Kemnal Technology College

Kemnal Keys: Geography — Weather hazards and climate change Part 1

What you should know	What you should be able to do
• The Earth's atmosphere is unevenly heated by the Sun (angle of incidence) • The Tri-cellular model explains the differences in climate on the Earth due to this uneven heating • Global atmospheric circulation is made up of three cells either side of the equator: the Hadley Cell, the Ferrel Cell and the Polar Cell resulting in warm air rising, cooling, condensing and precipitating • Ocean currents transfer heat around the planet with warmer water moving north and south from the equator to the poles and vice versa, (Global Thermohaline Circulation)	⇒ Describe the characteristics of the Hadley, Ferrel and Polar Cells ⇒ Describe the location of the Hadley, Ferrel and Polar Cells ⇒ Explain how differences in heating results in differences in air pressure ⇒ Explain how wind is formed ⇒ Explain why the differences in heating result in differences in climate ⇒ Explain why differences in climate result in differences in ecosystems ⇒ Describe the difference between weather and climate
• The average climatic conditions of the Earth change naturally over time • The Quaternary period is the most recent geological time period from 2.6 million years ago • Before the Quaternary period global temperatures were warmer and quite stable • During the Quaternary period global temperatures have fluctuated between glacial and interglacial periods • Natural variations in global climate are caused by Milankovitch cycles (Eccentricity, Axial tilt, Precession), solar variation and tectonic activity • Historical sources, ice cores, tree rings and pollen records all evidence climate changes	⇒ Describe the changes in climate before and during the Quaternary period ⇒ Describe the difference between glacial and interglacial periods ⇒ Explain how Milankovitch cycles change global temperatures ⇒ Explain how solar variation change global temperatures ⇒ Explain how volcanic activity can affect global temperatures ⇒ Explain how humans know global temperatures were different to what they are today
• The Greenhouse effect is how life is sustained on Earth • The burning of fossil fuels had led to the enhanced greenhouse effect and global warming resulting in climate change • Human activities such as industry, transport, agriculture and population growth has led to the enhanced greenhouse effect • The negative effects of climate change include the melting of ice and retreating glaciers resulting in sea-level rise and the increased risk of drought in many areas around the world but especially in warmer climates closest to the equator	⇒ Describe the greenhouse effect ⇒ Explain the enhanced greenhouse effect ⇒ Explain how human activities have led to global warming ⇒ Explain how ⇒ Explain how global warming has led to climate change ⇒ Assess the effects of climate change on contrasting locations
• The UK's climate has varied a lot over the last 1000 years • The UK experienced the Medieval Warm Period between 900 and 1300 • The UK experienced the Little Ice Age following the Medieval Warm Period • The UK's climate is temperate • The north and west are generally cooler and wetter whilst the south and east are generally warmer and drier • The prevailing winds of the UK are from the south west, across the Atlantic Ocean, bringing warm, moist air and the Gulf Stream from the Caribbean brings warm ocean currents to the UK	⇒ Describe the UK's climate in winter and summer ⇒ Explain the role of latitude in the differences in the UK's climate ⇒ Explain the role of altitude in the differences in the UK's climate ⇒ Explain how ocean currents influence the UK's climate

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1. Which convection cell is closest to the Equator?
2. What is the difference between low pressure and high pressure?
3. Air sinks at 30° north and south of the equator. Which two convection cells are involved?
4. Air rises at 60° north and south of the equator. Which two convection cells are involved?
5. What kind of weather is associated with sinking air at 30° north and south of the equator?
6. What causes wind?
7. What is the Coriolis effect?
8. Which direction do winds bend in the northern hemisphere?
9. What do ocean currents do?
10. What is responsible for the movement of warm water from the Caribbean and keeps Western Europe warmer than it otherwise would be?
11. State 3 greenhouse gases and give their chemical formula
12. What physical changes to the atmosphere does the increase in greenhouse gases lead to?
13. What was the Earth's climate like before the Quaternary period?
14. What happened to global temperatures during the Quaternary period?
15. What is the change in the Earth's orbit from circular to elliptical called?
16. What is the change in the Earth's angle known as?
17. What is 'wobble' of the Earth on it's axis known as?
18. What other natural causes of climate change are there?
19. What evidence can humans use to show the Earth's climate has changed?
20. What part did the Industrial Revolution play in changing Earth's climate?
21. What gas do rice paddies emit?
22. How does deforestation change climate?
23. Which mineral is most responsible for the increase in global temperatures since 1750?
24. Which gas does waste landfill emit?
25. How does population increase lead to an increase in global temperatures?
26. How does electricity generation lead to changes in climate?
27. What is the difference between renewable and non-renewable energy sources?
28. How much have sea-levels risen since 1901?
29. How does warmer oceans leader to flooding in coastal areas?
30. What is ozone and why is it a useful greenhouse gas?
31. What is a 'hockey stick' graph?
32. What is the IPCC?
33. What is the ITCZ?
34. What are the characteristics of a monsoon climate?
35. Where are hot deserts located?
36. Why are rainforests located where they are?
37. What is the name given to the UK's climate?
38. Why are few crops grown in north-west Scotland?
39. Where are the trade winds?
40. How did the trade winds lead to colonialism?