

Get off to a 'Flying Start' in

Geology - A Level

Welcome to Flying Start with North Devon College.

We hope that you are excited to join us at North Devon College. We want to help you to focus on your skills for your course with us and so below you will find questions to consider, tasks to complete and some background research to undertake before enrolment.

Please read the instructions and have a go at the activities.

If you get stuck, please see the Frequently Asked Questions (FAQs) section at the end of this document for help.

A quick hello and introduction to the course

Welcome to Geology A level! It is a fascinating course that provides you with a scientific understanding of how our planet works today and the evidence we have for how it has changed since it was formed 4.5 billion years ago.

You will develop skills useful in a wide range of future careers including problem solving and analysing information. There are also 4 local field trips run as part of the course where you can put some of your newly developed practical skills to the test.

I look forward to meeting you all in September.

Gavin – Lecturer, Geology A Level

To get you started...

This task involves researching volcanic hazards and considering their impacts.

Please go to page 3 for full instructions and complete all the tasks in the task brief.

For those who want a bit more...

Optional Extension Task

- Contrast the hazards produced by Sri Berapi (a composite or stratovolcano) with the hazards produced by an eruption of a shield volcano e.g. Kilauea on Hawaii:
 - <https://www.youtube.com/watch?v=aUQAlphKgEU>
 - <https://www.youtube.com/watch?v=8y8eYXBLRw8>
 - <https://www.youtube.com/watch?v=4pyD5fWB0PY>
 - <https://www.youtube.com/watch?v=kOaWFhJsdjl>

Why is the type of eruption and the hazards produced so different? Research the type of magma and gas content of the magma.

Frequently Asked Questions (FAQs)

Q: Will this work be marked and when is it due?

A: This work may not be formally marked but will be discussed during your first classes with us in September. Just bring along what you have completed to your first timetabled sessions.

Q: I am not sure if I have the answers right, what should I do?

A: Don't worry, just have a go at getting something down and bring it along to the lesson where we can talk it through. There is no need to get anxious about the tasks, we are not expecting you to know everything before you arrive but are interested in your ideas and what you have found easy or difficult as it helps us support you right from the beginning.

Q: Do I have to do it?

A: Flying Start is not compulsory, but many students find it useful for getting them used to thinking about subjects at the next level. Early classroom sessions will also reflect on some of the Flying Start activities.

Q: I don't have access to a printer, what should I do?

A: It doesn't matter. If you prefer you could handwrite the report and draw the maps instead.

Q: I haven't studied geography before so don't know much about volcanoes.

A: Don't worry! You do NOT need to have studied geography before to be a good geologist. If you want extra background this BBC Bitesize revision page will help. <https://www.bbc.co.uk/bitesize/guides/z8p9j6f/revision/1>

North Devon GEOLOGY

RESEARCH TASK - Volcanic Hazards



North Devon COLLEGE GEOLOGY

RESEARCH TASK - Volcanic Hazards

Introduction

This task is intended to allow you to demonstrate and to develop your ability to undertake a structured research task – an essential skill to be a good A Level geologist (or student in any subject!).

Background Information

Read this carefully.

You have been employed as a geology consultant by the South-East Asian state of Harimau, a small area of which is shown in Figure 1. The state lies close to the Republic of the Philippines at latitude 15°N and longitude 120°E. The climate is tropical with a high annual rainfall and high average annual temperatures. The principal difference between the seasons is that the wind blows from the southwest between May and October and from the north from November to April.

