a diagram and annotate it to explain what global warming is and why it is happening. 	
6	<p><u>What have the countries of the world agreed to do about global warming?</u></p> <p>L.O. That understand ways in which we, and the global community, can contribute towards reducing greenhouse gas emissions.</p>	<ul style="list-style-type: none"> In December 2015 in Paris, representatives of 200 countries agreed to ensure that the surface temperature of the earth would not increase by more than 2.5°C by 2100 and in order to achieve this, they would decrease carbon dioxide emissions. They also agreed that to make sure this happened, the use of fossil fuels to create energy in all of the countries of the world would be phased out by the end of the century. DW Connected Geography. Investigate ways in which energy can be generated that doesn't involve the burning of fossil fuels – renewable sources e.g. solar, wind, geothermal, tidal and wave energy. <p>BBC Bitesize - fossil fuels and renewable energy BBC Bitesize - natural sources of energy BBC Bitesize - Sustainability and plastics</p> <p>Google search – How can we reduce global warming? Lots of information. Ways to reduce global warming</p> <ul style="list-style-type: none"> Children could create a detailed leaflet on ways to reduce global warming. They could research and present how different methods of renewable energy sources work. They could create posters advising people of ways to live more sustainably and reduce their carbon footprint. 	13, 14 & 15