



HSC Earth and Environmental Science

Assessment Task 2

Geological Natural Disaster Report

The Task:

To produce a report/case study on a specific major volcanic eruption, explaining the geological processes involved and the effects of this eruption on the atmosphere and biosphere.

Due Date:

Friday 14th June (3:15pm)

Weighting:

40 marks; representing 20% HSC Assessment mark

Assessor:

Mr. Anthony Neenan

Syllabus Dot Points:

Students:

- using data from secondary sources, compare the eruptions that occur at explosive and effusive volcanoes in terms of the impact on the biosphere and atmosphere
- analyse the effects of a major volcanic eruption on the atmosphere in terms of changing the climate (both warming and cooling)
- in a case study, investigate one eruption that has had a significant effect on the biosphere and atmosphere and assess its impact, including but not limited to:
 - Mount Pinatubo

Outcomes Assessed:

EES11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media

EES11/12-5 analyses and evaluates primary and secondary data and information

EES11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

EES12-13 describes and evaluates the causes of the Earth's hazards and the ways in which they affect, and are affected by, the Earth's systems

Select a volcanic eruption:

Choose one of these eruption events for you report:

<i>Volcano</i>	<i>Year of Eruption</i>
Grimsvotn [Lakagigar], Iceland	1783
Tambora, Sumbawa, Indonesia	1815
Cosiguina, Nicaragua	1835
Askja, Iceland	1875
Krakatau, Indonesia	1883
Okataina [Tarawera], North Island, New Zealand	1886
Santa Maria, Guatemala	1902
Ksudach, Kamchatka, Russia	1907
Novarupta [Katmai], Alaska, United States	1912
Agung, Bali, Indonesia	1963
Mount St. Helens, Washington, United States	1980
El Chichón, Chiapas, Mexico	1982
Mount Pinatubo, Luzon, Philippines	1991

Report Specifics /criteria:

Your report must include the following headings and content:

Title – E.g. The 1991 eruption of Mt. Pinatubo by Joseph Briggs (yes put your name here).

Introduction – Outline the location of the volcano (include a map), the start date of the eruption, the length of the eruption, a short summary of the geological cause of eruption and effects (you go into greater detail of cause and effects in the body of your report).

Geological Processes – Detail the geological processes behind the eruption including:

- plate interactions - what plates are involved, what direction are they moving, what type of plate boundary?
- nature of the eruption - is it explosive or effusive and why does the type of magma (felsic, mafic or intermediate) affect the explosivity of the eruption?
- associated impacts - describe the phenomenon of lahars, pyroclastic flows, ash eruptions, gas emissions and lava flows. Outline which of these were associated with your volcanic eruption.

Effects on biosphere – Explain the impacts of the eruption on living things and how these impacts came about. Some impacts may be positive such as ash deposits increasing soil fertility. Also explain the impacts on humans including number of deaths and costs to society (costs don't necessary have to have a dollar value).

Effects on atmosphere – Explain the effects of gas emissions (E.g. sulfur dioxide and carbon dioxide) and volcanic ash on the atmosphere. Why does the dust and gases have a warming or cooling effect? Outline the specific impact of the volcanic eruption on the atmosphere and climate.

Format

Your document may be presented as a poster, Word document or PowerPoint presentation or any other medium you choose. However, your report must include eye-catching design and diagrams to help communicate your understanding.

Word Limit:

As a guide, your report should be 1000-1500 words.

Referencing:

Harvard style referencing is required for all assertions in your report. Harvard referencing includes in-text citations and complete reference list accompanying presentation.

Making Rubric

Syllabus outcome	Element	Marks available
<p>EES11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media</p> <p>EES11/12-5 analyses and evaluates primary and secondary data and information</p>	Report demonstrates highly accomplished research skills and the ability to synthesise data and information from various sources	3
	A diverse range of sources has been accessed and referenced	3
	Harvard referencing has been utilised appropriately	3
<p>EES11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose</p>	Scientific language has been used appropriately with definitions of terms where necessary. There are no obvious spelling and grammar mistakes	3
	Diagrams and illustrations have been used to help communicate information	2
	Report is eye-catching, neat and well formatted with clear headings	3
<p>EES12-13 describes and evaluates the causes of the Earth's hazards and the ways in which they affect, and are affected by, the Earth's systems</p>	Title– volcano name, year and author	1
	Introduction – location, date, length, summary of impacts	3
	Geological processes – plate boundary interactions	4
	Geological processes – nature of the eruption. A clear explanation of the difference between effusive and explosive eruptions	2
	Geological processes – associated impacts (lahars, pyroclastic flows, ash eruptions, gas emissions, lava flows)	3
	Effects on biosphere – impact on living things and specific cause of these impacts	3
	Effects on biosphere – impact on humans and society	3
	Effects on atmosphere – Explain how ash and gases can have a warming or cooling effect on atmosphere and specifics of the volcanic eruption studied	4
	Total	40