Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
Level 3 GCE

Centre Number ☐☐☐☐☐ Candidate Number ☐☐☐☐

Tuesday 14 May 2019

Afternoon (Time: 1 hour 45 minutes) | Paper Reference **8GE0/01**

Geography

Advanced Subsidiary
Paper 1: Dynamic Landscapes

You must have:
Resource Booklet (enclosed)
Calculator, ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer Question 1 in Section A **and EITHER** Section B **OR** Section C.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators may be used.
- Any **calculations** must show **all** stages of **working out** and a **clear answer**.

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

Answer Section A and EITHER Section B OR Section C.

SECTION A: TECTONIC PROCESSES AND HAZARDS

Answer Question 1. Write your answers in the spaces provided.

You must use the Resource Booklet provided.

1 (a) State which type of earthquake wave travels fastest.

(1)

(b) Study Figure 1a in the Resource Booklet.

(i) Compare the distribution of reported ground shaking between the February and November earthquakes.

(2)

(ii) Suggest **one** reason for the pattern of reported ground shaking in the February earthquake.

(3)

(c) Explain **two** strategies used to modify tectonic hazard events.

(4)

1 ....

....

....

....

2 ....

....

....

....

(d) Explain how plate tectonic theory is used to explain plate movements.

(6)

(e) Study Figure 1b in the Resource Booklet.

Assess whether areal extent is the most important factor that determines the impact of volcanic eruptions.

(12)

(Total for Question 1 = 28 marks)

TOTAL FOR SECTION A = 28 MARKS

SECTION B: GLACIATED LANDSCAPES AND CHANGE

Do not answer Section B (Glaciated Landscapes and Change) if you have answered Section C (Coastal Landscapes and Change).

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

If you answer Section B put a cross in the box ☒ .

You must use the Resource Booklet provided.

2 (a) Identify the process of accumulation.

(1)

☒	**A**	Ice calving
☒	**B**	Water evaporation
☒	**C**	Snow melting
☒	**D**	Snowfall

(b) Complete A and B in Figure 2a below.

(2)

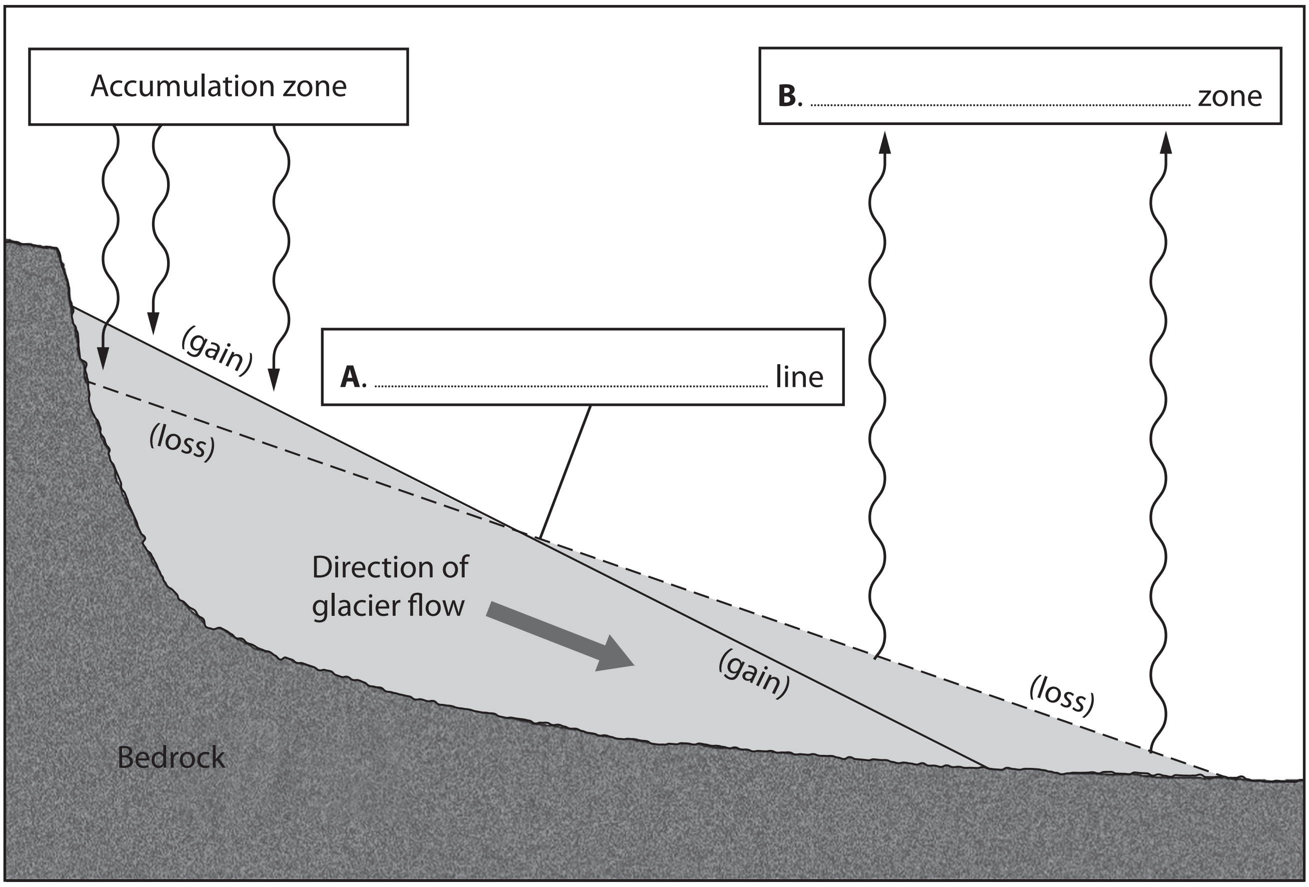
Accumulation zone
B. .... zone
(gain)
A. .... line
(loss)
Direction of glacier flow
(gain)
(loss)
Bedrock

