

IGCSE Geography
Unit 4: Weather, Climate and Vegetation

Recommended Prior Knowledge

An understanding of the aspects of weather and how they are measured. An appreciation of how climate changes across the world and its impact upon vegetation type. A good general knowledge, particularly of environmental issues such as tropical rainforest destruction and desertification.

Context:

It is recommended that this is the fourth of the units to be studied. The unit incorporates some work on the interdependence of physical and human geography (2.3) by focusing upon climatic hazards and also how our actions have altered natural environments. The skills gained in this unit will have useful applications throughout and there are opportunities for local fieldwork.

Outline:

The unit offers pupils opportunities to develop a range of diagrammatic and graphical skills. It also enables pupils to collect, present and offer explanations for a range of data. It encourages an appreciation of environmental issues, particularly the need for sustainable development. Suggested activities from the core texts are differentiated.

Learning Outcomes		Suggested Teaching Activities	Resources
2.2a	Draw, describe and explain the use and siting of instruments at a weather station.	Pupils define the key term “weather” and brainstorm aspects of the weather that can be measured e.g. temperature, precipitation, wind speed. Pupils are introduced to the instruments that are used to measure the weather to include: rain gauge, maximum/minimum thermometer, wet and dry bulb thermometer, barometer, anemometer and wind vane. For each instrument, pupils draw a sketch and label the main features to show how it operates and the scale that is used. Pupils explain the optimum siting for each of the instruments. Pupils use instruments to keep daily records of the weather from observation, measurement or by use of a data-logging weather station. Pupils can then compare data over a week or between seasons.	<p>Longman Geography for GCSE Page 82 and 83. Question 2 Page 102.</p> <p>http://www.bbc.co.uk/education/gcsebitesize/index.shtml(Select Elements of Weather)</p> <p>http://geography.about.com/ (Select Weather and Climate for useful articles on recording weather)</p> <p>http://www.bbc.co.uk/weather/</p> <p>Question 4 Paper 1 November 1998 Question 3 Paper 1 May 1998 Question 4 Paper 1 June 2000 Question 4 Paper 1 November 1999 Question 3 Paper 3 May 1998</p>

Learning Outcomes		Suggested Teaching Activities	Resources
2.2a	Make calculations using information from these instruments.	Opportunities for pupils to use a wide variety of skills to present weather data. Suggestions include: weekly/monthly climate graph (<i>bar and line graphs</i>) which could be compared and contrasted with secondary data. Calculate the average temperature (<i>mean, mode, median</i>). Construct wind speed graphs, wind direction rose diagram. Opportunity for centre-based fieldwork - recording the weather at different sites around school and explaining the differences found.	Question 3 Paper 3 May 1999
2.2a	Describe and explain the characteristics, siting and use made of a Stevenson screen.	Pupils are introduced to a Stevenson Screen and draw a fully labelled sketch to show its characteristics. Decision Making Exercise - pupils are presented with a number of sites around school where the Stevenson Screen could be located. Pupils have to give the disadvantages and advantages of each site and make a final choice for the best site and be able to explain their decision. Relate to shelter, aspect etc.	Base map of centre with range of sites marked on. Longman Geography for GCSE Page 82 and 83. http://www.bbc.co.uk/education/gcsebitesize/index.shtml (Select Elements of Weather)
2.2a	Describe the main types of cloud and be able to estimate the extent of cloud cover.	Pupils are introduced to the main types of cloud using photographs and observation to include: cirrus, stratus, cumulus and cumulonimbus. Pupils describe the characteristics of and weather associated with each cloud type. Pupils understand that cloud cover is measured in eighths and keep a daily record of cloud cover - link to first section.	http://www.bbc.co.uk/schools/gcsebitesize/geography/weather/1elementsofweatherrev5.shtml http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/cld/cldtyp/home.rxml Question 3 Paper 2 May 1999
2.2b	Be aware of the difference between weather and climate.	Pupils define the key term "climate" and discuss the differences between weather and climate. Pupils take notes and draw diagrams to explain the factors that affect climate.	Longman Geography for GCSE Page 84 - 85. The New Wider World Page 200 – 201 and 210 -211. http://www.geography.learnontheinternet.co.uk/topics/climatezones.html#zones

