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Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE (9–1)

Time 1 hour 10 minutes

Paper reference **4GE1/01**

Geography

PAPER 1: Physical geography

You must have:
Resource Booklet (enclosed), calculator

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.
- In Section A, answer **two** questions from Questions 1, 2 **and** 3.
- In Section B, answer **one** question from Questions 4, 5 **and** 6.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Calculators may be used.
- Where asked you must show **all your working out with your answer clearly identified** at the **end of your solution**.

Information

- The total mark for this paper is 62.
- 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 ▶

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Q:1/1/1/1/1

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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 ☒.

SECTION A

Answer TWO questions from this section.

If you answer Question 1 put a cross in the box ☒ .

1 River environments

(a) Identify **one** landform usually found in the upper course of a river.

(1)

- ☒ **A** delta
- ☒ **B** estuary
- ☒ **C** oxbow lake
- ☒ **D** interlocking spurs

(b) (i) Identify the best definition of a watershed.

(1)

- ☒ **A** boundary of a drainage basin
- ☒ **B** bend in a river
- ☒ **C** where a river meets the sea
- ☒ **D** where two rivers meet

(ii) State **one** transfer in the hydrological cycle.

(1)

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(c) Explain how a river channel is eroded by solution (corrosion).

(2)

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

Explain **one** advantage and **one** disadvantage of the flood prevention measures shown.

(4)

Advantage

Disadvantage

(e) Explain how urban land use can affect river regimes.

(3)

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(f) Study Figure 1b in the Resource Booklet

Identify the feature of the storm hydrograph labelled X.

(1)

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(g) Explain how erosion can form waterfalls.

(4)

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(h) Study Figure 1c in the Resource Booklet.

Analyse the importance of this dam for managing the demand and supply of water.

(8)

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(Total for Question 1 = 25 marks)

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If you answer Question 2 put a cross in the box ☒ .

2 Coastal environments

(a) Identify the feature of a mangrove ecosystem.

(1)

☒ **A** high altitude

☒ **B** steep land gradient

☒ **C** complex root system

☒ **D** cold temperatures

(b) (i) Identify a process of coastal erosion.

(1)

☒ **A** abrasion

☒ **B** beach

☒ **C** fetch

☒ **D** swash

(ii) State **one** transportation process that occurs along a coastline.

(1)

.....

(c) Explain **one** way to reduce the impact of coastal flooding.

(2)

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(d) Study Figure 2a in the Resource Booklet.

Explain **two** reasons why there may be conflicts over the coastal management strategies chosen.

(4)

1 .....

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(e) Explain **one** way climate change may affect coastal environments.

(3)

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

Identify the type of wave shown.

(1)

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(g) Explain the formation of a cave.

(4)

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

Analyse the importance of managing the threats to this coral reef ecosystem.

(8)

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(Total for Question 2 = 25 marks)

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If you answer Question 3 put a cross in the box ☒ .

3 Hazardous environments

(a) Identify a type of plate boundary.

(1)

- ☒ **A** asymmetrical
- ☒ **B** constructive
- ☒ **C** hot spot
- ☒ **D** mantle

(b) (i) Identify **one** characteristic of a tropical cyclone.

(1)

- ☒ **A** area of very high pressure
- ☒ **B** very little rainfall
- ☒ **C** low wind speeds
- ☒ **D** eye in the centre

(ii) State **one** factor that can affect tropical cyclone formation.

(1)

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(c) Explain **one** long-term impact of a tropical cyclone.

(2)

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(d) Study Figure 3a in the Resource Booklet.

Explain **two** reasons why people continue to live in areas at risk from volcanoes.

(4)

1 .....

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2 .....

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(e) Explain **one** way building design can help prepare for earthquakes.

(3)

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(f) Study Figure 3b in the Resource Booklet.

Identify a potential short-term impact of the hazard shown.

(1)

(g) Explain how volcanoes are formed at a destructive plate boundary.

(4)

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(h) Study Figure 3c in the Resource Booklet.

Analyse the hazard risk from this predicted distribution of tropical cyclones.

(8)

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(Total for Question 3 = 25 marks)

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SECTION B

Answer ONE question from this section.

If you answer Question 4 put a cross in the box ☒ .

4 Investigating river environments

A group of students have undertaken an enquiry that investigates the characteristics of a river along its course.

(a) Study Figure 4a in the Resource Booklet.

(i) Identify **one** type of primary data used by the students.

(1)

☒ **A** Environment Agency flood risk map

☒ **B** field sketches

☒ **C** local historical map

☒ **D** newspaper articles

(ii) Name **one** piece of equipment the students could have used in their enquiry.

(1)

.....

(b) Study Figure 4b which shows some data about river velocity at four sites.

(i) Calculate the mean river velocity at Site 2.

Give your answer to one decimal place.

You must show all your workings in the space below.

(2)

..... m/s

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(ii) State **one** type of sampling students could have used to choose their data collection sites.

(1)

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(iii) Suggest **one** reason why the data for Site 1 may not be reliable.

(2)

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(c) (i) Complete Figure 4d below, using data highlighted in Figure 4c in the Resource Booklet.