Figure 2a

Glacial mass balance system

(c) Study Figure 2b in the Resource Booklet.

Suggest **one** reason for the avalanche.

(3)

(d) Explain **two** processes of water movement within glaciers.

(4)

1

2

(e) Explain how the characteristics of glacial and fluvioglacial deposits differ.

(6)

Turn over ▶

(f) Assess the importance of long-term climate change in explaining the distribution of glacial landscapes.

(12)

(Total for Question 2 = 28 marks)

3 (a) Study Figure 3a below.

A group of students used secondary data about cirque/corrie orientation in Snowdonia, North Wales, as part of an investigation about ice flow direction.

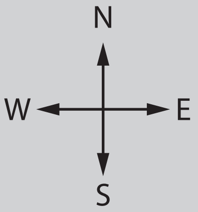	**Orientation** **0°–89°**	**Orientation** **90°–179°**	**Orientation** **180°–269°**	**Orientation** **270°–360°**
Number of cirques/corries	24	6	5	13

Figure 3a

(i) State **one** reason for studying cirque/corrie orientation.

(1)

Study Figure 3b below

The students carried out a Chi^2 test to determine if there was any pattern in the distribution of corrie orientation.

The formula for Chi^2 ($\mathcal{X}^2$) is:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

$\sum$ = sum of

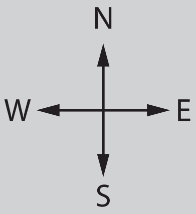	**Orientation** **0°–89°**	**Orientation** **90°–179°**	**Orientation** **180°–269°**	**Orientation** **270°–360°**
Observed (O)	24	6	5	13
Expected (E)	12	12	12	12
$(O-E)^2$	144	36		1
$(O-E)^2/E$	12	3	4.1	0.08

Figure 3b

(ii) Complete the table above by calculating the missing number in the Orientation 180° – 269° column.

(1)

(iii) Calculate the value of Chi^2 ($\mathcal{X}^2$) from the data given.

(1)

Chi^2 ($\mathcal{X}^2$) = ...

(iv) Suggest **one** reason for carrying out a Chi^2 ($\mathcal{X}^2$) test on this data set.

(2)

(v) Explain **two** primary fieldwork methods that might have been used to extend this investigation on ice flow direction.

(4)

1

2

(b) You have carried out **primary fieldwork** to investigate glacial landscapes and change.

Assess how the sampling procedures and sample size affected your results.

(9)

Geographical enquiry question:

(Total for Question 3 = 18 marks)

Use your knowledge and understanding from across the course of study, along with the information in Figure 4, to answer this question.

4 Study Figure 4a and Figure 4b in the Resource Booklet.

The Swiss Alps glaciated landscape faces many threats.

Evaluate the effectiveness of the management strategies shown.

(16)

(Total for Question 4 = 16 marks)

TOTAL FOR SECTION B = 62 MARKS

SECTION C: COASTAL LANDSCAPES AND CHANGE

Do not answer Section C (Coastal Landscapes and Change) if you have answered Section B (Glaciated Landscapes and Change).

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ~~☒~~ and then mark your new answer with a cross ☒.

If you answer Section C put a cross in the box ☒ .

You must use the Resource Booklet provided.

5 (a) Identify the factor which affects the direction of coastal sediment movement.

(1)

☒	**A** Wave type
☒	**B** Longshore drift
☒	**C** Sediment cell
☒	**D** Sediment shape

(b) Complete A and B in Figure 5a below.

(2)

