



# 15<sup>th</sup> International Geography Olympiad

Québec City, Canada

31 July – 6 August, 2018

## Written Response Test Question and Answer Booklet

Name: ..... Team: .....

Student number

1	5				
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**Do NOT open the Booklet before instructed to do so by a supervisor.**

## Instructions for Students

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1. Fill in your name, team and iGeo student number on the front page of this Question and Answer Booklet.
2. Fill in your iGeo student number in the boxes on top of the pages in this Booklet.
3. This test consists of 6 Sections.
4. The maximum total mark is 90.  
The mark for each question is given in the margin at the beginning of the question.  
There is a maximum of 15 marks for each Section.
5. Answer all questions in the spaces provided in this Booklet in English.  
Keep the left margin free for markers.  
Please write clearly.  
Please use blue (or black) pen, not pencil.
6. Check the backs of pages as questions are printed on both sides of a page.
7. There are blank pages which you can use as additional space for your notes.  
Please cross through any notes so that we know they are not part of your answers.  
If you use these pages for answers, please label them clearly with your Student Number, the Section and question number (e.g. A1). Mark by the question to search for follow-up.
8. Where appropriate, please write sentences or phrases not single words.
9. Give only the required number of answers (reasons, examples, etc.).  
For instance, if the question asks for 2 reasons and you give more than 2, only the first 2 reasons will be marked.
10. The Resource Booklet contains Figures referred to in this Booklet.  
Do not write any of your answers in Resource Booklet.
11. You may use a calculator during the test.
12. Time:  
180 minutes for students not educated in English (+10 minutes reading time),  
150 minutes for students educated in English (+10 minutes reading time).
13. Students not educated in English are allowed to use bilingual dictionaries during the test.

**Good luck!**

### Written Response Test

Contributions from: Australia, New Zealand, Poland and Thailand

Committee Convenor: Margaret McIvor (Australia)

Deputy: Dubravka Spevec (Croatia)

Editors: Birgit Sandermann Justesen (Denmark), Ivan Sulc (Croatia), Li Ling Tan (Singapore)

Reviewers: Mark Higginbottom (UK) and Anu Printsman (Estonia)

Director of Tests: Su-Min Shen (Taiwan/China-Taipei)

## Section A: Population

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1. Study Resource Booklet Figure A1: Population growth, 2015.  
Outline why the highest population growth is found in countries like Mali, Chad, and Demographic Republic of the Congo.

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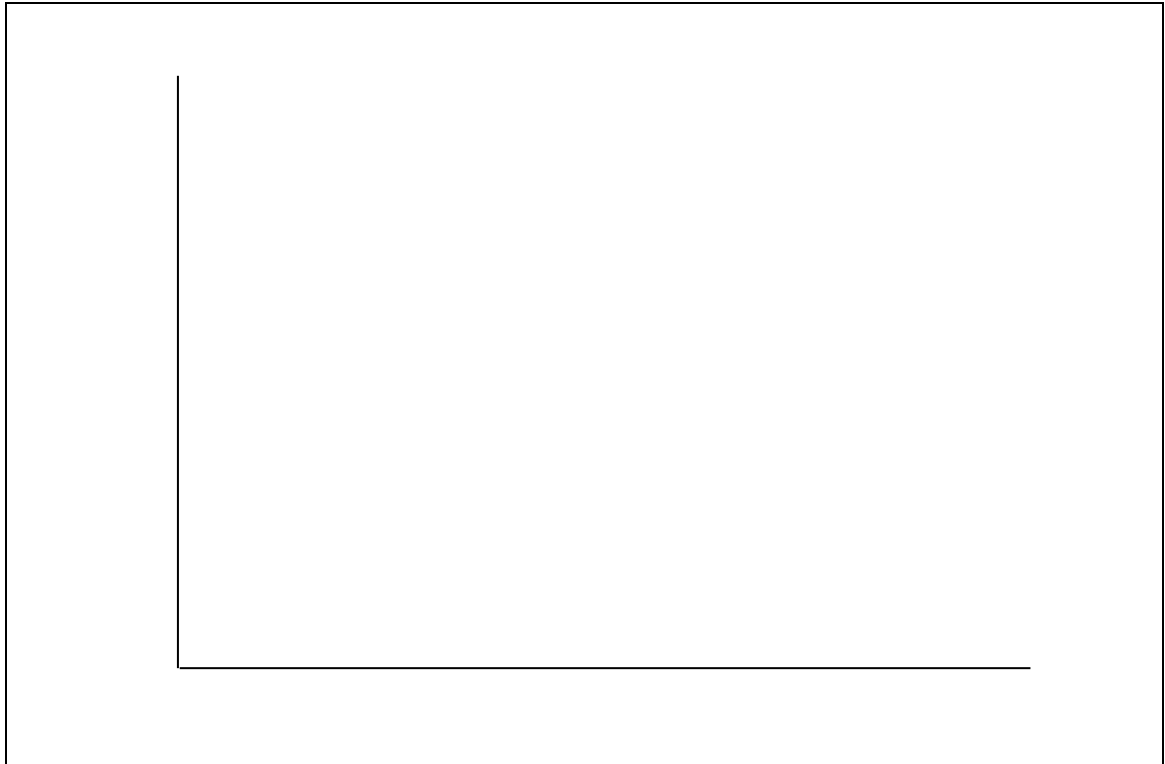
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4 m

