



**GCE AS
B110U10-1**



TUESDAY, 17 MAY 2022 – AFTERNOON

**GEOGRAPHY – AS component 1
CHANGING LANDSCAPES**

**2 hours 15 minutes plus your additional
time allowance**

Surname

First name(s)

Centre Number

Candidate Number

2

ADDITIONAL MATERIALS

A calculator.

INSTRUCTIONS TO CANDIDATES

In Section A, answer EITHER questions 1 AND 2 OR questions 3 AND 4.

Answer ALL questions in Section B (Tectonic Hazards) and ALL questions in Section C (Challenges in the 21st Century).

Use black ink, black ball-point pen or your usual method.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces on the previous page.

(Turn over)

Write your answers in the spaces provided in this booklet.

If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

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 ANSWER. SKETCH MAPS AND DIAGRAMS SHOULD BE INCLUDED WHERE RELEVANT.

(Turn over)

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

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.

EITHER: COASTAL LANDSCAPES

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

(Turn over)

1 (a) Use FIGURE 1 opposite to describe the location of the Coral Triangle.

[5 marks]

(Turn over)

1 (b) Outline ONE factor that contributes to the development of coral reefs.

[3 marks]

(Turn over)

1 (c) Assess impacts of conservation on coastal landscapes and landforms.

[10 marks]

(Turn over)

(Turn over)

(Turn over)

Additional space for Question 1(c):

(Turn over)

- 2 (a) Use FIGURE 2 opposite to analyse the relationship between mean sediment size and beach slope angle. [5 marks]**

(Turn over)

2 (b) 'The main influence on the distribution of erosional coastal landscape systems is the length of fetch.' Discuss. [12 marks]

(Turn over)

(Turn over)

(Turn over)

(Turn over)

Additional space for Question 2(b):

(Turn over)

OR: GLACIATED LANDSCAPES

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

3 (a) Use FIGURE 3 opposite to describe the location of the Vatnajökull ice cap. [5 marks]

(Turn over)

3 (b) Outline ONE difference between warm-based and cold-based glaciers. [3 marks]

(Turn over)

3 (c) Assess impacts of a decrease in snowfall on the glacier system.

[10 marks]

(Turn over)

(Turn over)

[illegible]

(Turn over)

Additional space for Question 3(c):

(Turn over)

- 4 (a) Use FIGURE 4 opposite to analyse the relationship between mean scree particle size and scree slope angle.**
[5 marks]

(Turn over)

4 (b) 'The main influence on rates of glacial erosion is ice thickness.' Discuss. [12 marks]

(Turn over)

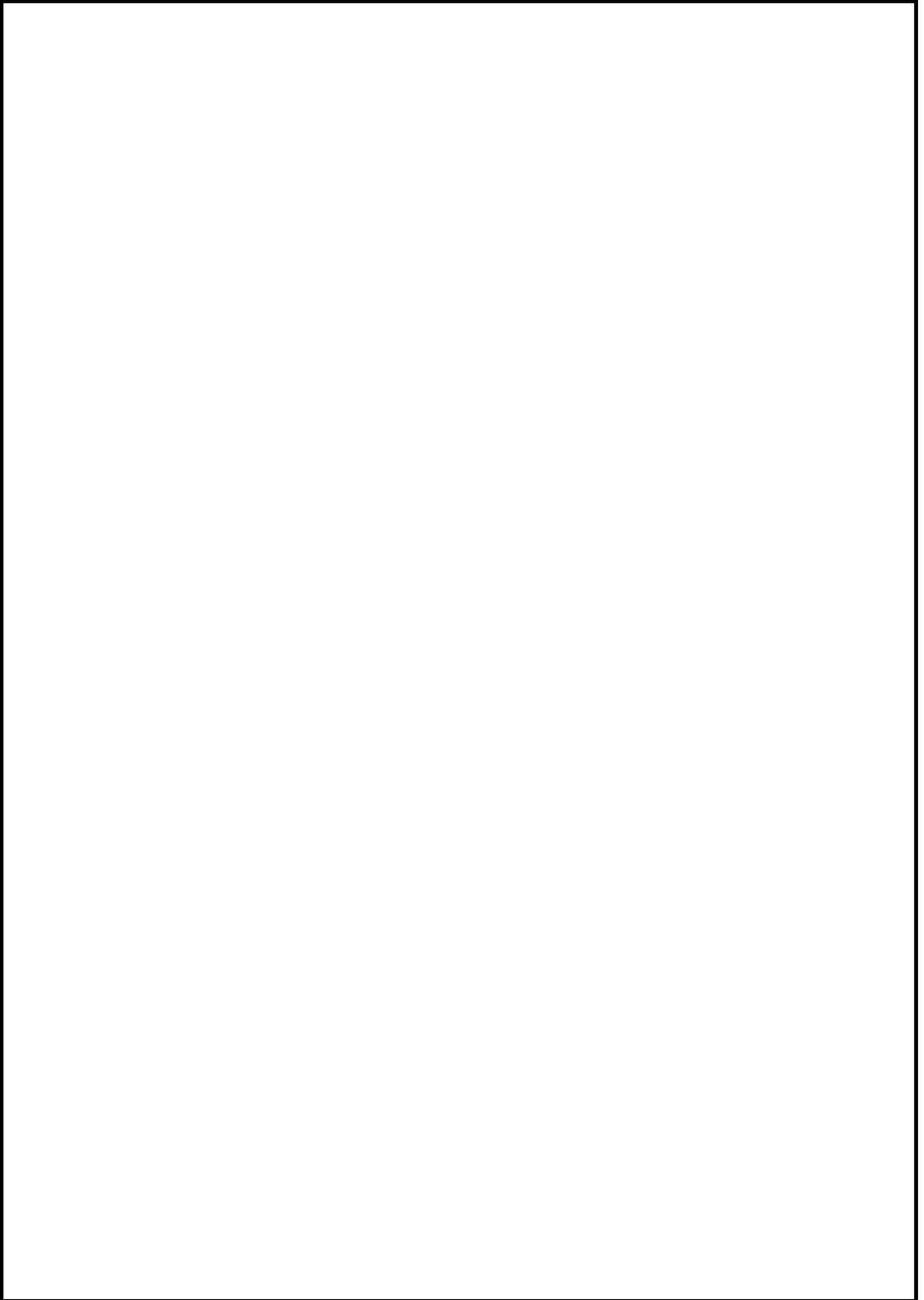
(Turn over)