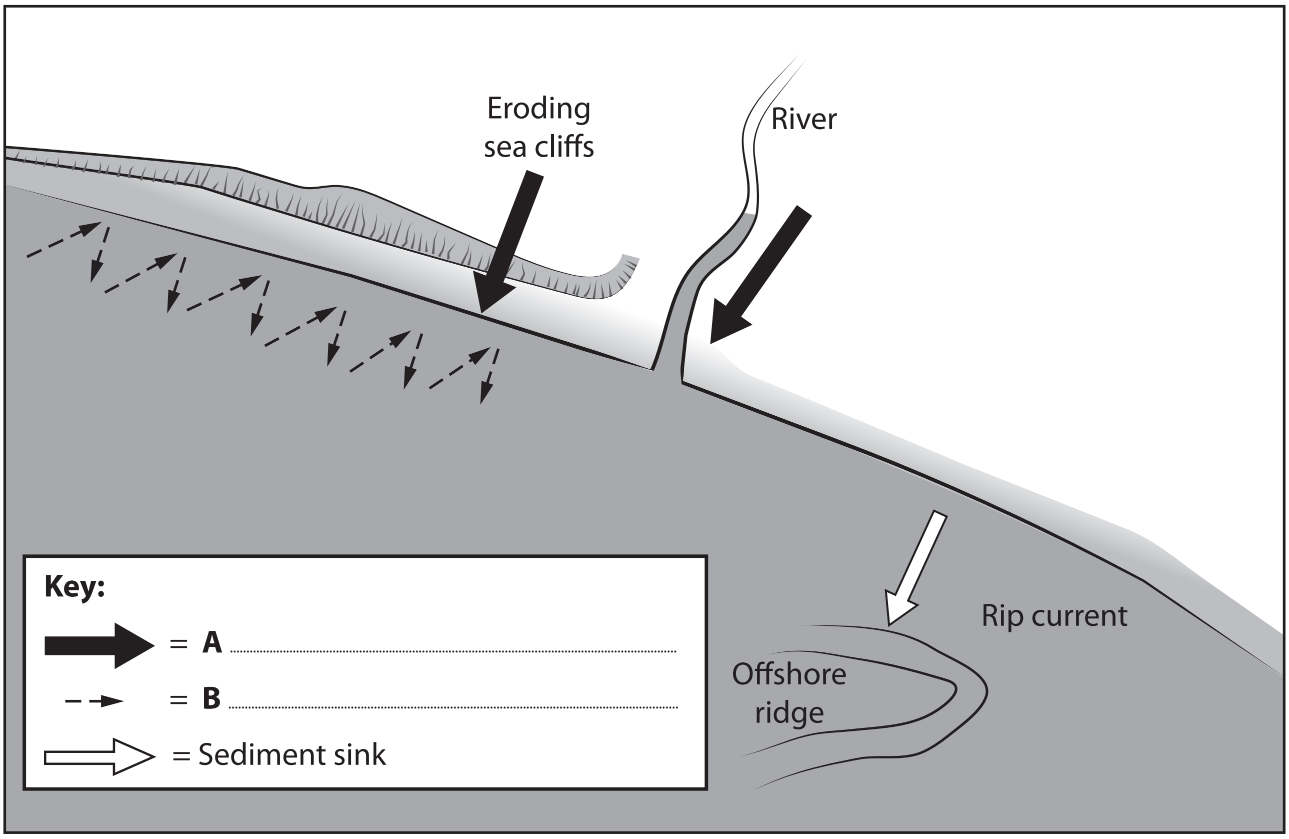

Figure 5a

Coastal sediment system

Study Figure 5b in the Resource Booklet.

(c) Suggest **one** reason for the cliff collapse.

(3)

(d) Explain **two** processes of weathering on a coastline.

(4)

1

2

(e) Explain how the characteristics of coastal plains and rocky coasts differ.

(6)

(f) Assess the importance of longer term sea-level change in explaining the risks at different coastlines.

(12)

(Total for Question 5 = 28 marks)

6 (a) Study Figure 6a below.

A group of students used data about sediment size, from samples taken from four sites along the south coast of England, as part of an investigation about spit formation.

Beach site	**Site 1**	**Site 2**	**Site 3**	**Site 4**
Number of pebbles > 5mm	27	20	12	5

Figure 6a

(i) State **one** reason for studying sediment size.

(1)

....

....

Study Figure 6b below.

The students carried out a Chi^2 test to determine if there was any pattern in the distribution of pebble sizes > 5mm.

The formula for Chi^2 ($\mathcal{X}^2$) is:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

$\sum$ = sum of

Beach site	**Site 1**	**Site 2**	**Site 3**	**Site 4**
Observed (O)	28	20	11	5
Expected (E)	16	16	16	16
$(O - E)^2$	144	16		121
$(O - E)^2/E$	9	1	1.6	7.6

Figure 6b

(ii) Complete the table above by calculating the missing number in the Site 3 column.

(1)

(iii) Calculate the value of Chi^2 ($\mathcal{X}^2$) for the data given.

(1)

Chi^2 ($\mathcal{X}^2$) = ...

(iv) Suggest **one** reason for carrying out a Chi² ($\mathcal{X}^2$) test on this data set.

(2)

....

....

....

....

(v) Explain **two** primary fieldwork methods that might have been used to extend this investigation on spit formation.

(4)

1 ....

....

....

....

2 ....

....

....

....

(b) You have carried out **primary fieldwork** to investigate coastal landscapes and change.

Assess how the sampling procedures and sample size affected your results.

(9)

Geographical enquiry question:

(Total for Question 6 = 18 marks)

Use your knowledge and understanding from across the course of study, along with the information in Figure 7, to answer this question.

7 Study Figure 7a and Figure 7b in the Resource Booklet.

The coastal landscape of Aqaba, Jordan, faces many threats.

Evaluate the effectiveness of the management strategies shown.

(16)

(Total for Question 7 = 16 marks)

TOTAL FOR SECTION C = 62 MARKS
TOTAL FOR PAPER = 90 MARKS

Pearson Edexcel Level 3 GCE

Tuesday 14 May 2019

Afternoon (Time: 1 hour 45 minutes)

Paper Reference **8GE0/01**

Geography

Advanced Subsidiary

Paper 1: Dynamic Landscape

Resource Booklet

Do not return this Resource Booklet with the question paper.