2. Study Resource Booklet Table A1: Population data – selected years.  
(a) Draw a graph which shows the **Age Dependency Ratio** for Countries A, C, D and F.



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- (b) Describe the **trends** shown in the graph.

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3. Study Resource Booklet Table A1: Population data – selected years.  
Identify the country which is likely to be **least developed** and explain why.

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4. Study Resource Booklet Table A1: Population data – selected years.  
Identify the country which is likely to be experiencing **economic growth** and explain why.

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5. Outline 3 possible impacts that an **ageing society** may have on a country's economic development.

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## Section B: Tourism: The Rise of Airbnb

Airbnb is an online community marketplace that connects people looking to rent their homes with people who are looking for accommodation.

1 m 1. Give 2 reasons why tourists may visit large cities, such as New York.

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3 m 2. Study Resource Booklet Figure B1: Five boroughs of New York City and sub-districts of Manhattan and Figure B2: Distribution of hotels and Airbnb properties throughout New York City.

Identify 2 patterns shown on the map and explain each pattern that you have given.

Pattern 1: .....  
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Explanation: .....  
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Pattern 2: .....  
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Explanation: .....  
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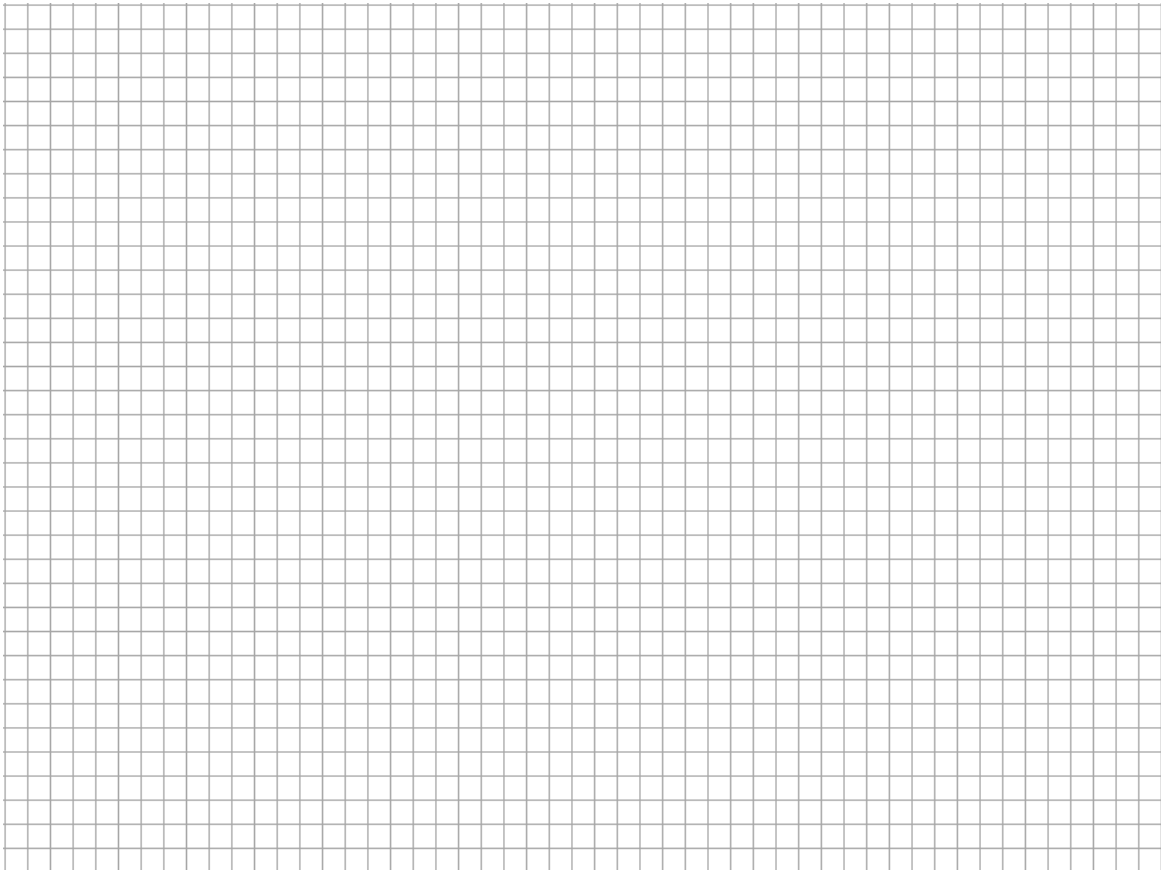
This Section continues on the next page.