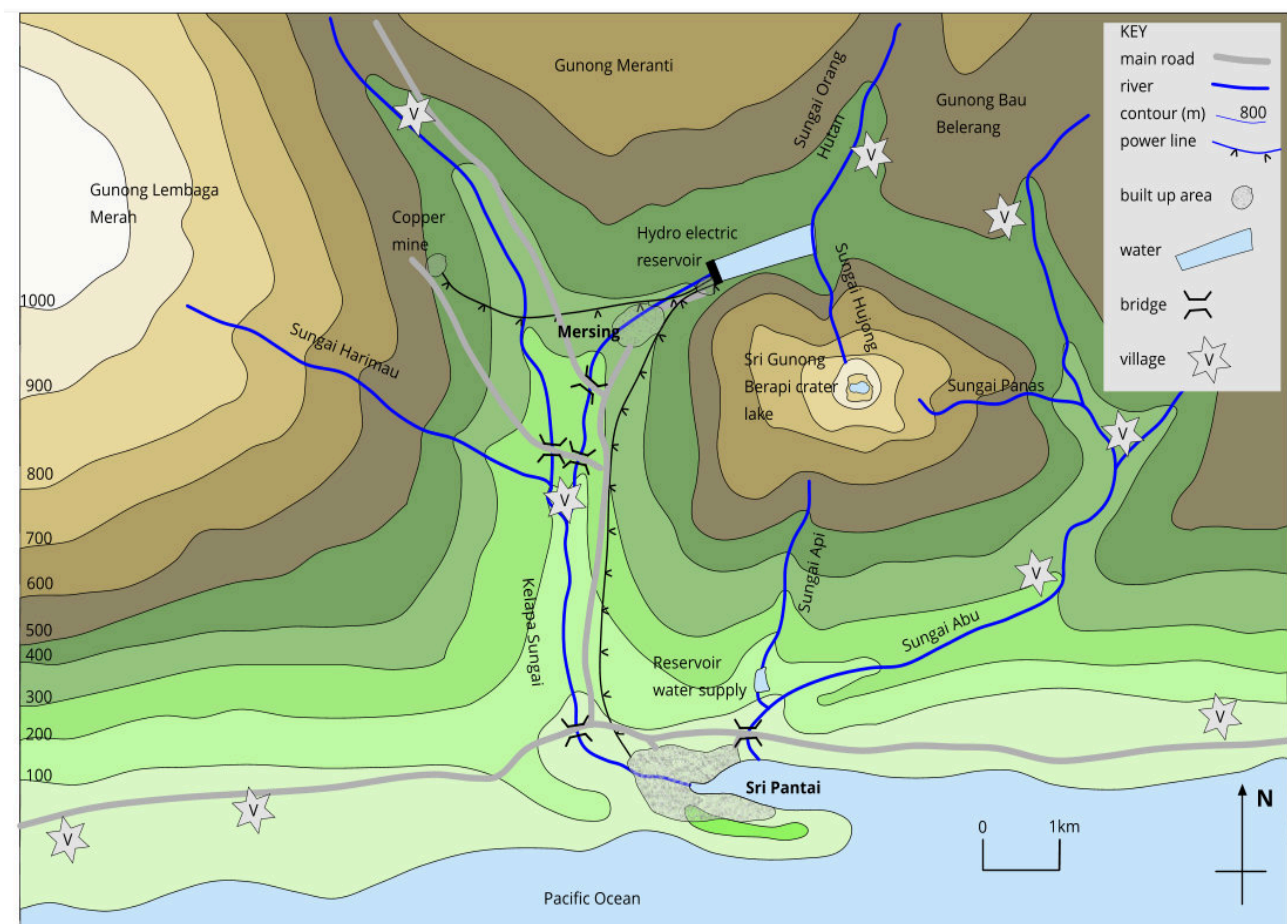


Figure 1. Location of Sri Berapi volcano with the surrounding settlements and economic developments

The capital city of Harimau, Sri Pantai, lies close to a steep-sided stratovolcano (also called composite volcano) called **Sri Berapi**. Local oral tradition suggests that Sri Berapi last erupted violently in the 17th Century. Since then, there has been some occasional emissions of steam and sulphurous gas, and a small andesite cone has built up in the crater. Recently there have been some small earth tremors and much larger and more frequent emissions of steam.

