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| **Coonabarabran High School**  TAKE HOME ASSESSMENT NOTIFICATION | | | |
| **Subject:** | **Earth and Environmental Science** | **Weighting:** | **25%** |
| **Teacher:** | **Mrs Eshman** | **Notification date:** | **10th June 2025** |
| **Topic:** | **Climate Science** | **Due date:** | **20th June 2025** |

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| **Outcomes to be assessed:** |
| * **EES 12-14 –** Analyses the natural processes and human influences on the Earth, including scientific evidence for changes in climate. * **EES 11/12-7 –** Communicates scientific understanding using suitable language and terminology for a specific audience or purpose. * **EES 11/12-5 –** Analyses and evaluates primary and secondary data and information. * **EES 11/12-4 –** Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media. * **EES 11/12-6 –** Solves scientific problems using primary and secondary data, critical thinking skills and scientific processes. |

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| **You will be assessed on how well you:** |
| * Select and process appropriate qualitative and quantitative data and information using a range of appropriate media. * Analyse the climate science data and derive trends and relationships. * Assess the relevance, accuracy, validity and reliability of data. * Make predictions based on data. * Communicate your scientific understanding using subject specific terminology. |

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| **Task description:** |
| Global climate change is without a doubt one of the biggest challenges for humanity in the 21st century. Much of what we hear stated about climate change relates to predictions of the future. Scientists use modelling from past data to provide these predictions. There are many types of ancient and modern evidence that scientists can utilize to provide data to assist in scientific modelling.  This Case Study consists of two sections.  **Section 1 – Data Analysis**  In this section you will be required to access the ANSTO data set on historic greenhouse gas concentrations from Antarctic Ice Core sampling. You will use this information alongside other climate data to construct and annotate a number of graphs to describe trends and make predictions.  **Section 2 – Analysis of climate mitigation and adaptation strategies**  In this section you will analyse one climate mitigation strategy and one adaptation strategy  Please refer to the attached supporting document for more detailed task description. |

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| **Submission:** |
| Submission of 4 annotated graphs, description of the Industrial Revolution and the implications for climate change, a one-page analysis of a mitigation strategy and a one-page analysis of an adaptation strategy, an evaluation of the relevance, reliability, validity and accuracy of your information and a bibliography.  Drafts can be submitted prior to final assessment. |

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| **Feedback (during and after task completion):** |
| You will be given 3 periods of class time to work on this task. During this time you will be given feedback on your progress.  The marking guidelines in the attached supporting document will be used to provide feedback on how well you have achieved the outcomes being assessed. |

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| *NOTE: This is a compulsory assessment task. You are to make a genuine attempt at the task, and all protocols relating to plagiarism, collusion, and malpractice apply. You are required to submit on the above stated date. Failing to do so may result in the awarding of the grade of 0%. If students are unable to submit by the due date, they must provide a doctor’s certificate and/or an Illness & Misadventure Form. All assessment submission protocols, found in the Assessment Handbook, will be followed.* |

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| **Criteria:** | **Marks:** |
| * **EES 11/12-4: Processing data and information** * Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media | **/10** |
| * **EES 11/12-5: Analysing data and information** * Derives trends, patterns and relationships in data and information. * Assesses error, uncertainty and limitations in data. * Assesses the relevance, accuracy, validity and reliability of data | **/10** |
| * **EES 11/12-6: Problem solving** * Solves scientific problems using primary or secondary data, critical thinking skills and scientific processes. * Uses modelling to explain phenomena, make predictions and solve problems. | **/10** |
| * **EES 11/12-7: Communicating** * Communicates scientific understanding using suitable language and scientific terminology for a specific audience or purpose. * Constructs evidence-based arguments to evaluate an argument or conclusion. | **/10** |
| * **EES 12-14: Analyses the natural processes and human influences on the Earth, including scientific evidence for changes in climate.** * Demonstrates detailed knowledge and understanding of the human influences for climate change | **/10** |

**Supporting Document**

**Section 1 – Data Analysis**

1. Locate the ANSTO data set on ice cores – <http://www.ansto.gov.au/education/resources/data-sets>
2. In the Excel spreadsheet, locate the CO2 Composite Record data.
3. Use this data to create a graph (Graph #1). Choose scatter graph with smooth lines and markers. Add axes and chart titles.
4. Describe what the graph is showing and explain any trends.
5. Locate the CO2\_CH4\_0-2000AD data.
6. Use this data to construct a graph (Graph #2) of the CO2 over time. Choose a scatter graph with smooth lines and markers and add in minor grid lines. Add axes and chart titles.
7. Describe what the graph is showing and explain any trends.
8. This data from ANSTO only goes until 2004. Use another source to locate data from 2005 – 2023/24 (include in your bibliography and reference on your graph). Add this data to the ANSTO data and create another graph that shows CO2 levels from just before the Industrial Revolution until today (Graph #3). Account for the changes in CO2 and explain any trends.
9. Research the Industrial Revolution and provide a summary on its implications to climate change.
10. Research climate data and associated websites to predict future warming if CO2 levels continue to rise at their current rates.

**Section 2 – Mitigation and Adaptation Strategies**

1. Choose ONE climate mitigation strategy and ONE climate adaptation strategy. Provide details for each of these including pictures/ diagrams, advantages and disadvantages of this particular strategy and an overall evaluation of the strategy. Please limit each to ONE page (not including bibliography).

**Bibliography**

APA referenced. Comment on the relevance, reliability, validity and accuracy of your sources.