(2)

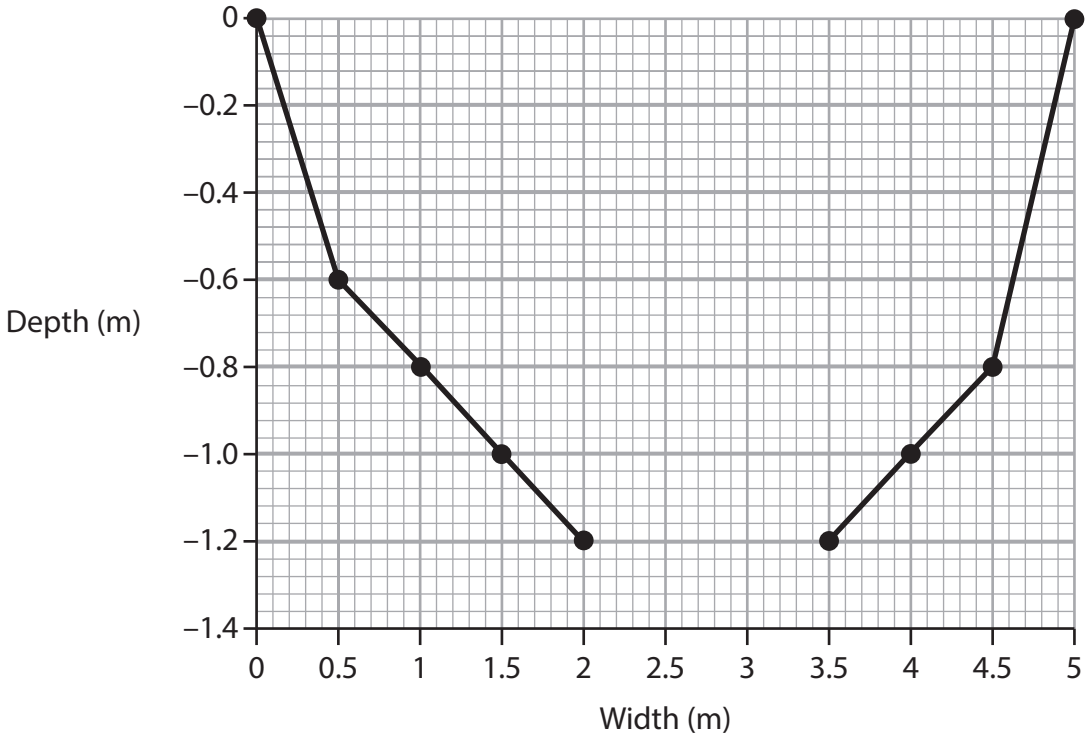

Figure 4d

River channel cross-section

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(ii) Explain **one** advantage of using a line graph to present results.

(3)

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(Total for Question 4 = 12 marks)

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If you answer Question 5 put a cross in the box ☒ .

5 Investigating coastal environments

A group of students have undertaken an enquiry that explores how beach characteristics change due to coastal management.

(a) Study Figure 5a in the Resource Booklet.

(i) Identify **one** type of primary data used by the students.

(1)

☒ **A** local shoreline management plan

☒ **B** field sketches

☒ **C** local historical map

☒ **D** newspaper articles

(ii) Name **one** piece of equipment the students could have used in their enquiry.

(1)

.....

(b) Study Figure 5b which shows some data about beach characteristics at four sites where data was collected.

(i) Calculate the mean pebble size at Site 2.

Give your answer to one decimal place.

You must show all your workings in the space below.

(2)

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(ii) State **one** type of sampling students could have used to choose their data collection sites.

(1)

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(iii) Suggest **one** reason why the data for Site 1 may not be reliable.

(2)

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(c) (i) Complete the beach profile in Figure 5d below using data highlighted in Figure 5c in the Resource Booklet.

(2)

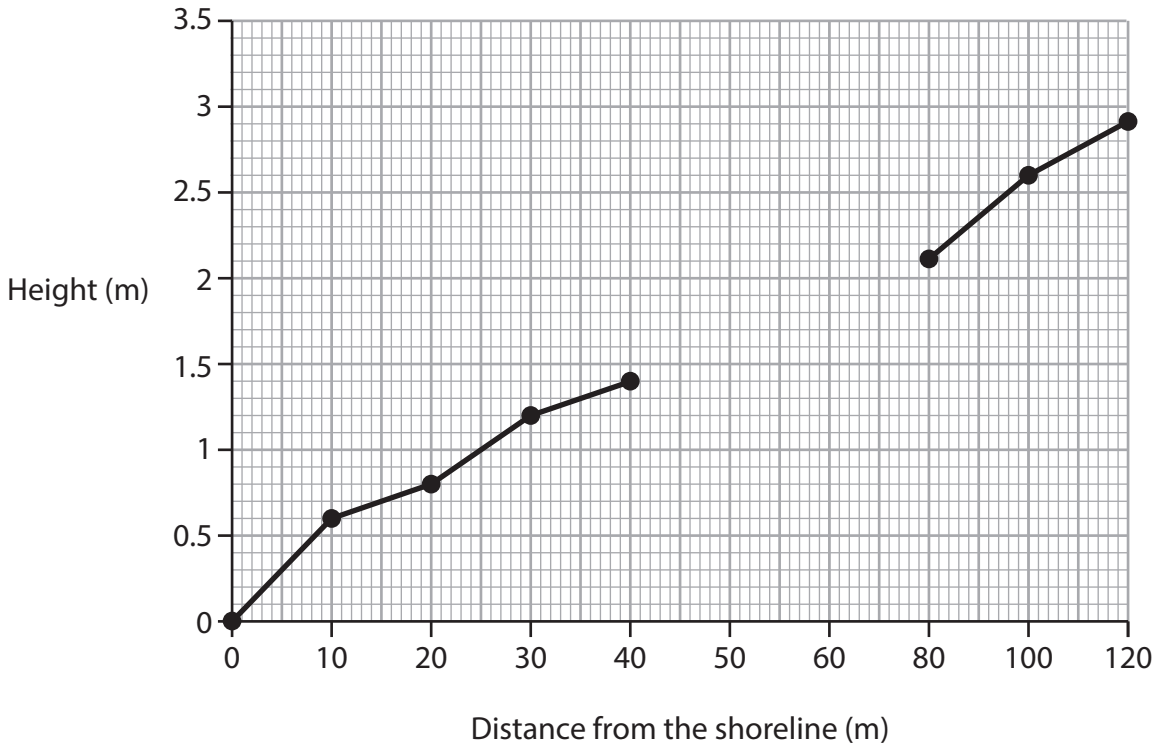

Figure 5d

Beach profile

(ii) Explain **one** advantage of using a line graph to present results.