Turn over ▶

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SECTION A

The following resources relate to Question 1.

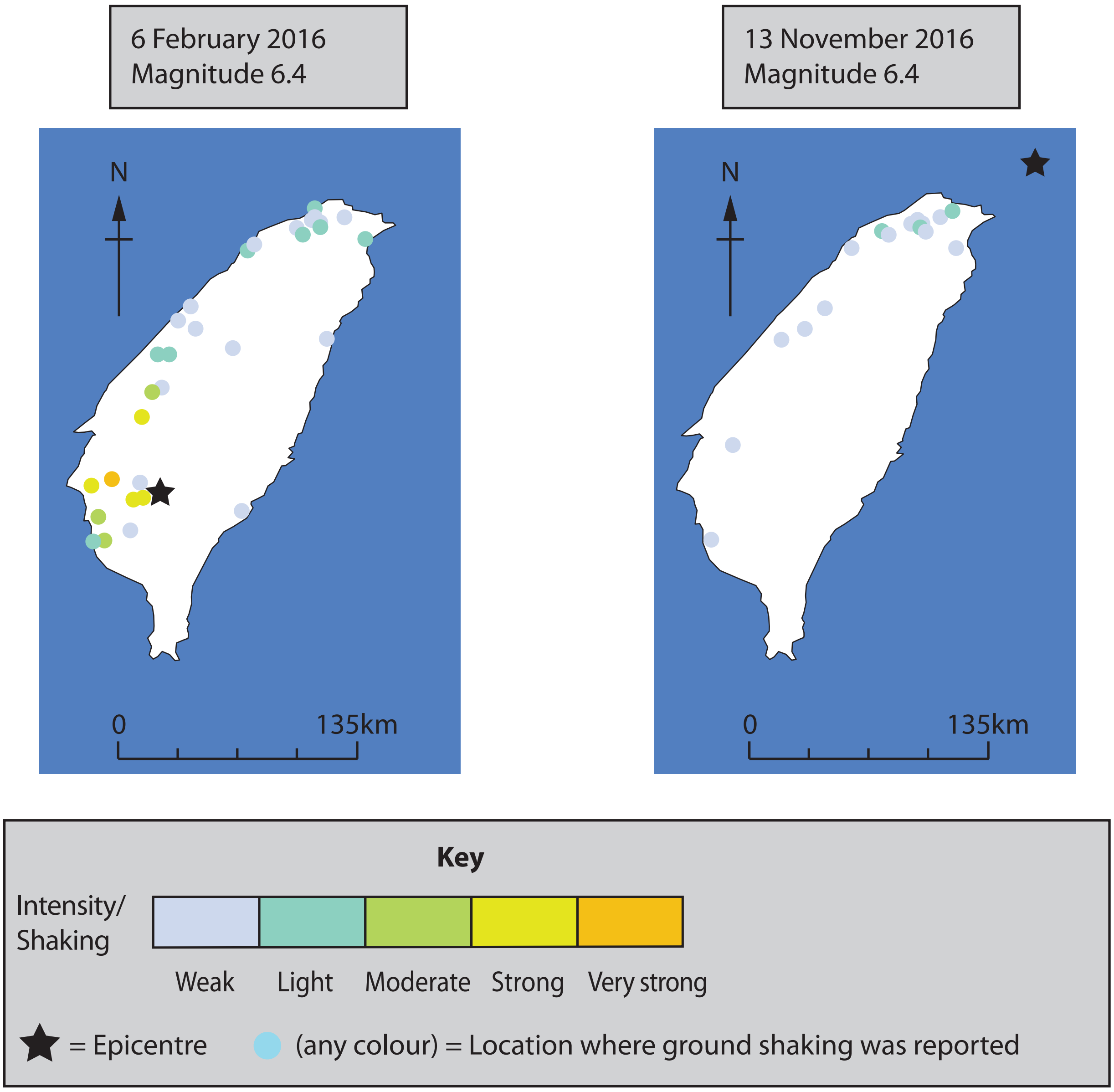
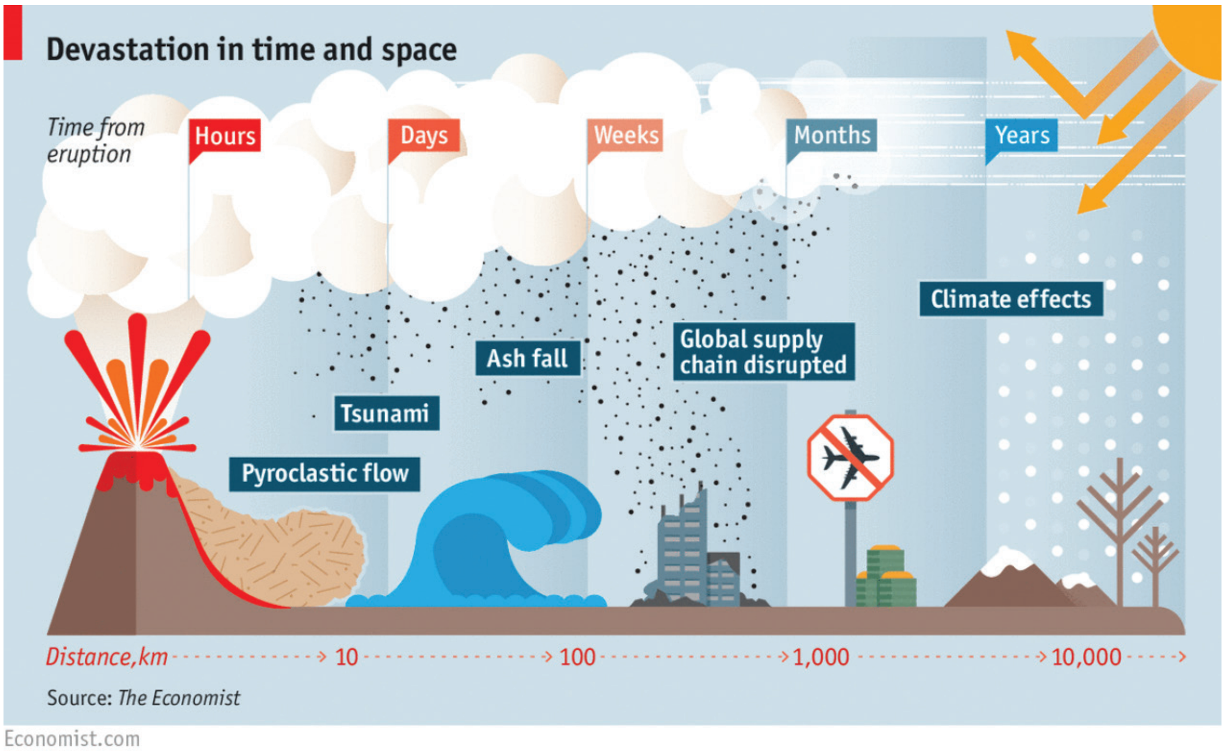