[illegible]

(Turn over)

Additional space for Question 4(b):

(Turn over)



(Turn over)

SECTION B: TECTONIC HAZARDS

Answer ALL questions.

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

5 (a) Use FIGURE 5 opposite to compare the TWO hazard profiles. [5 marks]

(Turn over)

(Turn over)

5 (b) Use FIGURE 6 opposite to describe the likely impacts of this eruption on people and the built environment.

[4 marks]

(Turn over)

5 (c) Use FIGURE 7 opposite to:

- (i) Calculate the median value for the number of earthquakes per year in California from 2010 to 2015.**

[2 marks]

(Turn over)

5 (c) (ii) Calculate the mean number of earthquakes per year in California from 2010 to 2015. [2 marks]

(Turn over)

5 (c) (iii) Outline ONE disadvantage of using the mean value when studying the frequency of earthquakes in California from 2010–2015. [3 marks]

(Turn over)

5 (c) (iv) Use only FIGURE 8 opposite to analyse the relationship between earthquake magnitude and frequency. [4 marks]

(Turn over)

5 (d) Explain how tectonic plates are thought to move. [6 marks]

(Turn over)

- 5 (e) Evaluate the importance of prediction and mitigation in reducing risks associated with volcanic activity. [14 marks]**

(Turn over)

[illegible]

(Turn over)

[illegible]

(Turn over)

[illegible]

(Turn over)

Additional space for Question 5(e):

(Turn over)

6 (a) Assess how risks from volcanic activity vary from one place to another. [15 marks]

(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

Additional space for Question 6(a):

(Turn over)

6 (b) Evaluate the effectiveness of short-term and long-term responses to seismic events in countries at different levels of development.

[20 marks]

(Turn over)

(Turn over)