(3)

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(Total for Question 5 = 12 marks)

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If you answer Question 6 put a cross in the box ☒ .

6 Investigating hazardous environments

A group of students have undertaken an enquiry that explores relationships between local weather characteristics.

(a) Study Figure 6a in the Resource Booklet.

(i) Identify **one** type of primary data used by the students.

(1)

☒ **A** local weather map

☒ **B** field sketches

☒ **C** a local weather diary from last year

☒ **D** newspaper articles

(ii) Name **one** piece of equipment the students could have used in their enquiry.

(1)

.....

(b) Study Figure 6b which shows some data on wind speed at four sites where data was collected.

(i) Calculate the mean wind speed collected at Site 2.

Give your answer to one decimal place.

You must show all your workings in the space below.

(2)

..... mph

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(ii) State **one** type of sampling students could have used to choose their data collection sites.

(1)

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(iii) Suggest **one** reason why the data for Site 1 may not be reliable.

(2)

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(c) (i) Complete Figure 6d below using data highlighted in Figure 6c in the Resource Booklet.

(2)

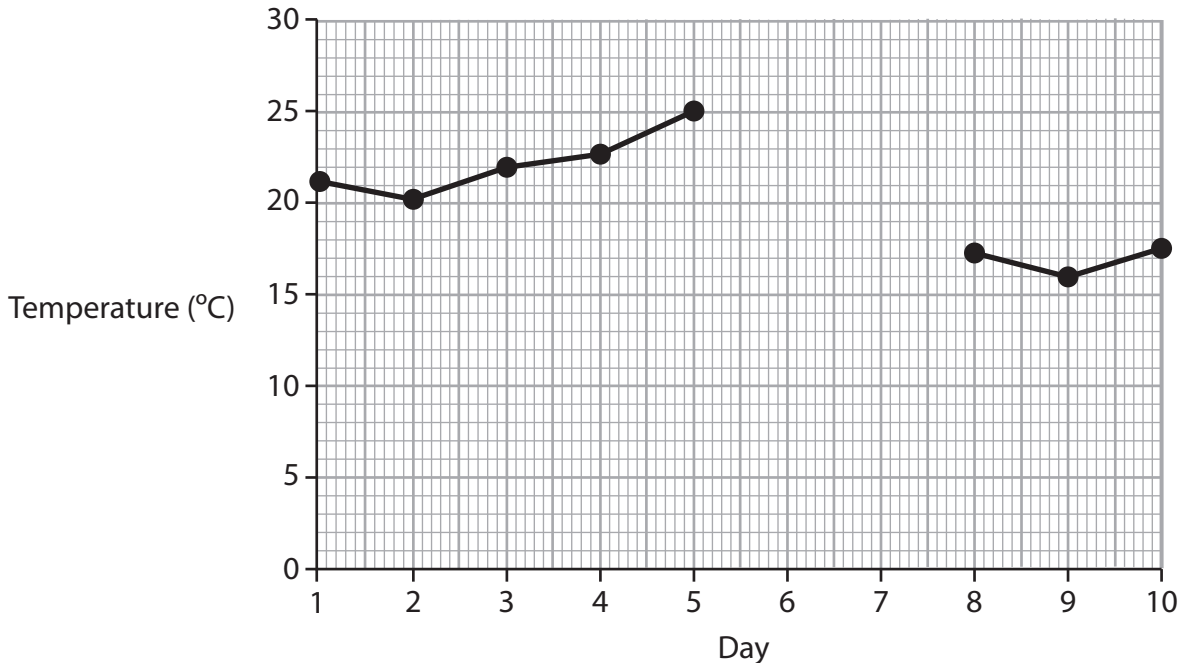

Figure 6d

Daily temperature

(ii) Explain **one** advantage of using a line graph to present results.

(3)

(Total for Question 6 = 12 marks)

TOTAL FOR SECTION B = 12 MARKS
TOTAL FOR PAPER = 62 MARKS

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Pearson Edexcel International GCSE (9–1)