3. Study the Table below. Choose an **appropriate graphing method** to display the data in the space provided. You need to clearly show on the **same** graph how in some cities hotels are less expensive than Airbnb while in other cities hotels are more expensive than Airbnb.

Table: Average cost difference between hotel and Airbnb properties in selected cities in the world, in 2016. (in US dollars per night)

City	Hotels are less expensive than Airbnb by (USD):
Barcelona	139.42
San Diego	61.73
New Orleans	9.62
San Francisco	3.49
City	Hotels are more expensive than Airbnb by (USD):
Los Angeles	5.09
Amsterdam	44.72
Sydney	44.96
Vienna	71.62
New York	81.80
London	108.29

Source: <https://www.busbud.com/blog/airbnb-vs-hotel-rates/>



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4. Study Resource Booklet Figure B3: Airbnb protest in Barcelona and the Figure below.

Figure: Some Airbnb data for Barcelona

- €1 billion in economic activity from Airbnb
- €167 million earned by local households
- 16,100 hosts
- 20,000 listings
- 27 million tourists in 2012 to more than 34 million in 2016.  
Over 25 % increase in four years.
- 40% of Barcelona’s tourist apartments are illegal.
- City is facing a housing problem for those who live and work here.  
Rents increased by 16.5% in 2016.

(<http://www.independent.co.uk/travel/news-and-advice/barcelona-locals-hate-tourists-why-reasons-spain-protests-arran-airbnb-locals-attacks-graffiti-a7883021.html>, <https://www.airbnbitizen.com/airbnb-community-generated-more-than-e1-billion-in-barcelona-in-2016/>)

Evaluate whether the introduction of Airbnb to cities like Barcelona is more positive or negative for local people. Your decision should be based on both economic and social impacts supported with/by specific evidence.

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Economic: .....

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for answers, which are clearly labelled with the Section and question number).



## Section C: Environmental Geography: Coral reefs

2 m 1. Study Resource Booklet Figure C1: Location of coral reefs.  
Describe the global pattern for the location of coral reefs.

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3 m 2. Explain why coral reefs are considered to be of great value.

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3 m 3. Study Resource Booklet Figure C2: Threats to coral reefs.  
(a) Outline the major types of threats to coral reefs in 3 different regions of the world.

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(b) Tourism is often regarded as a major threat to coral reefs. Identify 4 ways in which tourists cause damage to reefs.

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4. Study Resource Booklet Figure C3: Photographs showing change in a coral reef. What name is given to the change shown in the photographs and why does it occur?

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5. Nature can also be responsible for damage to coral reefs. Describe a natural threat to coral reefs.

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6. Study Resource Booklet Figure C4: Marine Protected Areas. Some areas of the ocean have been declared Marine Protected Areas (MPA). Outline the problems associated with the management (administering and enforcing) of MPAs.

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## Section D: River Catchments

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1. Define the term **river catchment**.

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2. Study the Figure below.

(a) On the diagram, draw a line to clearly identify the **boundary** of the Farmhouse Creek catchment.