A wide variety of hazards is likely if you examine the map closely. Your research (see guidance notes below) should help you to evaluate the extent and significance of these hazards, **but it is vital that you use all the information provided in Map 1 and the additional information above and below:**

1. The area is self-sufficient in food because it has a large fishing fleet and much fertile land.
2. The only major industries are copper mining and hardwood forestry, the products of which are exported by sea from a port in Sri Pantai
3. The low-lying land along the shore and valleys is mostly used for 'paddy fields' to grow rice, the staple local food, and for grazing. The higher slopes, above two hundred metres, are tropical rainforest used mainly for timber production.
4. There are two centres of population: **Sri Pantai** is the administrative and commercial centre, with a population of about thirty thousand and lies around the harbour; **Mersing** has a population of nine thousand, lies inland, and houses most of the copper mine labour force.
5. In Sri Pantai and Mersing, the buildings are mostly brick and concrete, some with flat roofs and some with tiled roofs. Many people live in small villages in the countryside where houses are mostly timber with thatched roofs.

Task

Some of the potential volcanic hazards faced by the area around the volcano are illustrated in Figure 2:

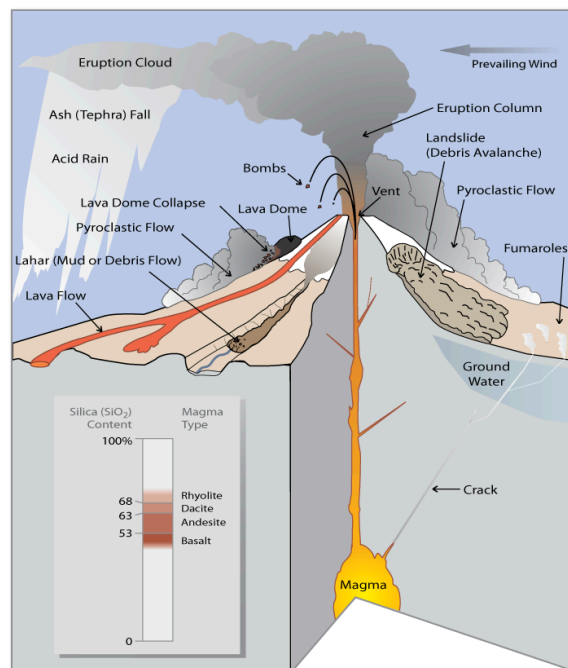


Figure 2. Simplified sketch showing how a volcano produces a wide variety of natural hazards that can kill people and destroy property. Credit: USGS

For each hazard listed below you need to research and produce notes on the following:

- A description of the hazard
- Using the map and additional information given on pages 4 and 5, an explanation of how the hazard will affect local people and economic activity
- For the two hazards indicated (*) use one of the maps provided (or draw one) to shade in the 'danger zones' - areas likely to be affected by the hazard

Hazards to include and helpful links:

- Pyroclasts* : Ash** and larger fragments that fall onto the surrounding area:
YouTube video of Mt. Pinatubo explosion at Clark Air Base, Philippines (Part 1).
<https://www.youtube.com/watch?v=SMe0VPQftsc>
- Lava flows**
YouTube clip showing the 1973 Iceland volcanic eruption and efforts to save the Vestmannaeyjar harbour.
<https://www.youtube.com/watch?v=ghl33n26d44>
- Pyroclastic flows (nuées ardentes)** YouTube clip showing a pyroclastic flow eruption at Sinabung, Indonesia in June 2015 <https://www.youtube.com/watch?v=GUdqQR0N2q4>
- Lahars** * YouTube clip showing a lahar, Mt Ruapehu, New Zealand, March 18, 2007
<https://www.youtube.com/watch?v=5x5tZAHoRU>
- Tsunami** https://www.youtube.com/watch?v=rRe_EqhlxRk

Good general research resources are:

- USGS site detailing volcanic hazards such as tephra/ash, lava flows, lahars, volcanic gas, pyroclastic flows
[Understanding volcanic hazards can save lives | U.S. Geological Survey \(usgs.gov\)](https://www.usgs.gov/understanding-volcanic-hazards-can-save-lives)
- A site where there is an outline of the many types of hazards associated with volcanoes.
<https://geology.com/volcanoes/volcanic-hazards/>

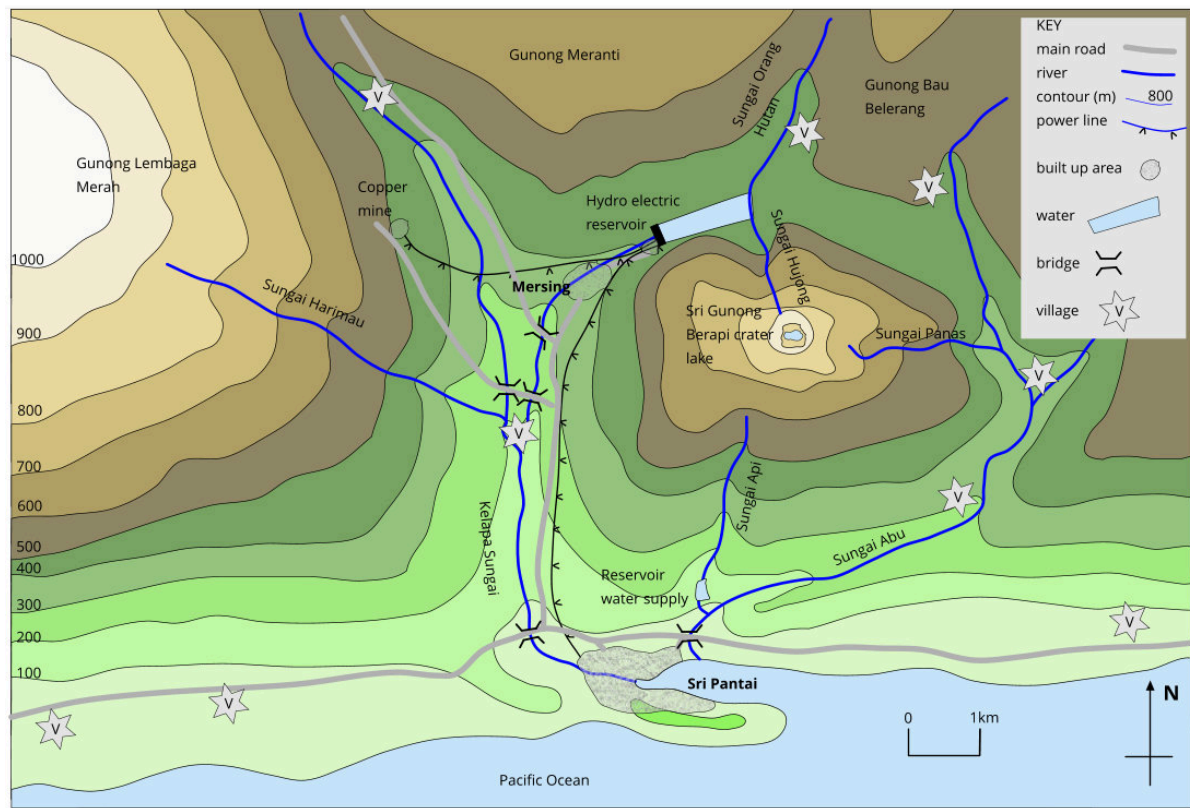
Maps that you could print out and use are on the next page. Please don't worry if you do not have a printer – you could draw them or even just write a description of the areas that would be affected using place names from the map.

If you haven't seen contour lines before, a description of how to "read" them is here:

<https://getoutside.ordnancesurvey.co.uk/guides/understanding-map-contour-lines-for-beginners/>

If you go down to the bottom of the webpage above there is a helpful video.

Map for distribution of pyroclasts/ash:



Map for distribution of lahars:

