

Surname	Centre Number	Candidate Number
First name(s)		2



## GCE AS/A LEVEL

2110U10-1



**TUESDAY, 17 MAY 2022 – AFTERNOON**

## GEOGRAPHY – AS unit 1 CHANGING LANDSCAPES

2 hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
Either 1 and 2 or 3 and 4	16	
	16	
	16	
	16	
5.	22	
6.	24	
7.	18	
<b>Total</b>	<b>96</b>	

### ADDITIONAL MATERIALS

A calculator.

### INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid. You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Write your answers in the spaces provided in this booklet.

In Section A, answer **either** questions 1 and 2 **or** questions 3 and 4.

Answer **all** questions in Section B.

If further space is required you should use the additional page(s) at the back of this booklet. The question number(s) should be clearly shown.

### INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

**This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.**

A plain page is available near the back of the booklet for you to add any relevant sketch maps and diagrams you may wish to include. The question number(s) should be clearly shown.



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### Section A: Changing Landscapes

Answer **either** questions 1 and 2 **or** questions 3 and 4 from your chosen landscape.

Make the fullest possible use of examples and data to support your answers.

#### Coastal Landscapes

Answer questions 1 and 2 if this is your chosen landscape.

**Figure 1a: Pendine Sands, Carmarthenshire, Wales**



Source: [www.coastradar.com](http://www.coastradar.com)



Figure 1b: Esgair Gemlyn, Anglesey, Wales



Source: www.geograph.org.uk

1. (a) (i) Use **Figures 1a** and **1b** to compare the characteristics of the two beaches. [5]

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(ii) Suggest **one** reason why the beach in **Figure 1a** is backed by sand dunes. [3]

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(b) Assess the importance of constructive waves in the development of beach profiles. [8]

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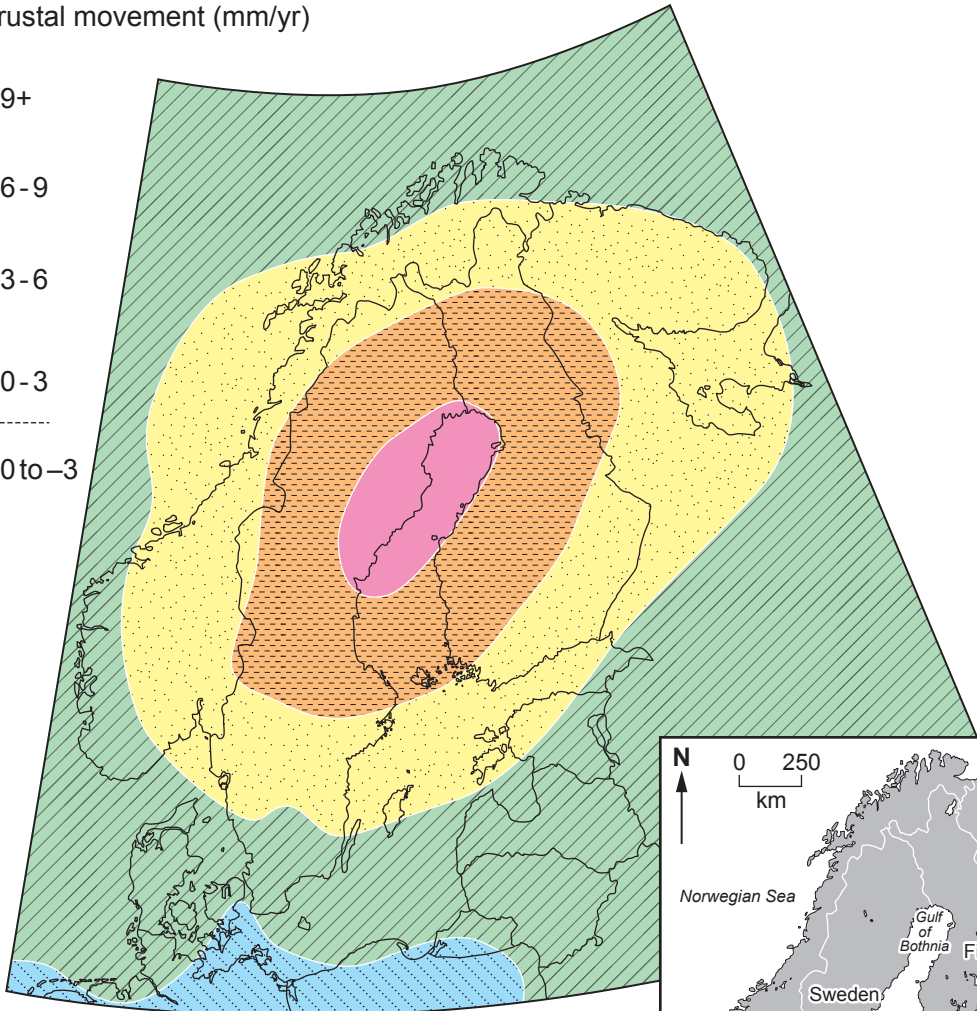
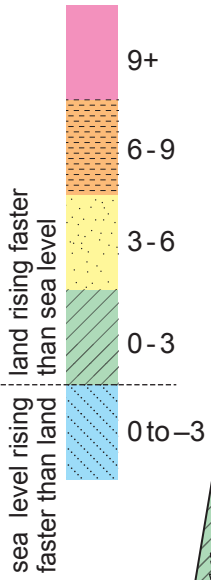
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Figure 2: Isopleth map of vertical crustal movement relative to sea level in Scandinavia

**Key:**

Vertical crustal movement (mm/yr)



Source: [www.researchgate.net](http://www.researchgate.net)



2. (a) (i) Use **Figure 2** to describe the pattern of vertical crustal movement relative to sea level. [5]

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(ii) Suggest **one** reason for the variations seen in **Figure 2**. [3]

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(b) Examine the role of **one** mass movement process in the development of **one or more** coastal landforms. [8]

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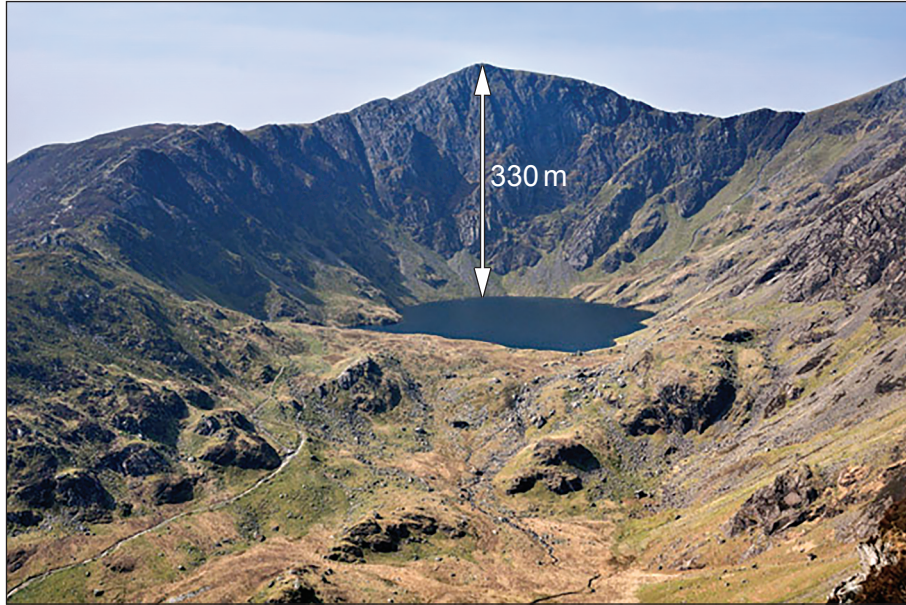
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### Glaciated Landscapes

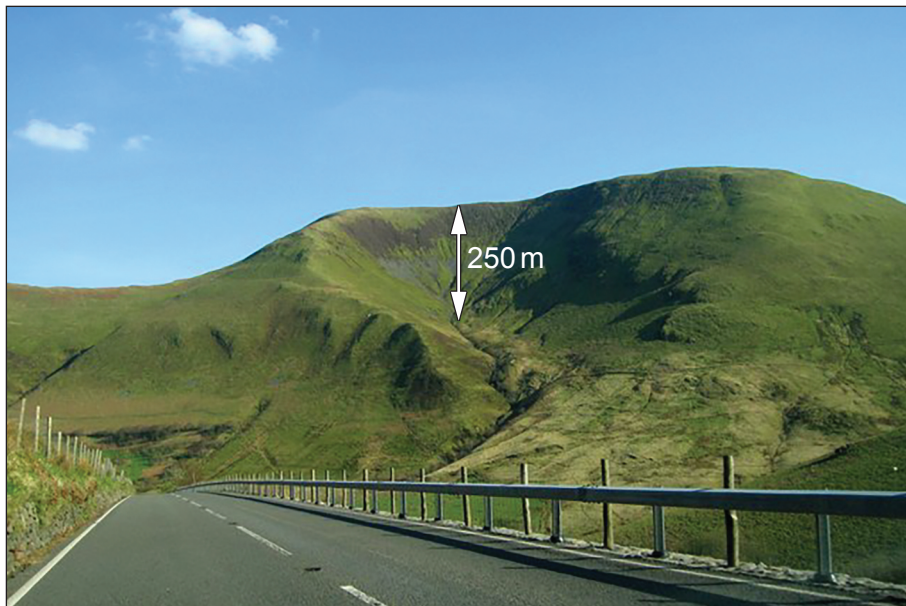
Answer questions 3 and 4 if this is your chosen landscape.

**Figure 3a: Cwm Cau, Snowdonia, Wales**



Source: [www.geologywales.co.uk](http://www.geologywales.co.uk)

**Figure 3b: Craig Rhiw-erch, Snowdonia, Wales**



Source: [www.geograph.org.uk](http://www.geograph.org.uk)



3. (a) (i) Use **Figures 3a** and **3b** to compare the characteristics of the two cirques. [5]

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(ii) Suggest **one** reason for the difference in the characteristics of the backwall of the two cirques. [3]

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(b) Assess the importance of ice thickness as a factor affecting the rate of glacial erosion.

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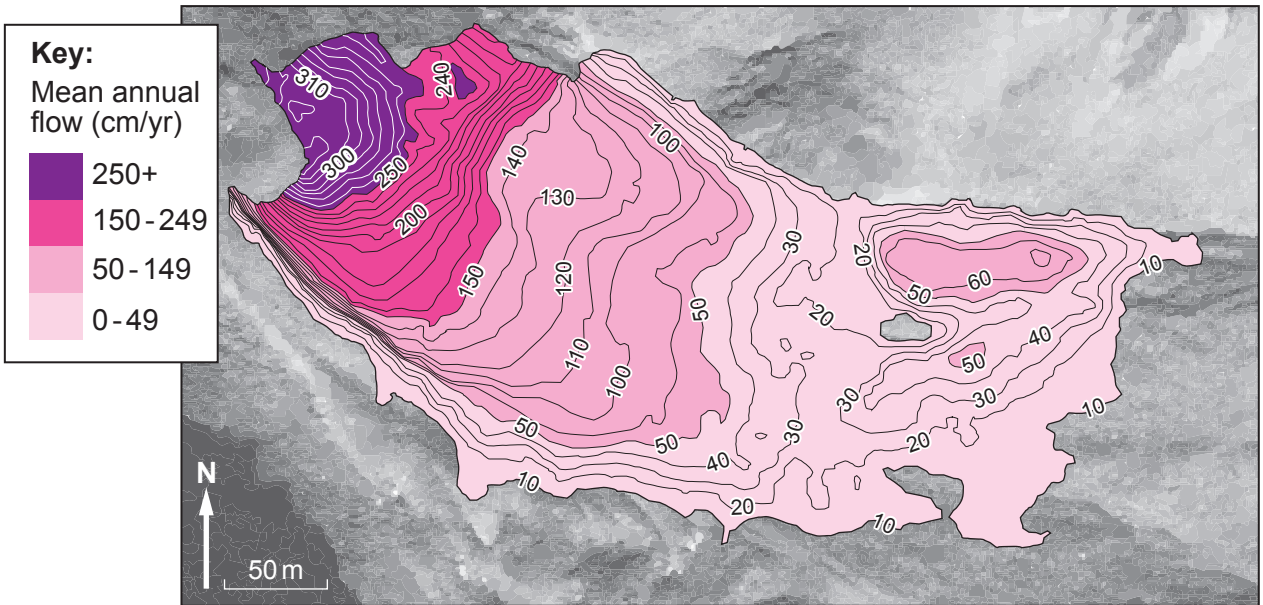
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Figure 4: Mean annual flow velocities of the Hinteres Langtalkar glacier, Austria



Source: zobodat.at

4. (a) (i) Use **Figure 4** to describe the pattern of flow velocity. [5]

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(ii) Suggest **one** reason why the flow velocity varies.

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(b) Examine the role of **one** mass movement process in the development of **one or more** periglacial landforms.

[8]

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**Section B: Tectonic Hazards**

Answer **all** questions.

Make the fullest possible use of examples and data to support your answers.

**Figure 5a: Global deaths as a result of selected volcanic hazards, 1600–2010**

Deaths	Volcanic hazard
91 484	Pyroclastic Flows
65 024	Indirect (Starvation and disease)
55 277	Waves (Tsunami)
37 451	Lahars (Primary)
8 126	Tephra
6 801	Lahars (Secondary)
5 230	Avalanches
2 151	Gas
1 163	Floods (Jökulhlaups)
887	Lava Flows
765	Seismicity
142	Lightning
<b>274 501</b>	

Adapted from: <https://link.springer.com>

5. (a) (i) Use **Figure 5a** to analyse the relative significance of the different causes of death. [5]

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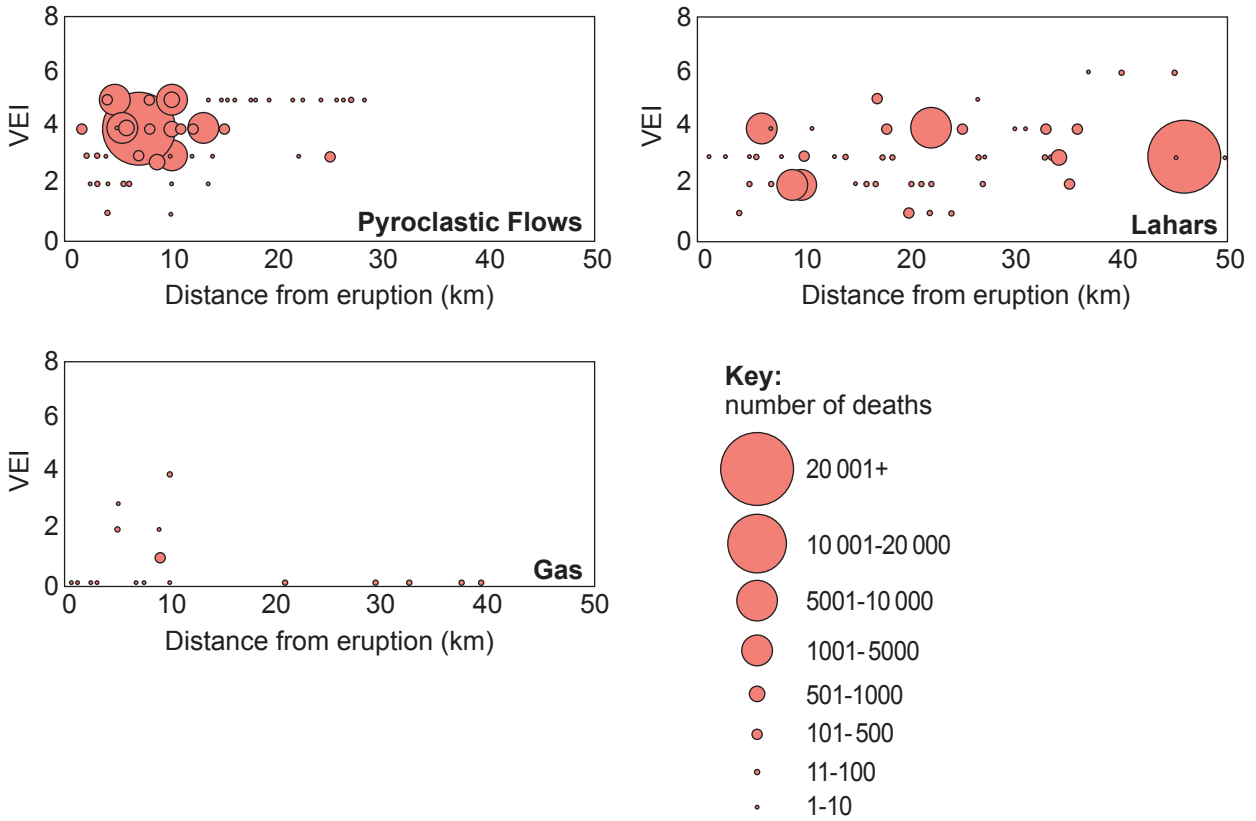
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**Figure 5b: The global relationship between eruption size (VEI), number of deaths and distance from eruption for selected volcanic hazards**



Source: <https://link.springer.com>

(ii) Use **Figures 5a** and **5b** to examine the physical factors that may influence the number of deaths resulting from volcanic eruptions. [9]