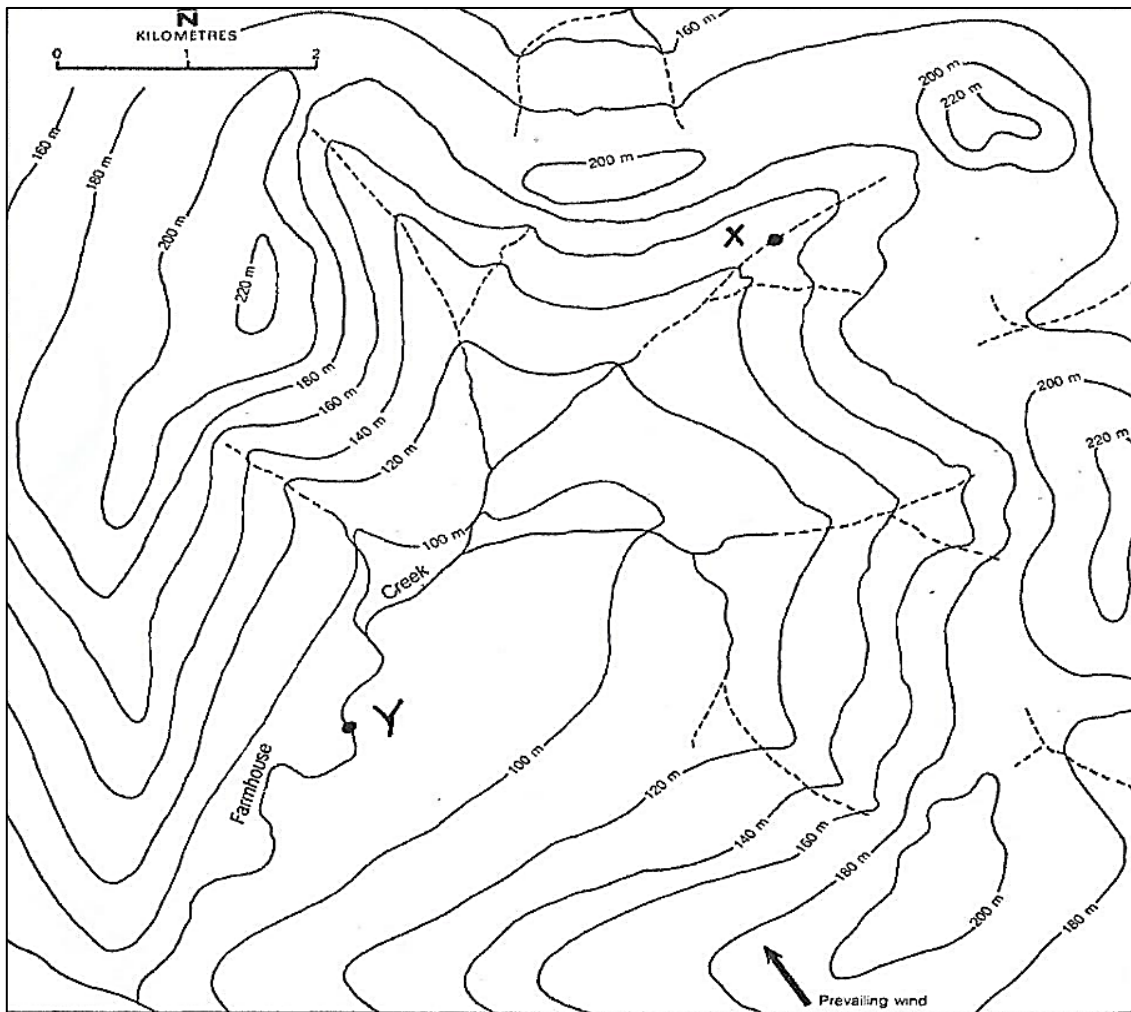


Figure: Farmhouse Creek (River)

0.5 m

(b) What name is given to this **boundary**?

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(c) In the space below, draw (sketch) 2 labelled diagrams to show the **shape of the creek channel** at Point X and Point Y, respectively.

X	Y

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(d) Give 2 reasons why the mean stream velocity is likely to be greater at point Y than point X as shown on the Figure: Farmhouse Creek (River).

Reason 1: .....

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Reason 2: .....

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3. Examine the data in the Table below.