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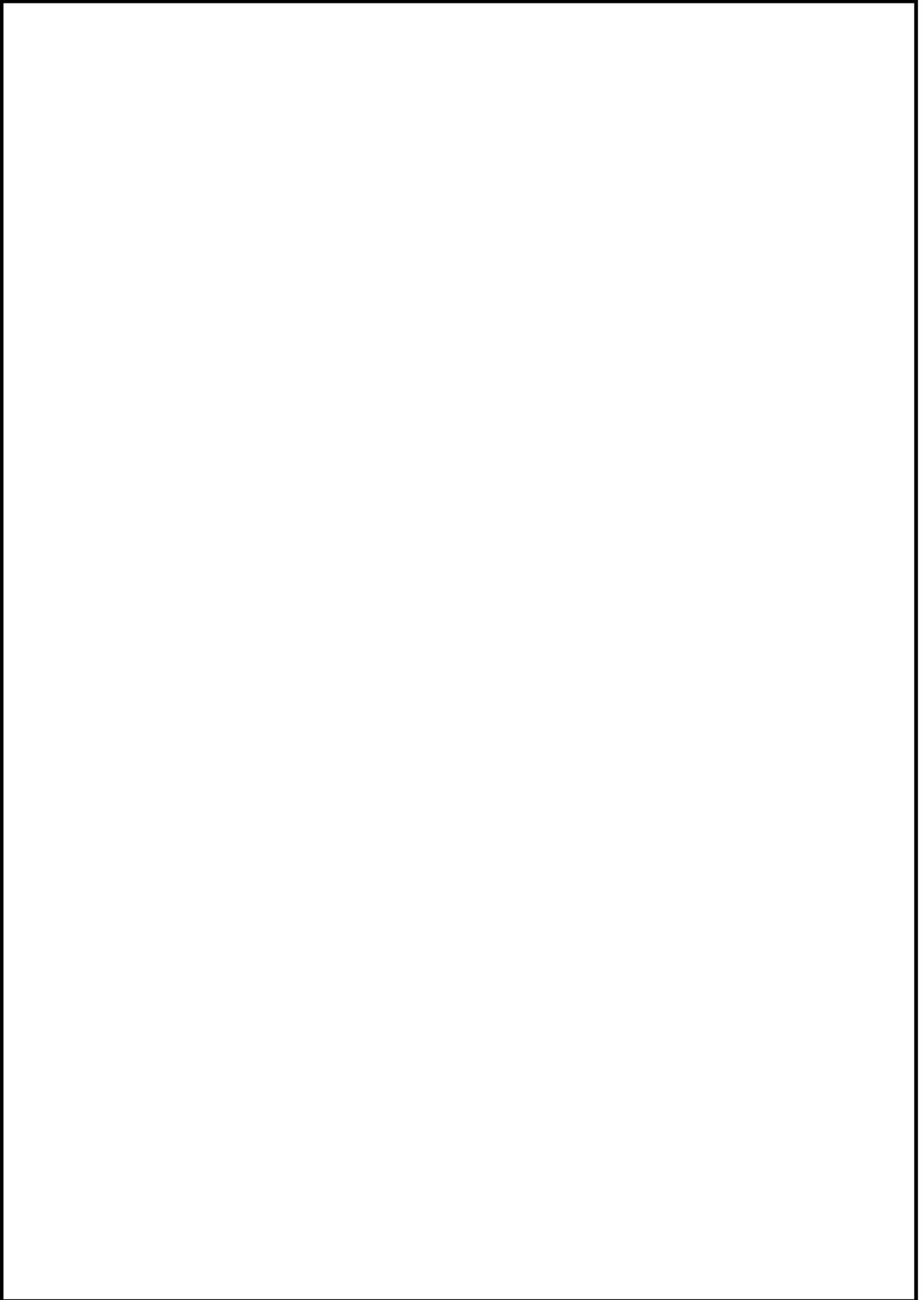
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This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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Additional space for Question 6(b):

(Turn over)



(Turn over)

SECTION C: CHALLENGES IN THE 21ST CENTURY

Answer ALL questions.

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

- 7 ‘Human innovation and investment in places minimise negative impacts of change.’ Discuss. [10 marks]**

In your answer to question 7, you may make use of the material in FIGURES 9a, 9b and 9c opposite and apply your own knowledge and understanding.

(Turn over)

(Turn over)

(Turn over)

[illegible]

(Turn over)

Additional space for Question 7:

END OF PAPER

(Turn over)

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
Either 1 and 2 or 3 and 4	18	
	17	
5	40	
6	35	
7	10	
Total	120	