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(b) Briefly outline the characteristics of:

(i) explosive eruptions

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(ii) effusive eruptions

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**Figure 6a: The extent of infrastructure exposure to lahars and pyroclastic flows in selected South East Asian countries**

	% cities (20 000+) exposed to lahars	% cities (20 000+) exposed to pyroclastic flows	% ports exposed to lahars	% ports exposed to pyroclastic flows	% main roads exposed to lahars	% main roads exposed to pyroclastic flows	% airports exposed to lahars	% airports exposed to pyroclastic flows
Indonesia	44	32	8	7	24	14	12	7
Papua New Guinea	38	13	10	15	12	0	6	6
Philippines	33	20	4	9	14	7	13	9

Adapted from: <http://globalvolcanomodel.org>

6. (a) (i) State the range of percentage of ports exposed to lahars. [1]

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- (ii) Calculate the mean percentage of main roads exposed to pyroclastic flows. Show your working. [2]

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(b) Use the information in **Figure 6a** to suggest which hazard is the greatest threat to infrastructure.

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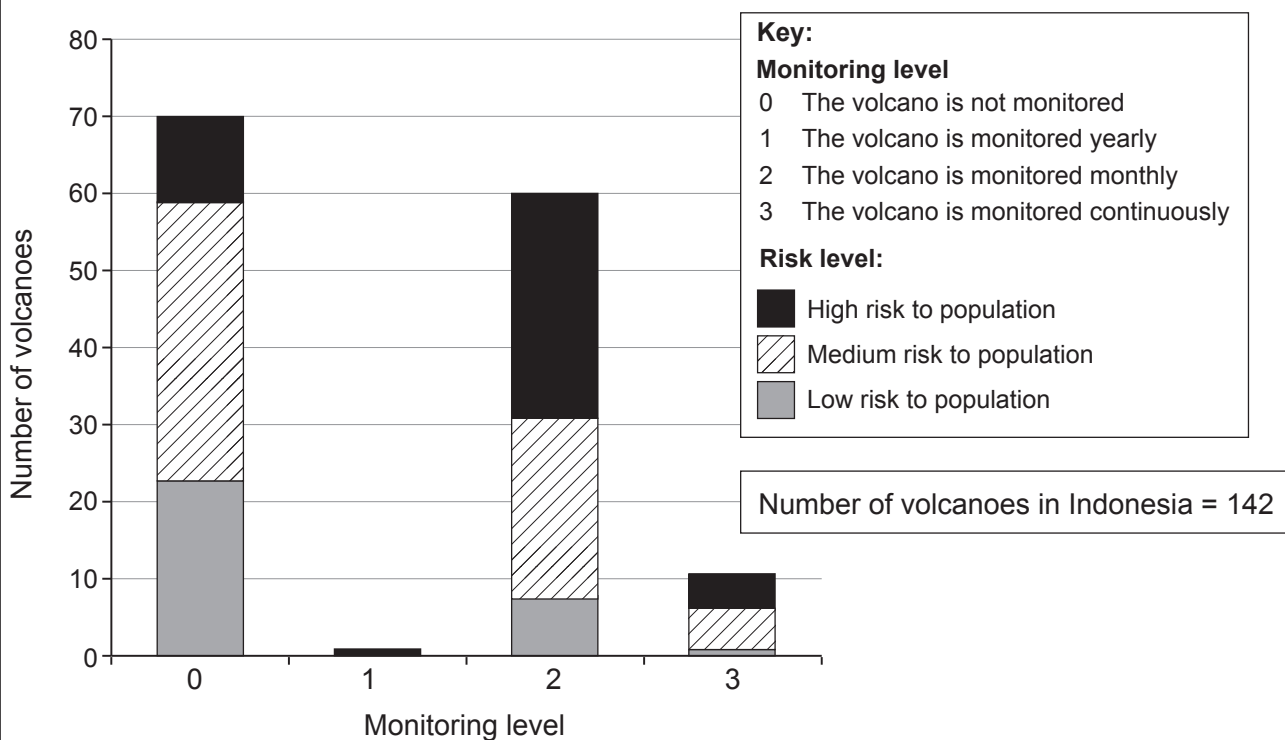
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**Figure 6b: Levels of monitoring and risk for the volcanoes of Indonesia**



Adapted from: <http://globalvolcanomodel.org>

- (c) (i) Use **Figure 6b** to calculate the percentage of Indonesia's volcanoes that are **not** monitored. Give your answer to **one** decimal place. Show your working. [3]