Time 1 hour 10 minutes

Paper reference **4GE1/01**

Geography

PAPER 1: Physical geography

Resource Booklet

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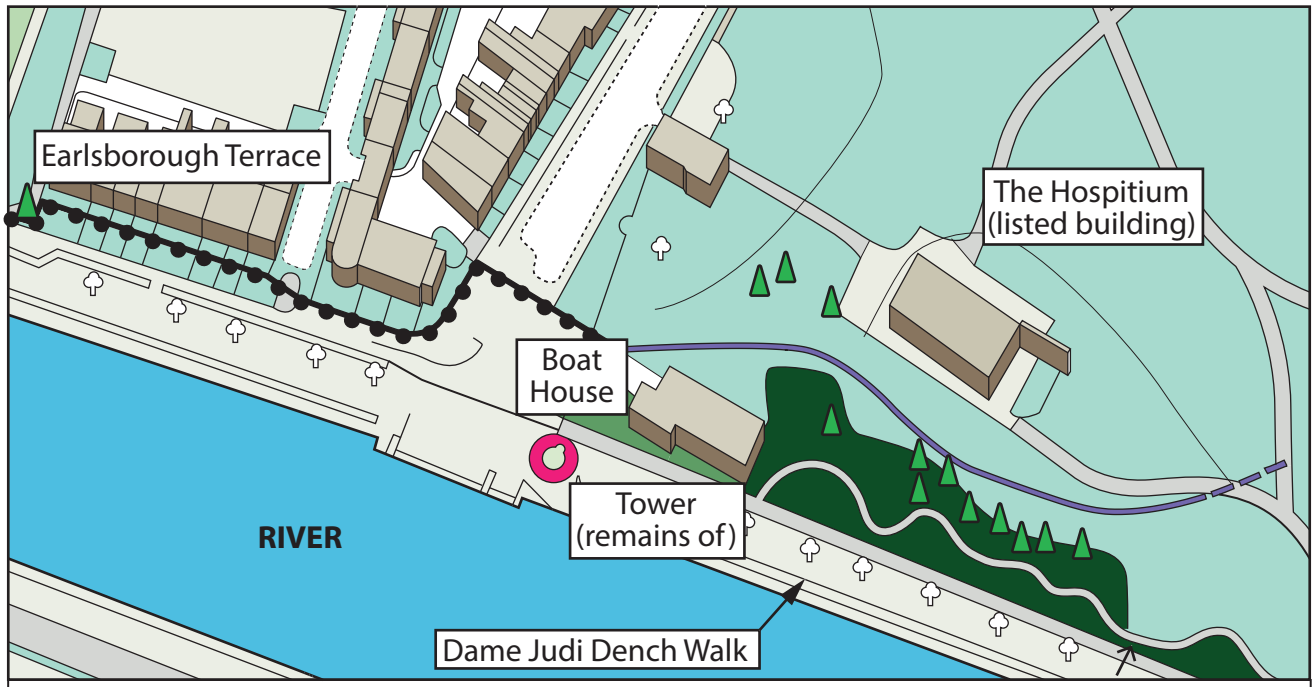

The height of flood defences (hard engineering) in the area are being increased to protect 56 homes and businesses from flooding.



To build the new flood defences 14 trees must be removed.



Key

- Trees to be removed
- Raising of the flood embankment
- Extension of the flood embankment
- Raising of the flood walls and gates

Figure 1a

Details about flood prevention measures in York, UK

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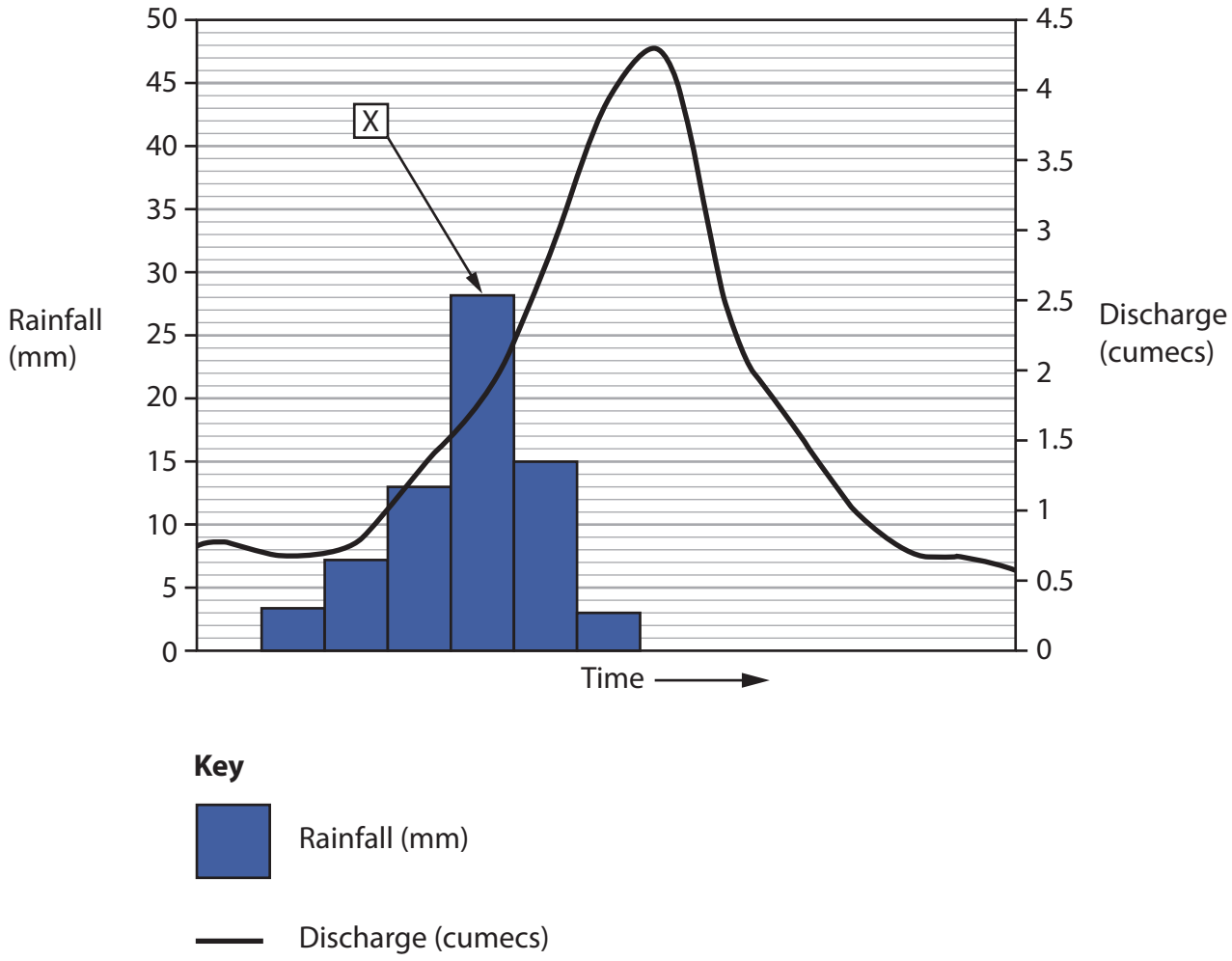

Figure 1b

Storm hydrograph

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Grand Renaissance Dam, Ethiopia

- Estimated cost US$5 billion.
- Africa's largest hydroelectric power project.
- Creates reservoirs with 74 billion cubic metres of water.
- Concerns from Egypt that it will limit water supplies to the country.
- 95% of water consumed in Egypt is from the Nile.
- Egypt wants an agreement with Ethiopia to add water to the Nile from reservoirs linked to the dam, especially if there is a drought.