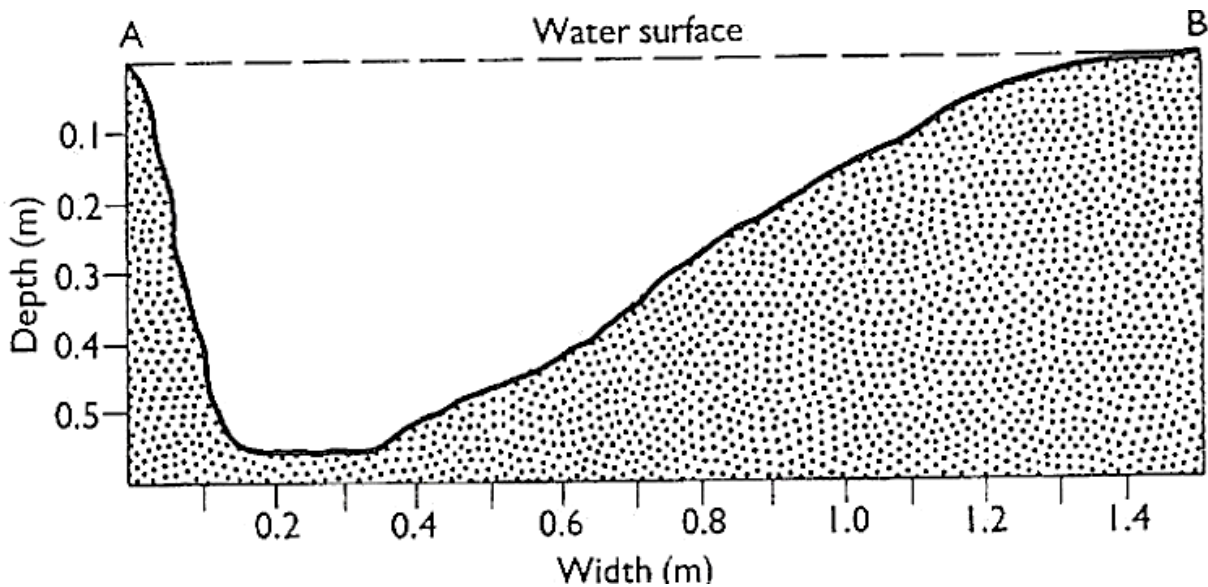
Table: Water velocity in metres per second

Depth (m)	Distance from Left Bank (A) in metres				
	0.2	0.4	0.6	0.8	1.0
0.1	0.53	0.41	0.38	0.21	0.10
0.2	0.58	0.33	0.26	0.11	
0.3	0.46	0.22	0.18		
0.4	0.32	0.10	0.04		
0.5	0.15	0.05			

2 m

(a) On the Figure below:

- i) Plot the water velocities given in the table, and
- ii) Draw in isovels (lines of equal velocity) at intervals of 0.1 metres per second.



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(b) Describe and explain variations across the channel.

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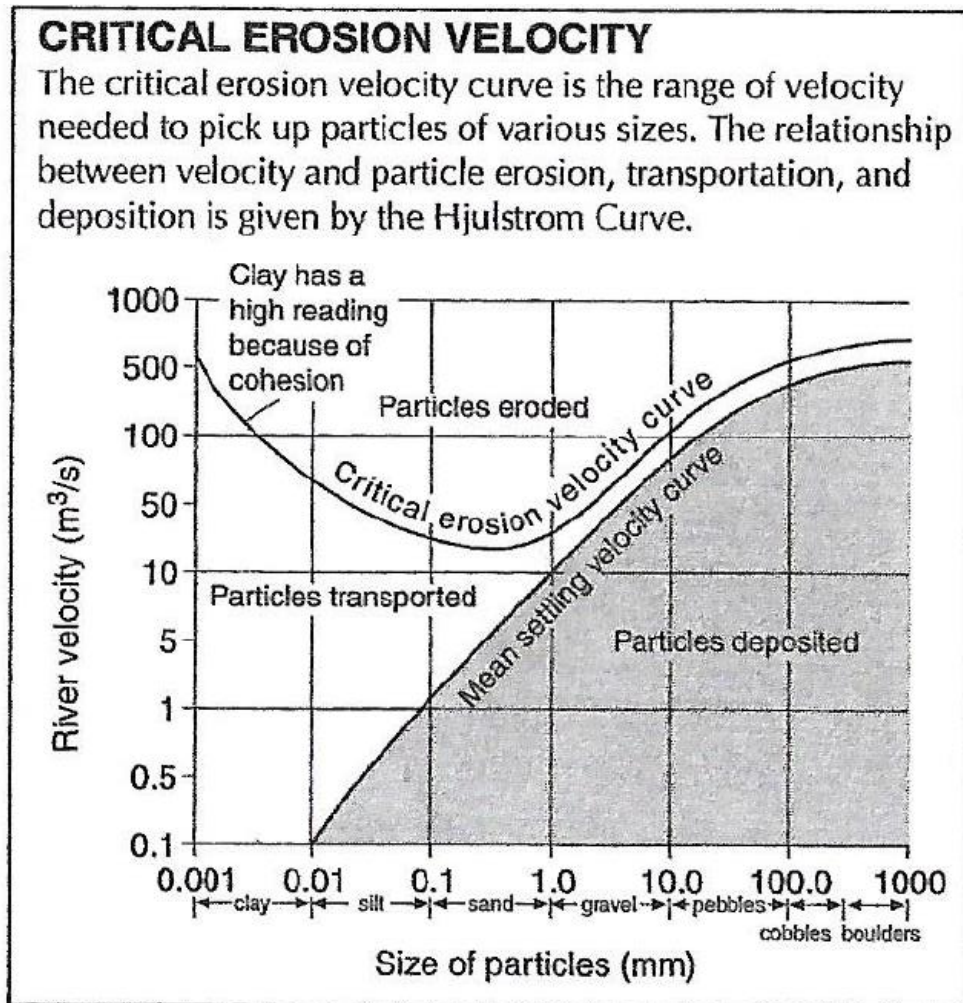
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4. Study the Figure below.

Figure: Hjulström Curve



1 m (a) Describe the relationship between the **settling velocity** and the **particle size**.

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1 m (b) Explain why the **settling velocity** curve is below that for the **erosion velocity**.

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5. Discuss why the statement "Everyone lives in a catchment" is important in catchment management.

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## Section E: Ebola Disease Outbreaks

The Ebola Virus Disease (EVD) epidemic in West Africa from 2014-2016 was a very serious health emergency.

2 m

1. Study Resource Booklet Figure E1: Key facts on Ebola **and** Figure E2: Distribution, frequency and magnitude of Ebola outbreaks to 30th November 2014. Describe the pattern of Ebola outbreaks in Africa over time. In your answer, refer to both frequency and magnitude.

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2. Study Figure E2: Distribution, frequency and magnitude of Ebola outbreaks to 30th November 2014 and Figure E3: Cases and deaths, Ebola outbreak to 27 March 2016.

Compare and contrast how the outbreak of the Ebola disease affected the **3** main countries between November 2014 and 27 March 2016.

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3. Study Figure E4: Time series of cumulative Ebola deaths in the districts of Guinea, Liberia, and Sierra Leone, 2014-2015.

0.5 m

(a) In what order should the maps be arranged to show the geographic spread of the Ebola disease in the three most affected countries?

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1.5 m

(b) Describe the origin and the spread of the Ebola disease.

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4. Identify and explain 2 factors that contributed to the failure to control this Ebola outbreak.

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Factor 2:

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5. Ebola outbreaks may cause various impacts for different groups in society such as **women** and **children**.  
Select **one** of these two groups and explain why the impacts of the Ebola outbreak would be more serious for this group within society.

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6. Study the Table below.  
Identify the country which is likely to have had the best systems in place to respond to the Ebola outbreak. Give reasons for your answer.

Table: Statistical data on selected countries affected by the 2014-15 Ebola outbreak  
(Source: WHO)

Country	Guinea	Liberia	Mali	Nigeria	Sierra Leone
Population (in millions)	12.61	4.50	17.60	182.20	6.45
Gross National Income per capita (PPP <sup>1</sup> \$)	1,160	790	1,540	5,360	1,750
Government health expenditure per capita (PPP <sup>1</sup> \$)	33	31	25	118	38
Medical doctors per 100,000	10.0	1.4	8.3	40.8	2.2
Population using improved sanitation %	20	17	25	29	13

<sup>1</sup> Purchasing Power Parity (PPP) is used to make comparisons across different currencies

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## Section F: Glaciers

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1. Study Resource Booklet Figure F1: Photographs of main types of glaciers.

2 m (a) Name two differences between continental and valley glaciers.

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1 m (b) Name one specific location where each type of glacier may be found.

Continental: .....

Valley: .....