Learning Outcomes	Suggested Teaching Activities	Resources
<p>2.2b Describe and explain the Tropical Rainforest climate, the characteristics of the natural vegetation and the relationship between the climate and the natural vegetation.</p>	<p>Tropical Rainforest Pupils produce location map of Equatorial climate and draw climate graph e.g. Manaus. Pupils describe the main features shown by the climate graph and other climatic characteristics e.g. highest temperature, small annual temperature range, high humidity, lack of seasonal change, high diurnal temperature range etc. Pupils explain the factors that have influenced this type of climate to include latitude/angle of the sun and convectional rainfall. Pupils describe the characteristics of the tropical rainforest e.g. in layers, tall trees, little undergrowth and how the vegetation is related to and had adapted to climate e.g. drip tip leaves, lianas, emergent layer.</p>	<p>The New Wider World Pages 212 and 232. Longman Geography for GCSE Page 86 and 99. http://www.bbc.co.uk/education/gcsebitesize/index.shtml(Select Climates and Ecosystems) http://www.geography.learnontheinternet.co.uk/topics (Select Climate Types and Graphs) http://www.s-cool.co.uk (Select GCSE Geography, then Ecosystems - Tropical Rainforests) http://www.greenpeace.org.uk/ (Amazon homepage) http://www.rainforestweb.org/</p>
<p>2.2b Describe and explain the Tropical Desert climate, the characteristics of the natural vegetation and the relationship between the climate and the natural vegetation.</p>	<p>Tropical Desert Pupils produce location map of desert climate and draw climate graph e.g. Algeria. Pupils describe the main features shown by the climate graph and other climatic characteristics e.g. highest temperature, annual temperature range, high pressure, low precipitation, cloudless skies etc. Pupils explain the factors that have influenced this type of climate to include prevailing winds and high pressure. Pupils describe the characteristics of the desert vegetation and how the vegetation is related to and had adapted to climate e.g. long roots, thin, spiky leaves, thick waxy skins etc.</p>	<p>Longman Geography for GCSE Page 87. http://www.bbc.co.uk/education/gcsebitesize/index.shtml(Select Climates and Ecosystems) http://www.geography.learnontheinternet.co.uk/topics (Select Climate Types and Graphs) http://pubs.usgs.gov/gip/deserts/contents http://www.s-cool.co.uk/ (Select GCSE Geography, then Ecosystems – Deserts) http://mbgnet.mobot.org/sets/desert/index.htm</p>
<p>2.3 The inter-relationship of the natural environment and human activities by reference to tropical</p>	<p>Pupils are introduced to the climate hazard of a tropical cyclone - causes, effects, prediction and precaution. Using a case study, pupils make the link between this climatic hazard and coastal flooding and research and write a newspaper</p>	<p>The New Wider World Pages 216 - 217. Exercises 3 and 4 Page 227 and 228. Longman Geography for GCSE Page 90.</p>

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	storms.	article to show the causes and effects of coastal flooding.	http://www.bbc.co.uk/education/gcsebitesize/index.shtml (Select Weather Hazards) http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml
2.3	The inter-relationship of the natural environment and human activities by reference to deforestation of the tropical rainforest.	Pupils research and write a newspaper article to describe the reasons for the deforestation of the tropical rainforest and the local and global effects. Pupils discuss the various approaches to sustainable forest management.	The New Wider World Pages 236 - 240. Exercise 5 Page 243. Longman Geography for GCSE Page 100 -101. http://www.s-cool.co.uk/ (Select GCSE Geography, then Ecosystems - Managing Ecosystems)
2.3	The inter-relationship of the natural environment and human activities by reference to drought.	Pupils are introduced to the climatic hazard of drought. Pupils write in role as a relief worker for the UN to present a report on the causes and effects of drought and desertification in LEDC's using textbook and Internet references.	The New Wider World Page 222 and 225 and 256 to 258 Exercise 7 Page261 Longman Geography for GCSE Page 97. http://geography.about.com/cs/deserts/index.htm?once=true& http://www.unccd.int/publicinfo/factsheets/menu.php