FIGURE 1: THE CORAL TRIANGLE

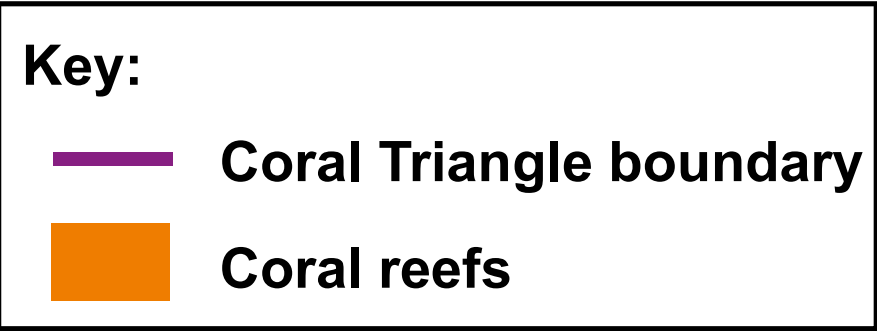
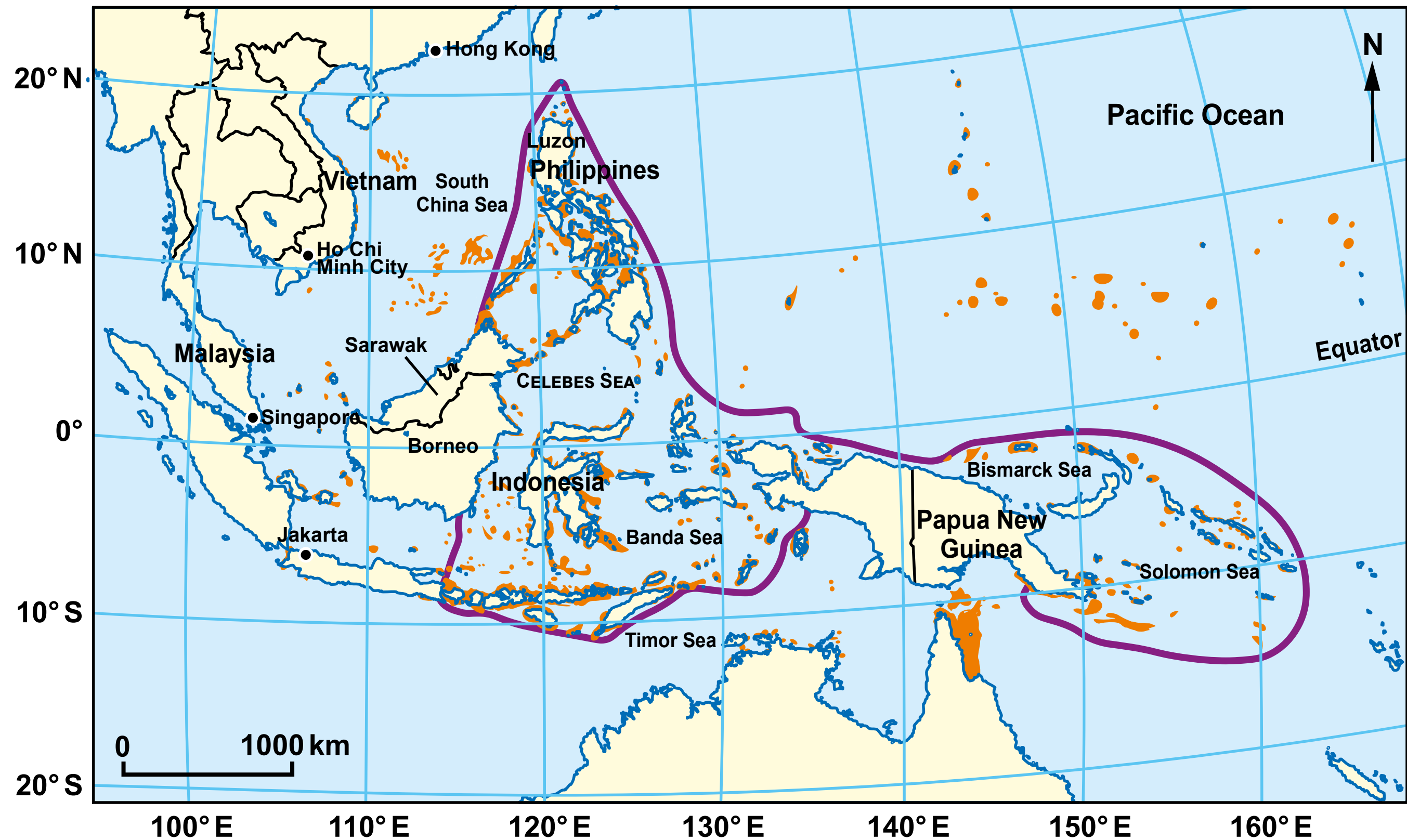
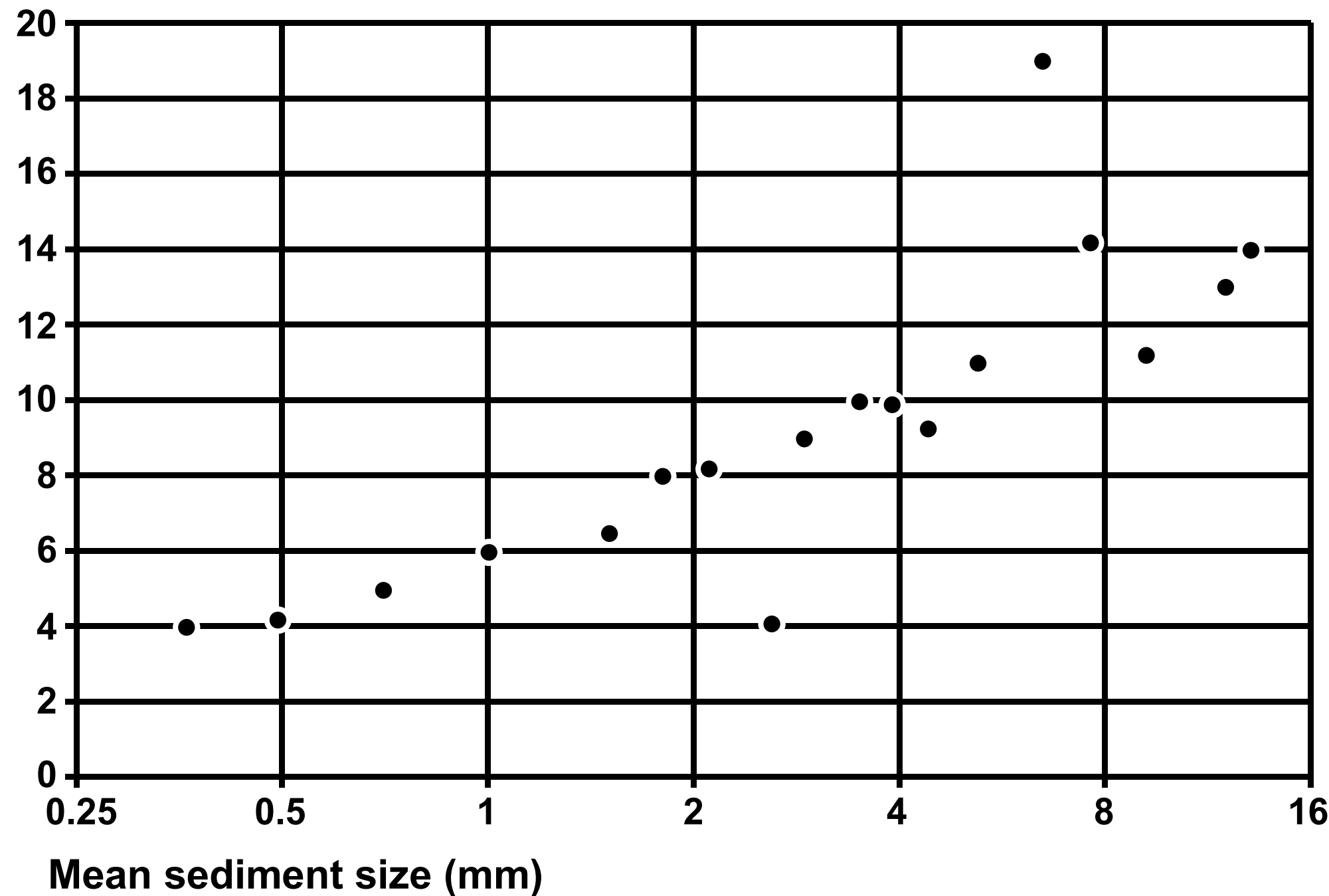