Figure 1a

Reported ground shaking after two earthquakes in Taiwan in the Pacific Ocean



Mount Tambora, Indonesia 1815 (VEI 7)

- Tsunami wave travelled 500 km
- Global temperatures reduced by 1–2 °C
- 60,000–120,000 estimated deaths from effects of the eruption

Mount Pinatubo, Philippines 1991 (VEI 6)

- 300–800 deaths and 96,000 hectares of land damaged by ash fall
- $250m of damage to farmland and forestry due to pyroclastic flows
- 0 deaths from climate effects of 0.5 °C temperature reduction

Eyjafjallajökull, Iceland 2010 (VEI 4)

- 100,000 flight cancellations affected international trade and tourism
- Airline losses of >$1.4bn
- Kenyan economy losses of > $3.8m as flowers and vegetables could not be exported by air

Soufrière Hills, Montserrat 1997 (VEI 4)

- 19 deaths by pyroclastic flows
- Capital city, Plymouth, destroyed by lava flows and ash
- 60% of the island's residents left for nearby islands or UK

Figure 1b

A simplified interpretation of the areal extent of volcanic eruptions, and actual data on 4 volcanic disasters

SECTION B

The following resources relate to Questions 2–4.

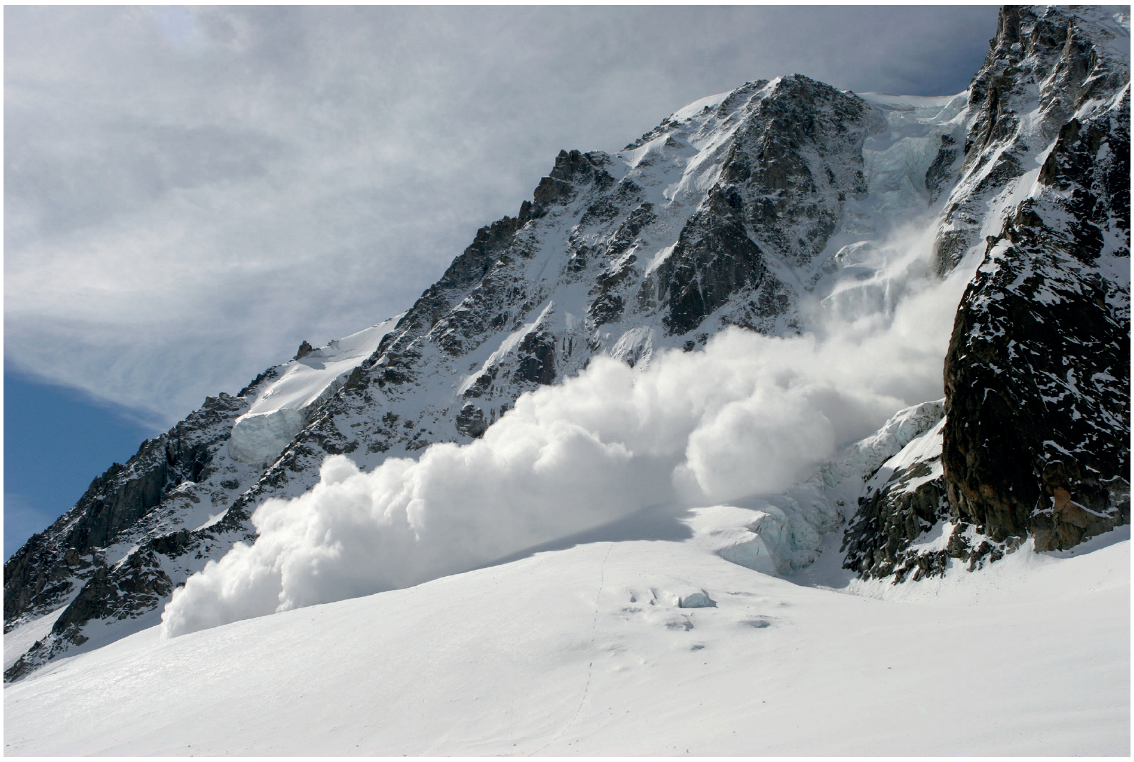


Figure 2b

An avalanche in the French Alps

The following resources relate to Question 4.

Figure 4: Information about the Swiss Alps, Europe

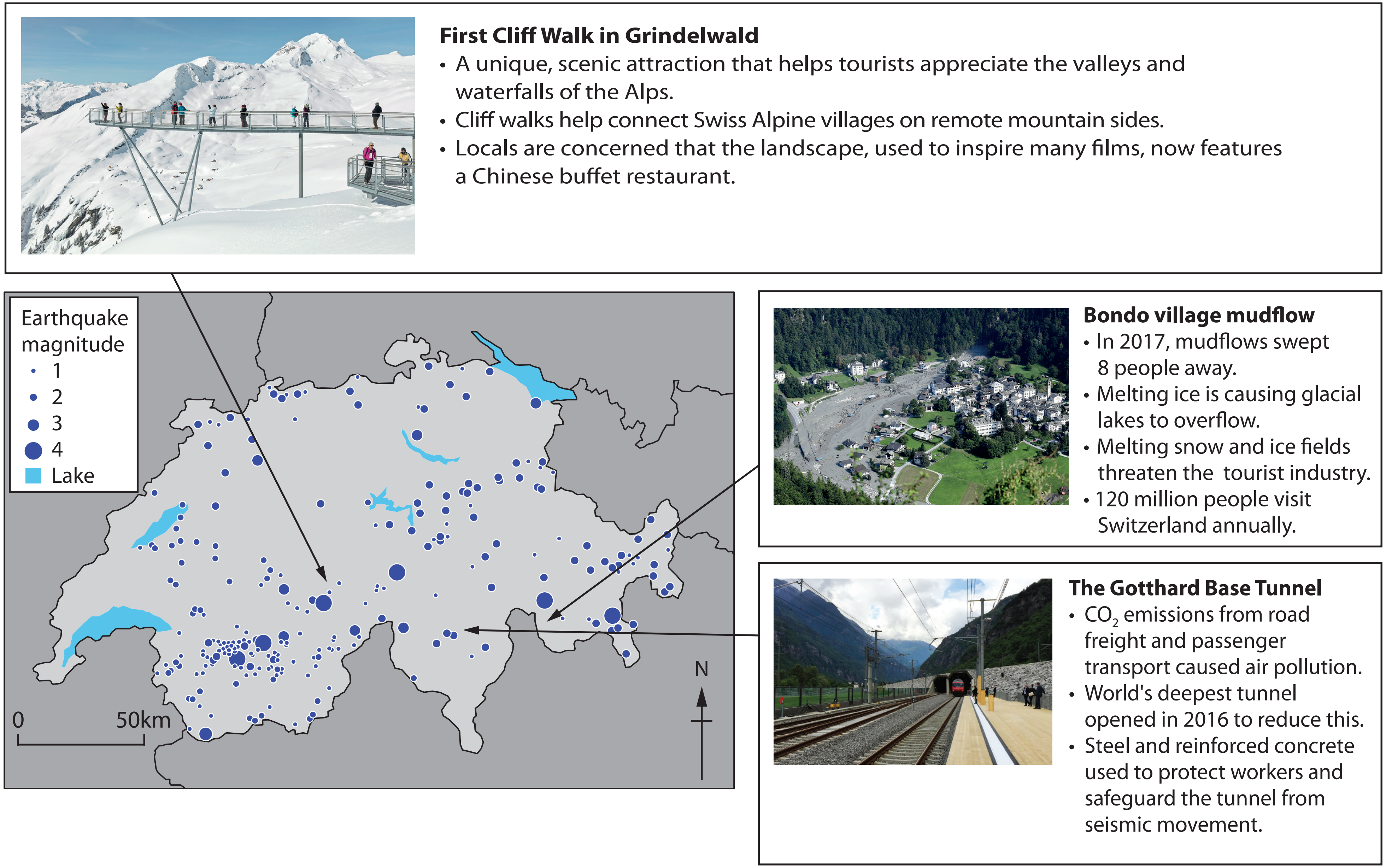
- The Swiss Alps are fold-mountains formed by uplift along a collision plate boundary separating the European and Adriatic plates. There are 500–800 earthquakes a year, but most are too small to be reported.
- The Swiss Alps are a multi-use location. A number of glaciated valleys have hydro-electric power (HEP) dams and reservoirs. Tourism, especially skiing, is highly important economically and dependent on a modern transport infrastructure.
- The high Alpine environment is still glaciated after the main advance of 18,000 years ago, which left a dramatic landscape dominated by 63 glaciers, most of which are retreating.
- The environment is very dynamic with both tectonic activity and climate change contributing to mudflows, glacial retreat and an increase in the number of avalanches, all of which threaten the tourist industry.