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(ii) Use **Figure 6b** to compare risk levels for volcanoes that are not monitored and those that are monitored monthly. [3]

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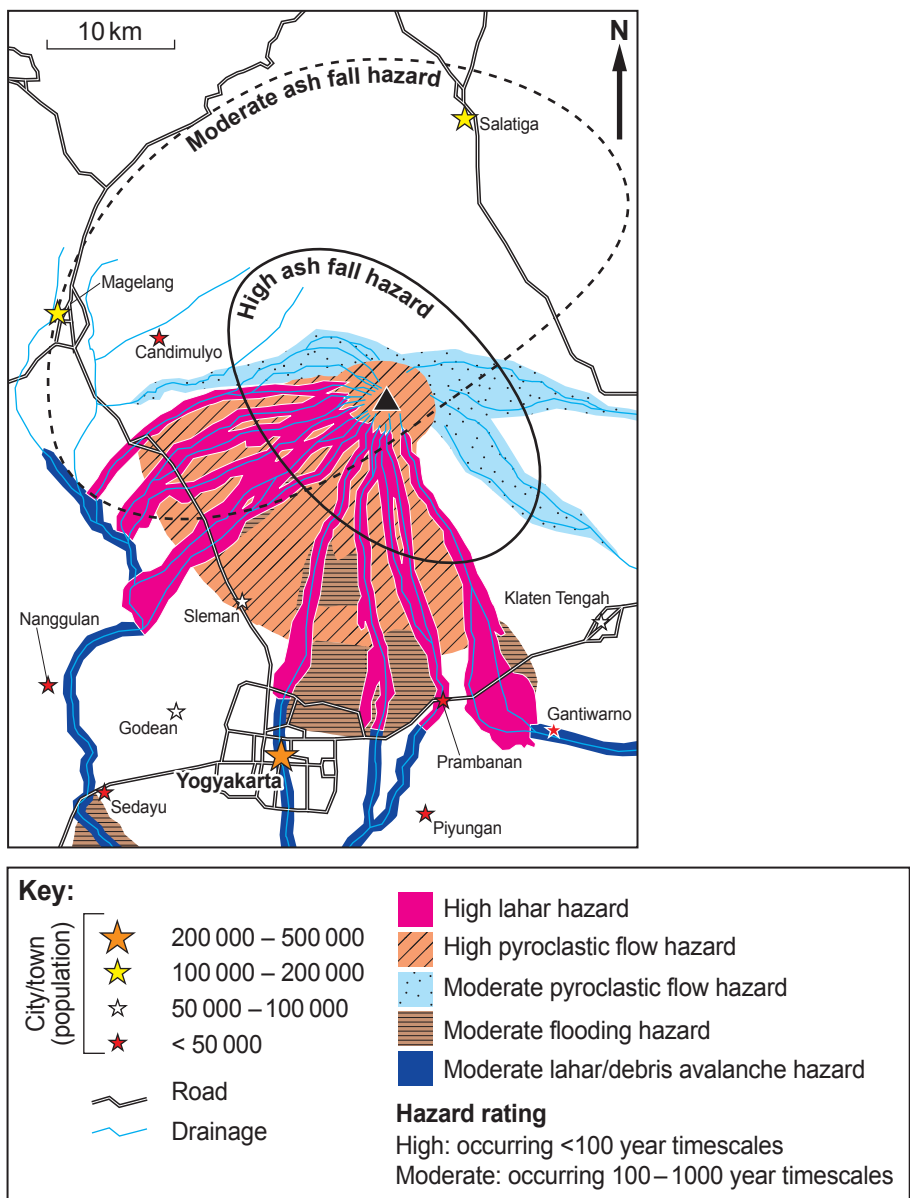
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Figure 6c: Hazard map of the Mount Merapi volcano area, Indonesia



Source: <https://gunungmerapi.weebly.com>

Figure 6d: Installing volcano monitoring equipment in Indonesia



Source: <https://www.usgs.gov>





(d) Use **Figures 6a** to **6d** to examine **human** reasons why there may be variations in the severity of impacts associated with volcanic eruptions. [10]

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7. (a) Explain how the processes associated with earthquakes produce **one or more** hazards. [10]

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(b) Examine the success of **one or more** long-term responses to the effects of earthquake hazards. [8]

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Question number	<b>Additional page, if required for diagrams. Write the question number(s) in the left-hand margin.</b>

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