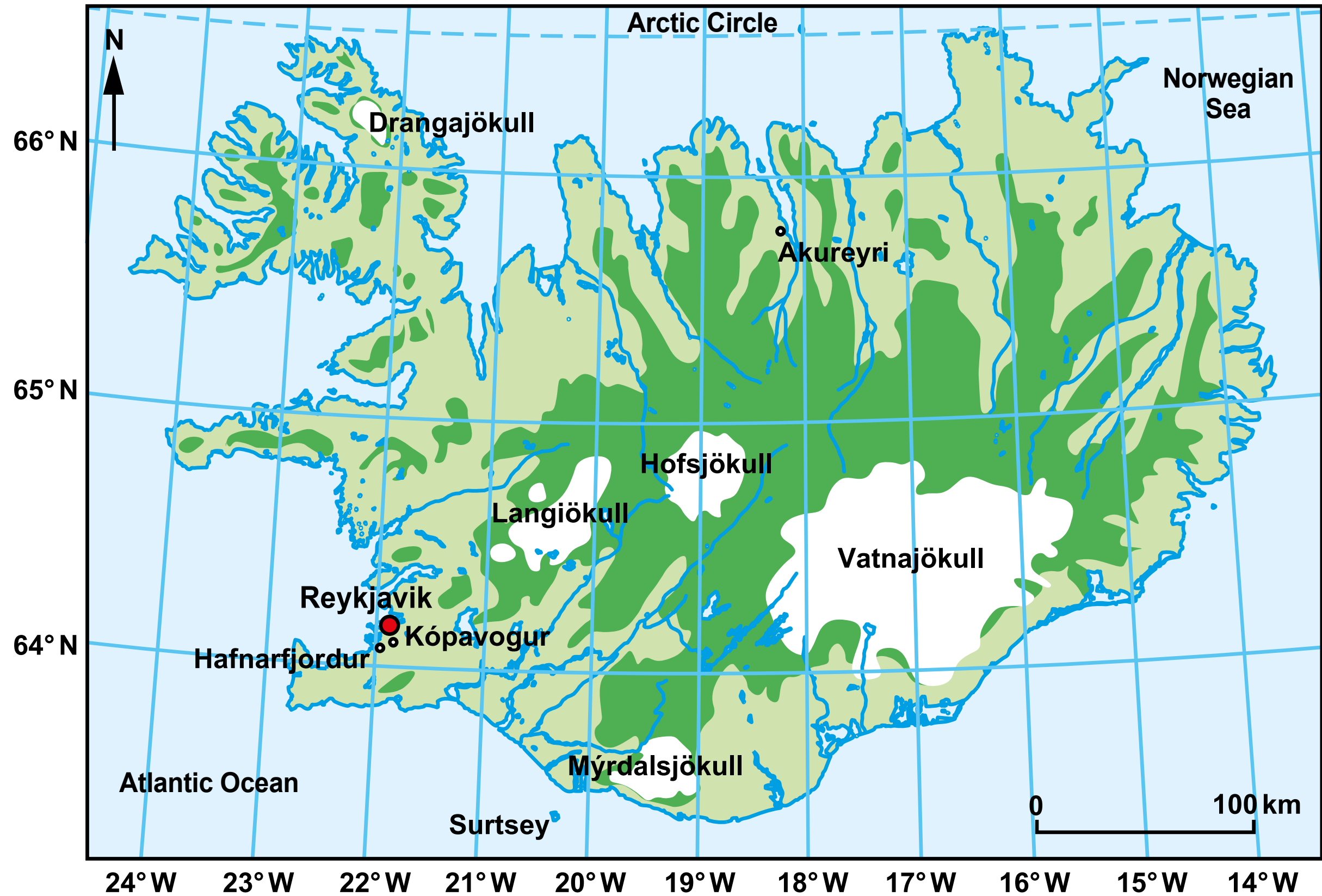
FIGURE 2: RELATIONSHIP BETWEEN MEAN SEDIMENT SIZE AND BEACH SLOPE ANGLE ON SELECTED BEACHES, SOUTH ISLAND, NEW ZEALAND