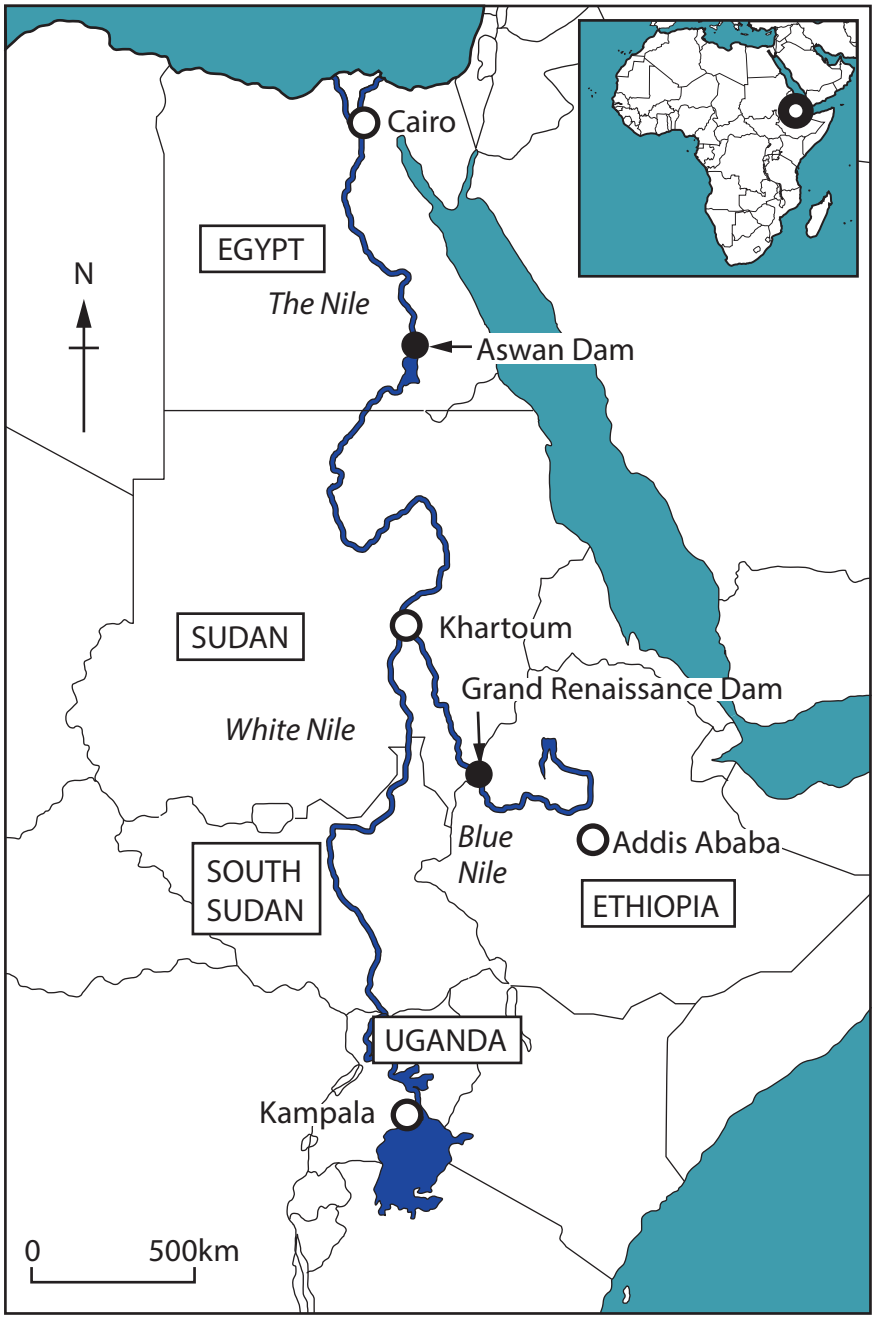

Figure 1c

Information about the Grand Renaissance Dam, Ethiopia

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Location	Coastal management strategy
El Zabal: Industrial town	No action: Allow the coast to retreat
Puerto Banus: **Town popular with tourists**	Adaptation – managed retreat: Changing location of buildings Relocation of residents
Caleta de Vélez: **Fishing town**	Protection: Gabions Sea wall



Figure 2a

Coastal management strategies for one coastline in South West Spain

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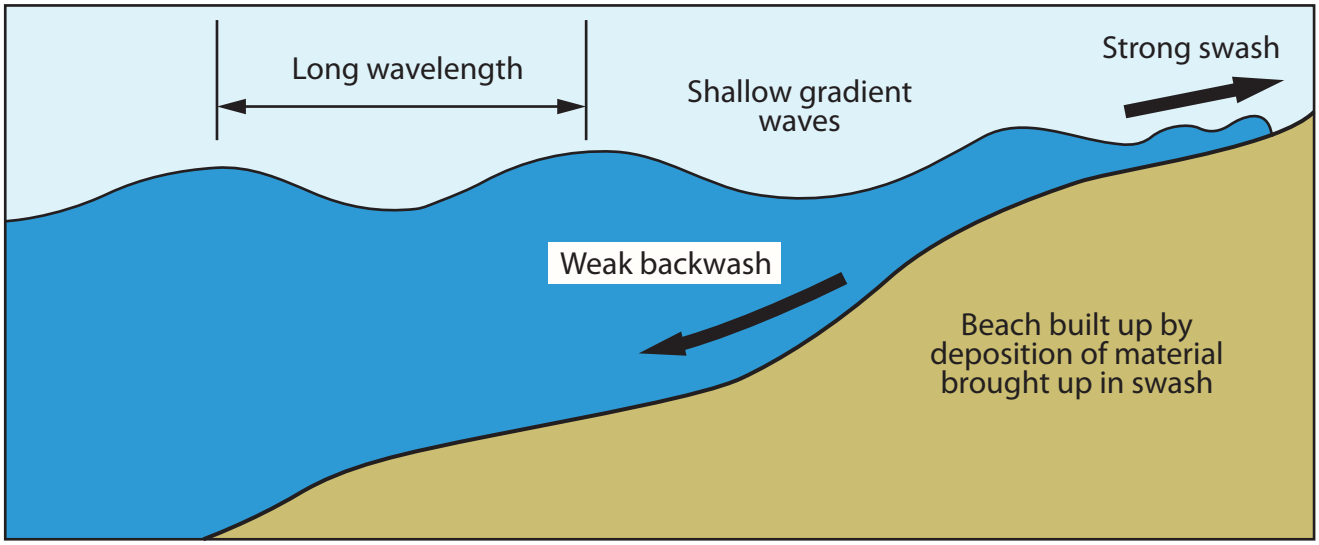

Figure 2b

Diagram of a wave

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1	Failed sewage systems.
2	Some chemicals from sunscreens.
3	Building on coastal areas leads to sediments reaching the water.
4	Stormwater runoff leading to chemicals and sediments reaching the water.
5	Deforestation increasing sediments reaching the water.
6	Oil and chemical spills causing water pollution.
7	Road construction causing air and water pollution.
8	Agriculture causing chemicals to leak into the soil and reach the water.

