

UNIT TITLE: Weather hazards and climate change

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| <p>Estimated Lesson Breakdown</p> <ol style="list-style-type: none"> 1) The atmospheric circulation model 2) Location of tropical storms 3) How tropical storms form 4) The structure of tropical storms 5) Impact of climate change on tropical storms 6) Typhoon Haiyan 1 7) Typhoon Haiyan 2 8) Diagnostic/therapies 9) Weather hazards in the UK 10) Storm Desmond 11) Reducing risk from weather hazards in Cumbria 12) Weather snapshot 13) Evidence of climate change 14) Causes of climate change 15) Causes of climate change 2 16) How climate change can be managed 17) Diagnostic/therapies | <p>Assessment</p> <p>Lesson 8 – Diagnostic/therapies (KB1, KB2) Lesson 12 – Weather hazards assessment snapshot (KB1, KB2, KB3, KB4) Lesson 17 – Diagnostic/therapies</p> <p>Practice Exam Questions</p> <p>Lesson 3 – Explain how tropical storms form (4 marks) Lesson 7 – Using the figure and an example of a tropical storm you have studied, outline the effects of tropical storms (6 marks). Lesson 15 – Explaining how physical and human causes lead to climate change (6 marks).</p> <p>Skills Coverage</p> <p>AM1 – Use and understand coordinates – latitude and longitude AM2 – recognise and describe distributions and patterns of physical features G1 – line charts, bar charts G5 – plot information on graphs when axes and scales are provided G6 – interpret and extract information from different types of maps, graphs, charts.</p> |
| <p>Notes</p> <ul style="list-style-type: none"> • | <p>Knowledge Stands/Links to Previous Learning</p> <p>Changing weather and climate:</p> <ul style="list-style-type: none"> • 7.5 What is life in the Arctic like? – how altitude and latitude affect temperature • 8.1 Are we heading for a climate disaster? – an overview of the causes and impacts of climate change • 8.4 Is the world becoming drier? – how Hadley cells work, basic understanding how high and low pressure • 9.4 Why are some tropical storms worse than others? – the distribution of tropical storms, causes of tropical storms, reasons why hazard risk varies, the effects of tropical storms. |
| <p>Specification Content</p> | <p>Teaching List – Key words in bold <i>Tier 2 words in Bold/italics</i></p> |
| <p>General atmospheric circulation model: pressure belts and surface winds.</p> | <p>KB1:</p> <ul style="list-style-type: none"> ○ Definitions of high and low pressure ○ The location of pressure belts in the atmospheric circulation model ○ The direction of surface winds at different latitudes |
| <p>Global distribution of tropical storms (hurricanes, cyclones, typhoons).</p> <p>An understanding of the relationship between tropical storms and general atmospheric circulation.</p> | <p>KB2</p> <ul style="list-style-type: none"> ○ The location of different tropical storms around the world: <ul style="list-style-type: none"> ○ Latitude ○ Names of oceans ○ Role of low pressure and Hadley cells in the formation of tropical storms |

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| <p>Causes of tropical storms and the sequence of their formation and development.</p> <p>The structure and features of a tropical storm.</p> <p>How climate change might affect the distribution, frequency and intensity of tropical storms.</p> | <ul style="list-style-type: none"> ○ How tropical storms form including the role of light wind shear, ocean temperature (26.5 degrees), Coriolis effect, trade winds. ○ The structure of tropical storms including definitions and features of (eye, eye wall, cumulonimbus clouds, high altitude wind, bands of clouds) ○ The increased frequency and intensity of tropical storms seen on line graphs due to climate change. |
| <p>Primary and secondary effects of tropical storms.</p> <p>Immediate and long-term responses to tropical storms.</p> <p>Use a named example of a tropical storm to show its effects and responses.</p> <p>How monitoring, prediction, protection and planning can reduce the effects of tropical storms.</p> | <p>KB3</p> <ul style="list-style-type: none"> ○ The primary and secondary effects of Typhoon Haiyan in The Philippines ○ The immediate and long-term response of Typhoon Haiyan in The Philippines. ○ The different methods for reducing the risk of tropical storms <ul style="list-style-type: none"> ○ Monitoring: use of satellites and aircraft ○ Protection: modifications made to buildings ○ Planning: Evacuation plans and preparation of emergency supplies ○ Prediction: use of monitoring to forecast weather and path of storms |
| <p>An overview of types of weather hazard experienced in the UK.</p> <p>An example of a recent extreme weather event in the UK to illustrate:</p> <ul style="list-style-type: none"> ○ causes ○ social, economic and environmental impacts ○ how management strategies can reduce risk. ○ Evidence that weather is becoming more extreme in the UK. | <p>KB4</p> <ul style="list-style-type: none"> ○ Definitions of weather hazard ○ Types of weather hazard experienced in the UK (snowfall, heavy rainfall, heatwaves). ○ The increased frequency and intensity of weather hazards experienced in the UK over the past 20 years. ○ The causes leading to Storm Desmond ○ The impacts experienced from Storm Desmond in Cumbria. ○ The different methods used to reduce future risk from heavy rain in Cumbria (flood defences, flood warnings). |
| <p>Evidence for climate change from the beginning of the Quaternary period to the present day.</p> <p>Possible causes of climate change:</p> <p>natural factors – orbital changes, volcanic activity and solar output</p> <p>human factors – use of fossil fuels, agriculture and deforestation.</p> <p>Overview of the effects of climate change on people and the environment.</p> <p>Managing climate change:</p> <p>mitigation – alternative energy production, carbon capture, planting trees, international agreements</p> <p>adaptation – change in agricultural systems, managing water supply, reducing risk from rising sea levels.</p> | <p>KB5</p> <ul style="list-style-type: none"> ○ Different evidence sources for climate change: ice caps, ocean sediments, ice cores, changes in earth's temperature, pollen analysis, tree rings). ○ The physical causes of climate change (Milankovitch cycles, gases released from volcanic activity, role of solar flares and sunspots). ○ The human causes of climate change (fossil fuel use over time, changing cattle farming and use of pesticides, and deforestation). ○ The effects of climate change including drought, changing weather patterns, food patterns, reduced ice cover, sea-level rise. ○ Definitions of mitigation and adaptation ○ Overview of the different strategies including alternative energy production, carbon capture, planting trees, international agreements, changes in agriculture, managing water supply, reducing risk from rising sea levels |