Alpine Convention management strategies used in the Swiss Alps

- Flocon Vert (Green Snowflake) initiative supports the use of low-energy systems, e.g. hybrid buses, by ski resorts
- Waste construction material is used to protect Alpine villages from noise, as well as potential avalanches
- The Gotthard Base Tunnel has reduced travel time as freight is being moved by rail instead of road
- Seismic sensors in the slopes automatically trigger concrete barriers and close roads

Figure 4a

Management strategies used in the Swiss Alps



First Cliff Walk in Grindelwald

- A unique, scenic attraction that helps tourists appreciate the valleys and waterfalls of the Alps.
- Cliff walks help connect Swiss Alpine villages on remote mountain sides.
- Locals are concerned that the landscape, used to inspire many films, now features a Chinese buffet restaurant.

Bondo village mudflow

- In 2017, mudflows swept 8 people away.
- Melting ice is causing glacial lakes to overflow.
- Melting snow and ice fields threaten the tourist industry.
- 120 million people visit Switzerland annually.

The Gotthard Base Tunnel

- CO_2 emissions from road freight and passenger transport caused air pollution.
- World's deepest tunnel opened in 2016 to reduce this.
- Steel and reinforced concrete used to protect workers and safeguard the tunnel from seismic movement.

Figure 4b

Threats to Swiss Alpine landscapes

SECTION C

The following resources relate to Questions 5–7.

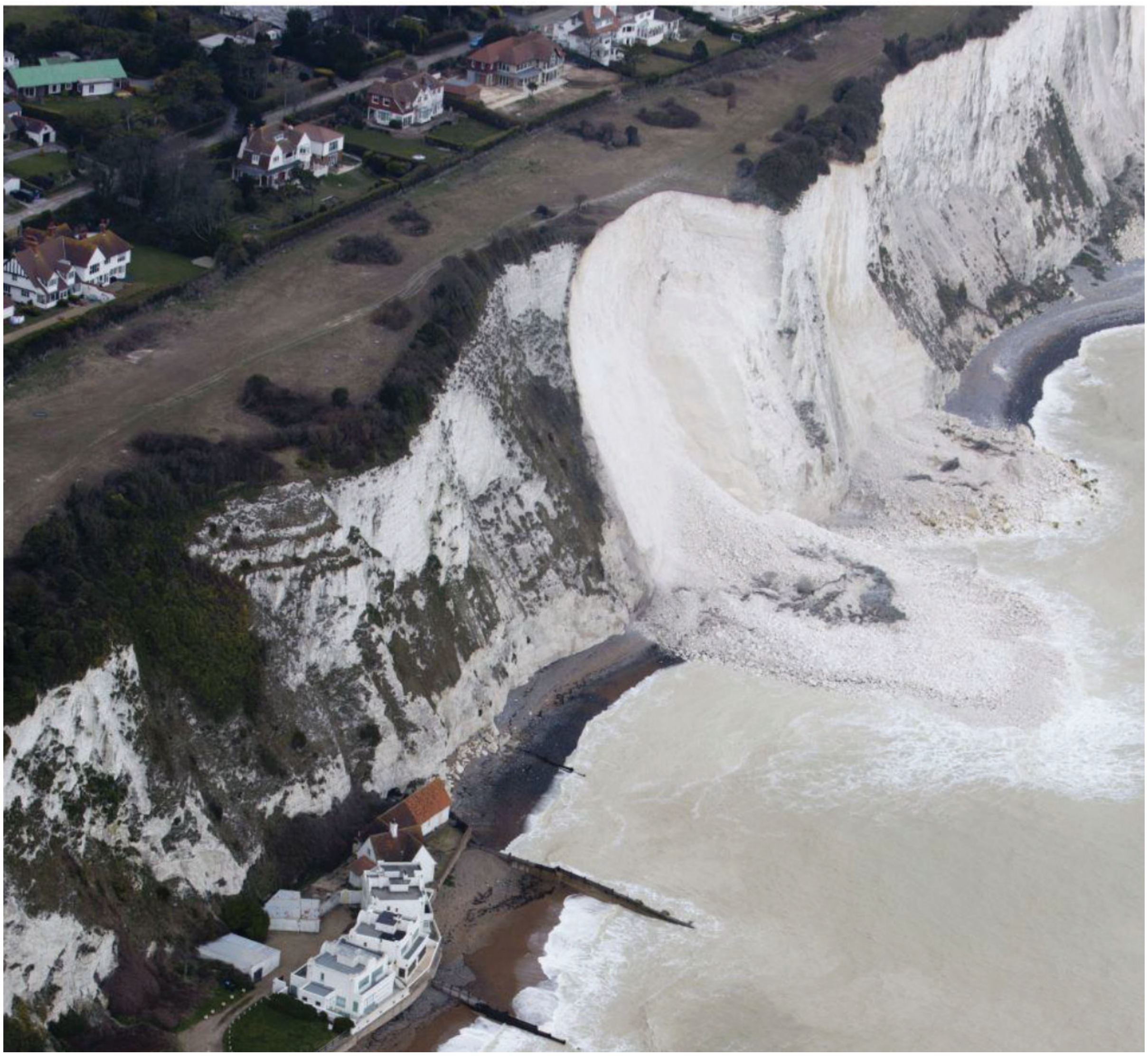


Figure 5b

Recent cliff collapse on the South East coastline of the United Kingdom

The following resources relate to Question 7.