Beach slope angle (°)



Source: Adapted from New Zealand Journal of Geology

FIGURE 3: ICE MASSES IN ICELAND



Key:



ice



highland 750 m and higher

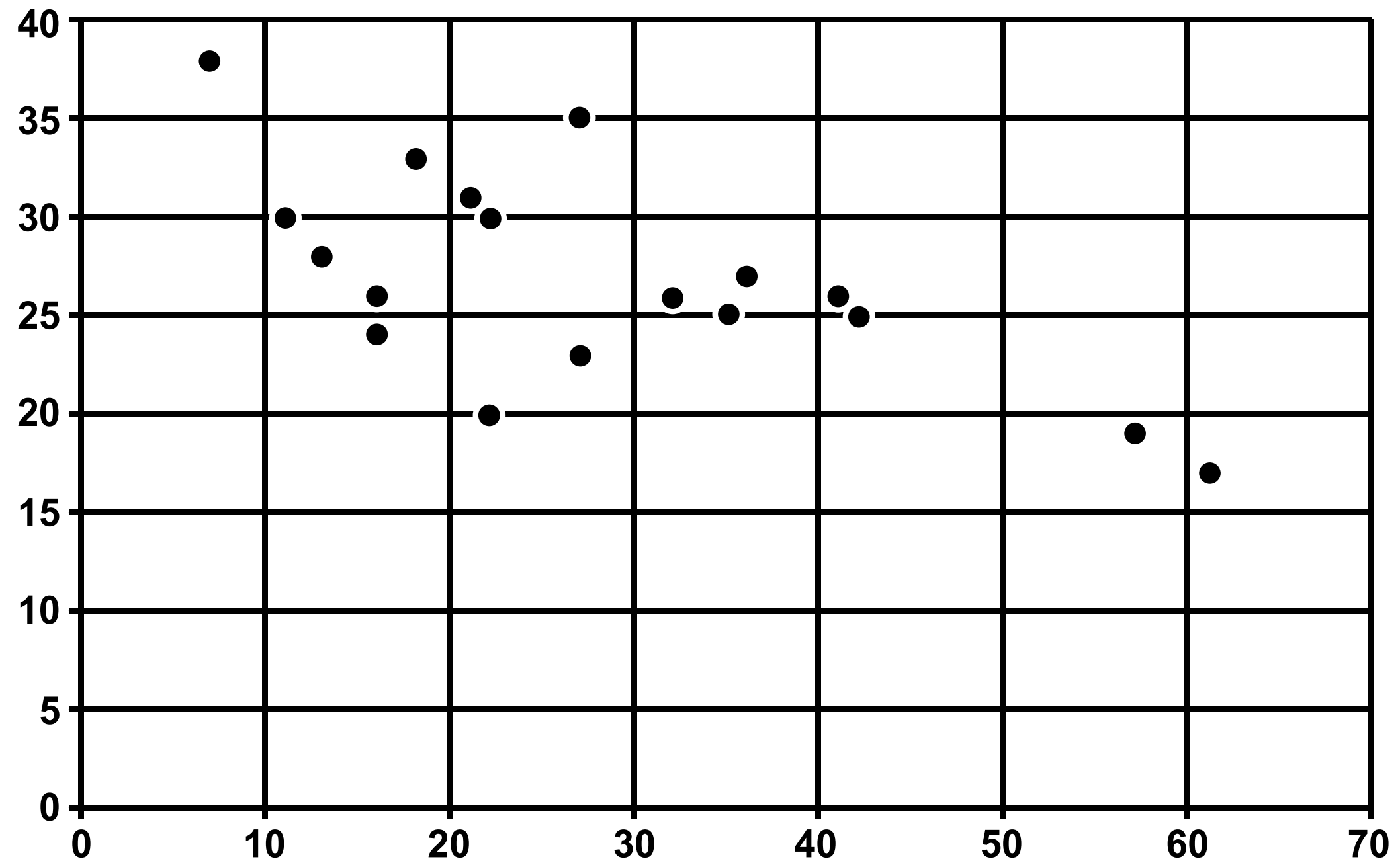


lowland 749 m and lower

Source: Wikimedia commons

FIGURE 4: RELATIONSHIP BETWEEN MEAN SCREE PARTICLE SIZE AND SCREE SLOPE ANGLE ON SELECTED SCREES, MEWSLADE, GOWER

Scree slope angle (°)



Mean scree particle size (cm)

FIGURE 5: HAZARD PROFILES FOR THE KILAUEA ERUPTION (2018) AND THE ASIAN TSUNAMI (2004)