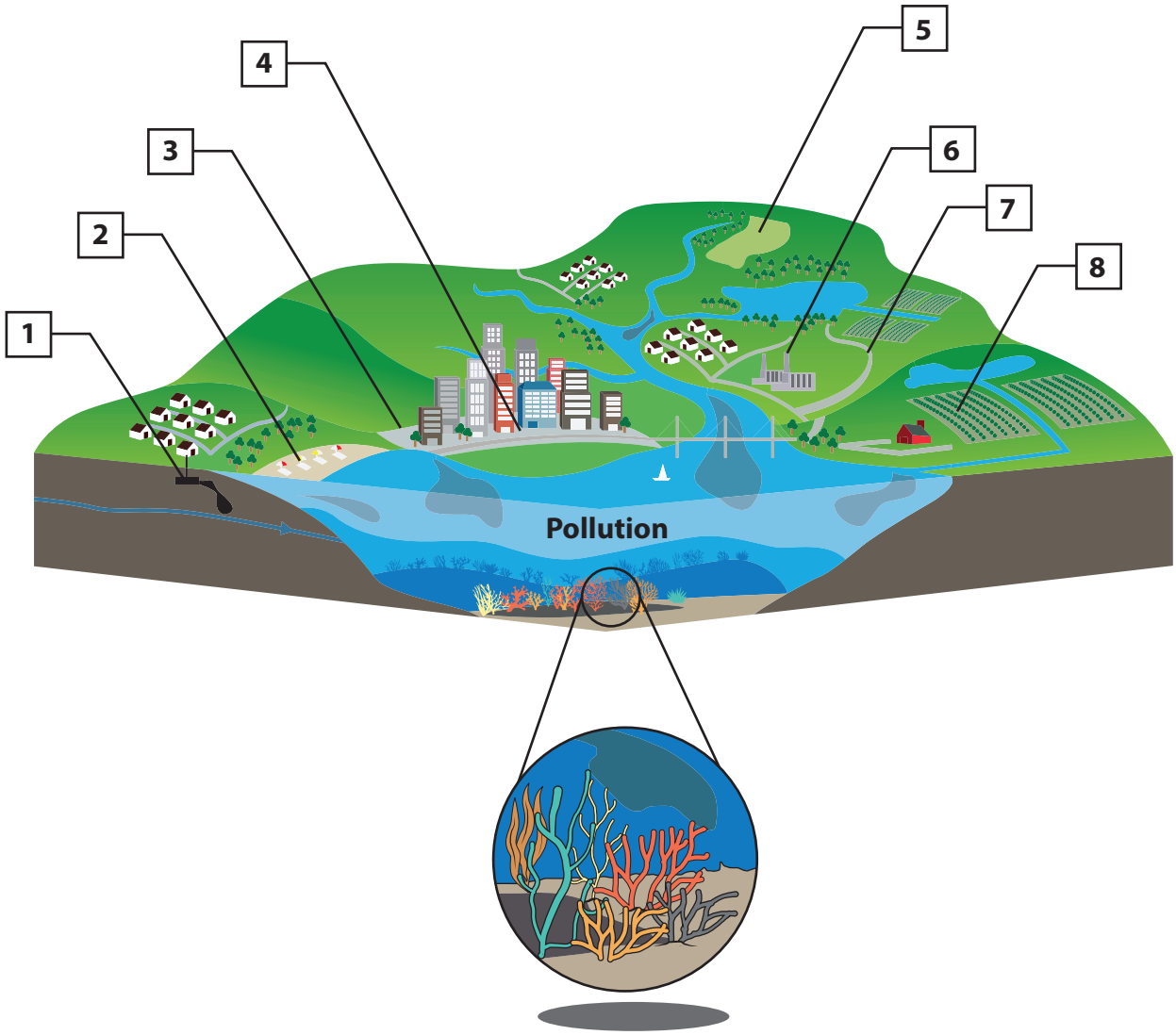

Figure 2c

Information on threats to a coral reef ecosystem

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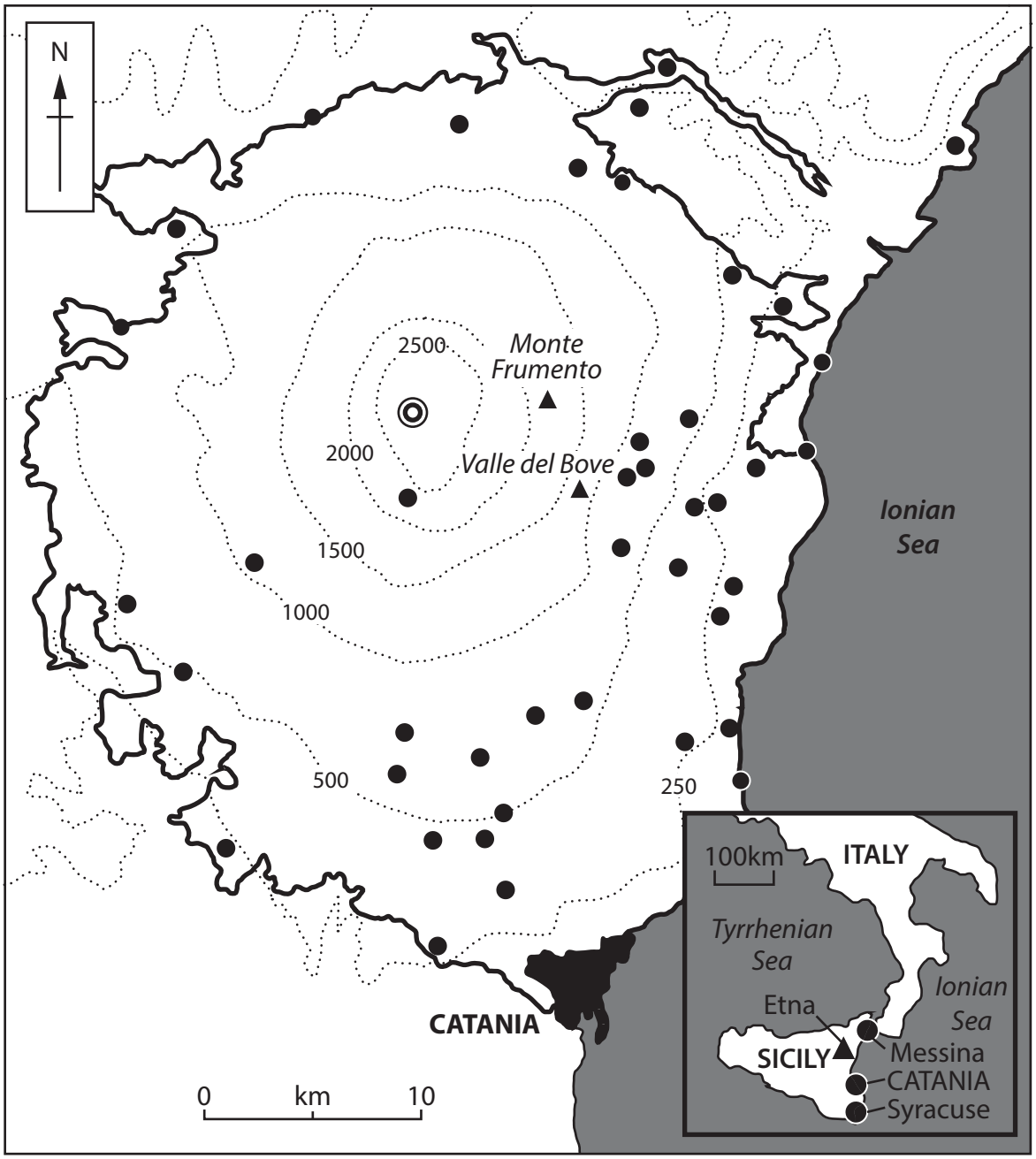