Figure 7: Information about Aqaba, Jordan, Middle East.

- The Gulf of Aqaba is at the northern end of the Dead Sea Transform fault, part of an active constructive plate boundary separating the Arabian and African plates.
- Plate movement formed a coastal plain and a basin now filled by warm sea water, an ideal habitat for coral reefs.
- Aqaba is a small coastal city ideally located for trade and more recently tourism. Its special economic zone (SEZ) offers tax-incentives to encourage tourist resorts and dive centres, as well as container ports.
- This is a dynamic coastal landscape. Earthquakes create landslides in the surrounding mountains and coastal flooding is also a hazard. The 1995 Aqaba earthquake killed 8 people and injured 30.

Coastal management strategies

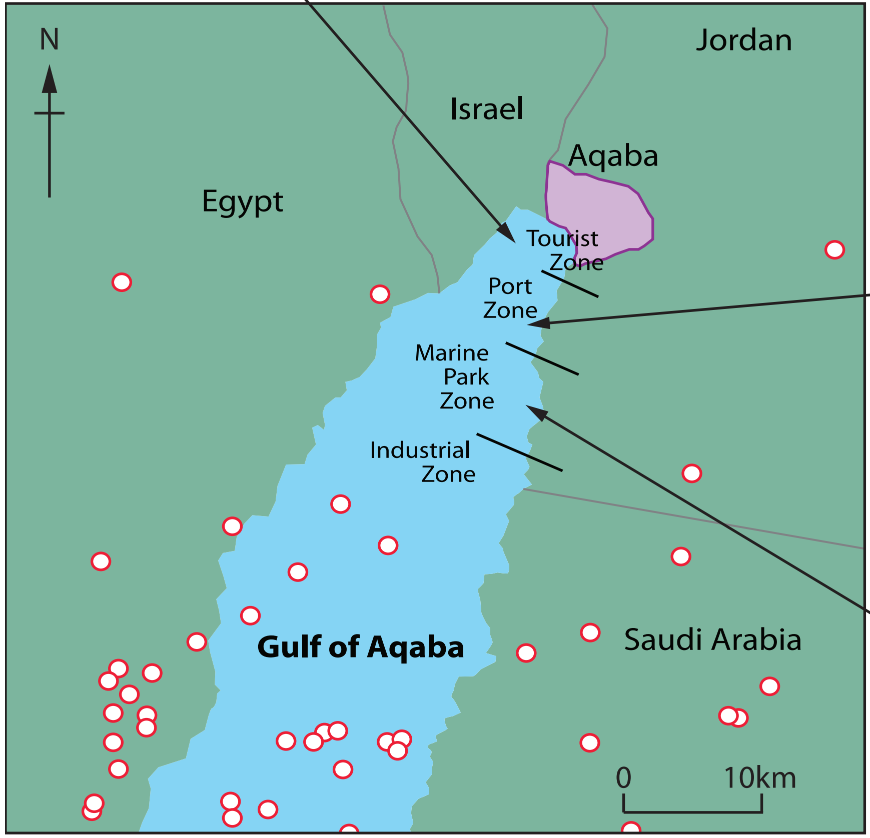
- Land is allocated for different uses, e.g. tourism, research, residential, shopping and some open space
- An oil pollution combat ship is usually on ready alert in the port areas
- Aqaba Marine Protected Area and the Marine Science Station monitor coral reef damage
- A beach protection zone (50–150 m inland) restricts usage to natural landscapes and recreation

Figure 7a

Management strategies used in Aqaba

Tourist zone

- 500,000 visitors a year visit Aqaba.
- More tourist resorts are planned creating 500 jobs in luxury hotels.
- Wastewater from resorts is sometimes dumped into the Gulf of Aqaba.
- 30–50% of the coastline has been dredged and excavated for shoreline construction.



Port zone and industrial zone

- More than 2,300 ships unload 3.5 m tonnes of oil every year, as well as phosphate and fertilisers.
- 20,000 m^3 of chlorinated cooling water is released every hour into deeper water.
- Occasional landslides in the mountains cut off access between the coastal plain and other infrastructure.

Marine park zone

- Hotels and dive centres have private beaches to facilitate 30,000 dives a year and trips on 55 glass-bottom boats.
- Coral reefs are being damaged by industrial pollution and tourist use.
- Coastal flooding occasionally causes damage to beach resorts.

Key:

○ = Earthquake epicentre

—— State border

▨ Aqaba SEZ (Special economic zone)

Figure 7b

Changing coastal landscapes in Gulf of Aqaba

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