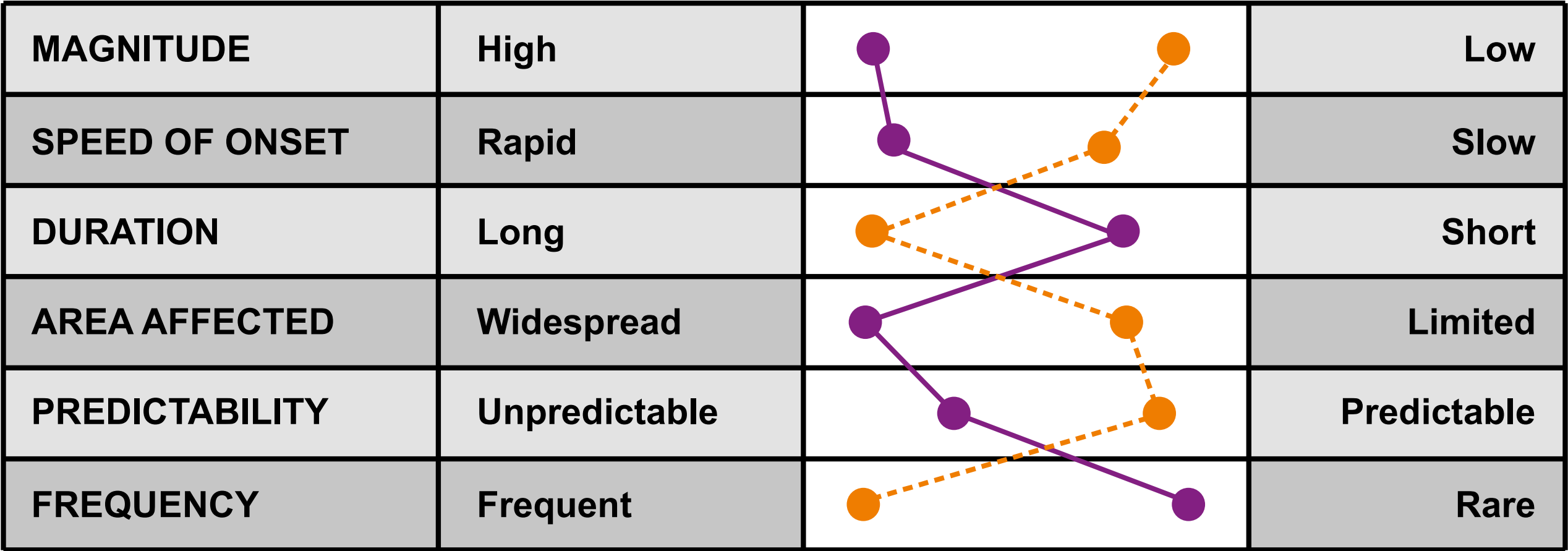


FIGURE 6: EFFUSIVE ERUPTION, PAHOA, HAWAII, MAY 2018

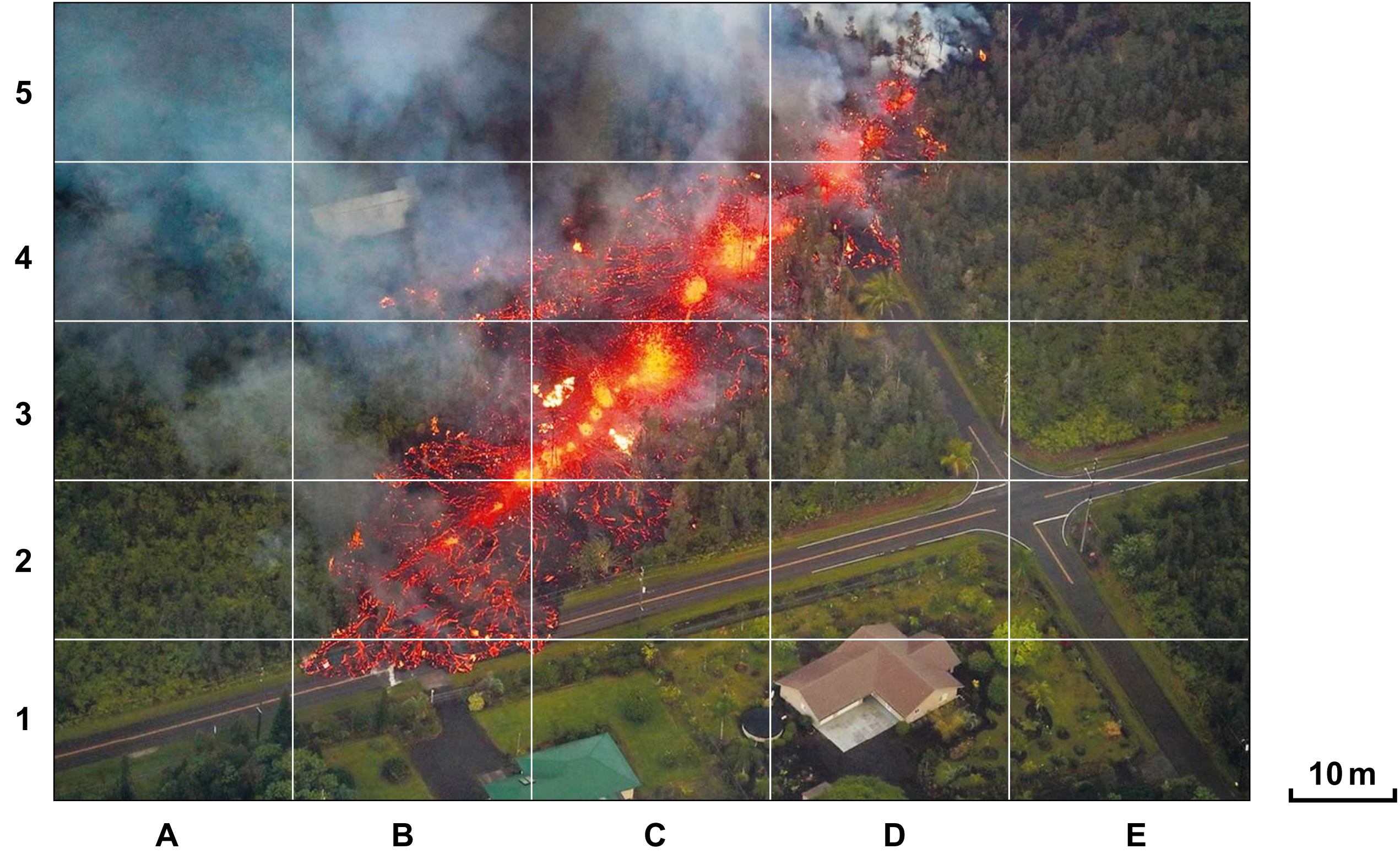


**FIGURE 7: TOTAL NUMBER OF
EARTHQUAKES OF MAGNITUDE 3+ (Mw)
IN SELECTED US STATES, 2010–2015**

	Year					
US state	2010	2011	2012	2013	2014	2015
Hawaii	17	3	40	30	26	53
California	546	195	243	240	191	130

Source: USGS

FIGURE 8: NUMBER OF EARTHQUAKES WORLDWIDE BY MAGNITUDE, 2016–2018

Earthquakes below magnitude 5 are too numerous to quantify accurately.

	Year		
	2016	2017	2018
MAGNITUDE (RICHTER SCALE)			
>8.0	0	1	1
7.0–7.9	16	3	16
6.0–6.9	130	104	117
5.0–5.9	1 550	1 455	1 674
Total	1 696	1 563	1 808

Source: Statista.com

**FIGURE 9a: COASTAL PROTECTION,
HORNSEA, YORKSHIRE**



**FIGURE 9b: DAMS PROVIDE WATER
SUPPLY AND POWER**



FIGURE 9c: CARDIFF BAY (i) DERELICT DOCKS AND (ii) AFTER REDEVELOPMENT

(i)



(ii)