Mt Etna is Europe's most active volcano with 200 eruptions since 1500 BCE

Significant eruptions in 2002–03, 2007, 2015, 2017, 2019, 2020–21

Key

Summit crater

Limit of volcanic rock

500 Contours in metres

Settlement

Figure 3a

Information about Mount Etna's eruptions and settlement distribution

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Figure 3b

Tropical cyclone approaching Bangalore, India

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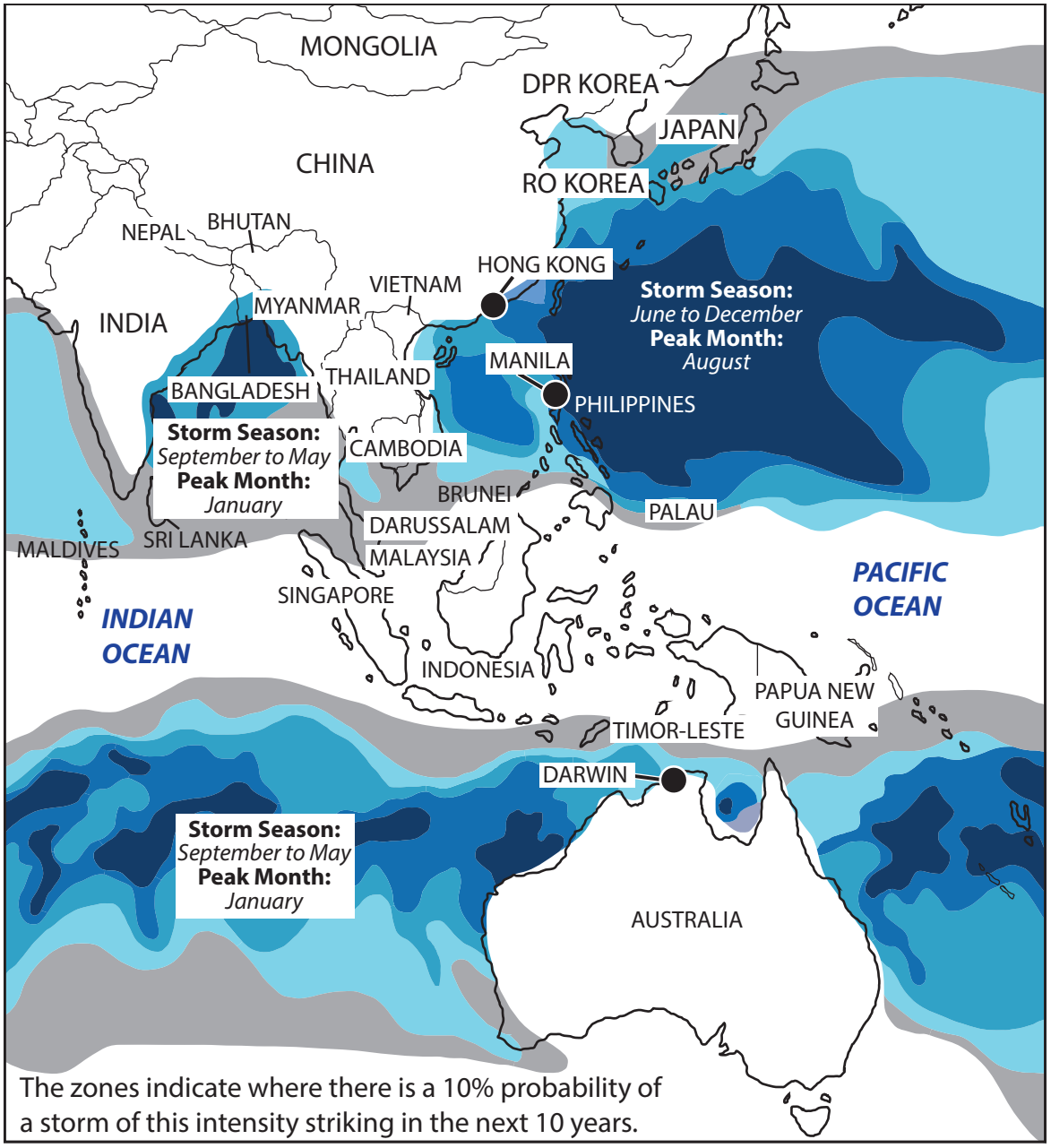

Key: Tropical Cyclone Intensity Saffir-Simpson Scale

- One: 118–153 km/h
- Two: 154–177 km/h
- Three: 178–209 km/h
- Four: 210–249 km/h
- Five: 250 + km/h

Hong Kong, China	Population: 7.50 million • Observatory issuing advice and warnings. • Public education programme about cyclone preparedness.
Manila, Philippines	Population: 1.84 million • Tropical cyclone early warning system. • Community evacuation routes.
Darwin, Australia	Population: 0.13 million • Building standards to ensure can withstand high winds.

Figure 3c

Information on predicted tropical cyclones and preparation measures

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Data/information used by the students:

- Environment Agency flood risk map
- Newspaper articles
- Local historical map
- Field sketches
- Measurements of: river velocity, river depth and sediment size

Figure 4a

Selected data/information used by the students

	Site 1	Site 2	Site 3	Site 4
Measurement 1	0.2	1.2	0.7	0.5
Measurement 2	0.8	1.0	0.6	0.6
Measurement 3	1.2	1.2	0.6	0.5
Measurement 4	1.3	1.3	0.6	0.4
Mean velocity	0.9	**?**	0.6	0.5
Range in velocity	1.1	0.3	0.1	0.2

Figure 4b

Data collected on river velocity (m/s)

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Depth (m)	Width (m)
0	0
–0.6	0.5
–0.8	1
–1	1.5
–1.2	2
–1.4	**2.5**
–0.8	**3**
–1.2	3.5
–1	4
–0.8	4.5
0	5

Figure 4c

Data collected on river channel depth and width

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Data/information used by the students:

- Local shoreline management plan
- Newspaper articles
- Local historical map
- Field sketches
- Measurements of: sediment size, beach gradient and beach height

Figure 5a

Selected types of data/information used by the students

	Site 1	Site 2	Site 3	Site 4
Pebble 1	20	25	22	52
Pebble 2	60	20	15	50
Pebble 3	82	22	17	39
Pebble 4	26	18	12	56
Mean size	47	**?**	17	49
Range in size	62	7	10	13

Figure 5b

Data collected on sediment characteristics (mm)

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Height (m)	Distance from shoreline (m)
0	0
0.6	10
0.8	20
1.2	30
1.4	40
1.6	**50**
2	**60**
2.1	80
2.6	100
2.9	120

Figure 5c

Data collected on height and distance from shoreline

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Data/information used by the students:

- Local weather map
- Newspaper articles
- Local weather diary from last year
- Field sketches
- Measurements of: rainfall, humidity and wind speed

Figure 6a

Selected types of data/information used by the students

	Site 1	**Site 2**	**Site 3**	**Site 4**
Reading 1	20	8	12	16
Reading 2	21	6	12	16
Reading 3	20	7	11	16
Reading 4	12	8	10	17
Mean wind speed	18	**?**	11	16
Range in wind speed	8	2	2	1

Figure 6b

Data collected on wind speed (mph)

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Day	Temperature (°C)
1	21.2
2	20.3
3	22.0
4	22.6
5	25.0
6	**18.0**
7	**16.0**
8	17.2
9	16.0
10	17.6

Figure 6c

Data collected on daily temperature

Acknowledgments:
Pearson Education Ltd. gratefully acknowledges all following sources used in preparation of this paper:
Figure 2a adapted from: https://www.mdpi.com/2077-1312/8/3/154/htm
Figure 2c adapted from: https://oceanservice.noaa.gov/facts/coral-pollution.html
Figure 3b adapted from: © Manish Bansal