2. Study Resource Booklet Figure F2: Global glacier thickness change.

2 m (a) Describe the overall trend in cumulative global glacier thickness between 1961 and 2005.

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3 m (b) Explain why this trend in cumulative glacier thickness is occurring.

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3. Study Resource Booklet Figure F2: Global glacier thickness change.  
Outline the extent to which volcanic eruptions such as El Chichon in March 1982, appear to have had an impact on the **overall trend** in global glacial thickness.

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4. Taking into consideration the link between ice melting and changes of albedo, explain what the phrase “positive feedback” means?

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5. Study Resource Booklet Figure F3: Climatic snow line.  
Although glaciers are most commonly found above the snowline, the snow line varies around the globe. Thus, location at a certain latitude and altitude does not automatically mean that a glacier will develop.  
Explain 4 factors that will determine if a glacier forms at a particular latitude and altitude.

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# **15<sup>th</sup> International Geography Olympiad**

**Québec City, Canada**

**31 July – 6 August, 2018**

## **Written Response Test Resource Booklet**

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# Section A: Population

Figure A1: Population growth (annual %), 2015

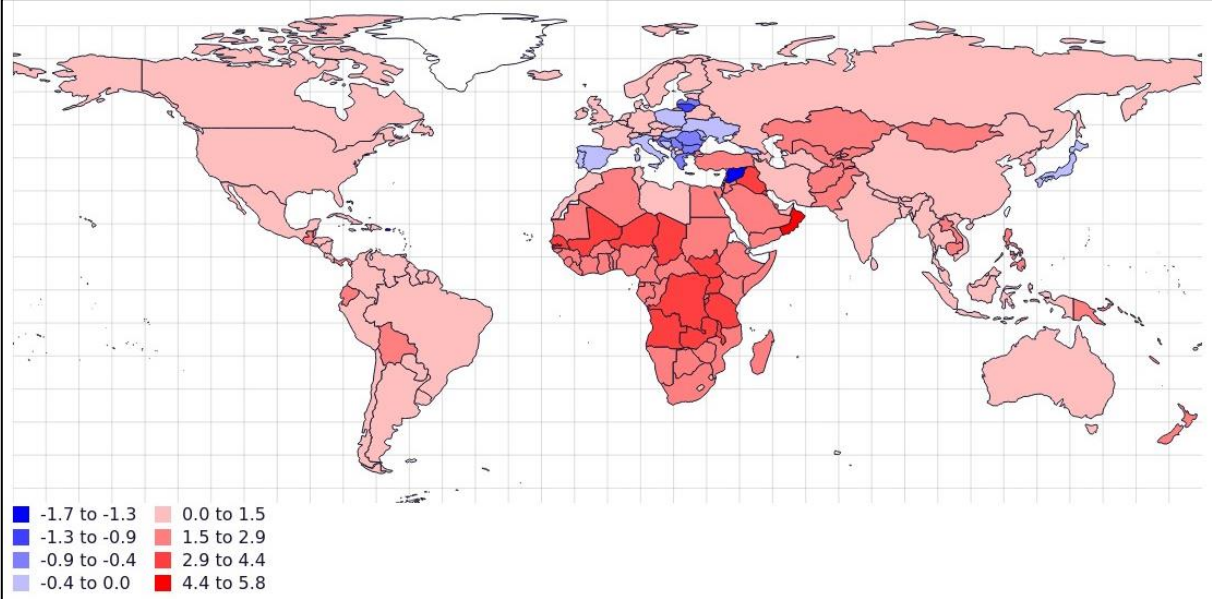


Table A1: Population data - selected years

Country	Age dependency ratio				Birth rate, crude (per 1,000 people)				Population ages 65 and above (% of total)				GDP per capita (current US\$)			
	1990	2000	2010	2015	1990	2000	2010	2015	1990	2000	2010	2015	1990	2000	2010	2015
<b>A</b>	52	51	49	51	17	14	13	13	13	12	13	15	23,955	36,450	48,374	56,116
<b>B</b>	53	54	51	55	14	12	13	12	16	16	16	18	19,096	27,770	38,709	43,876
<b>C</b>	43	47	57	64	10	9	9	8	12	17	23	26	25,124	38,532	44,508	34,524
<b>D</b>	72	64	56	52	31	26	22	20	4	4	5	6	375	452	1,346	1,598
<b>E</b>	45	46	52	52	11	9	8	9	15	16	21	21	22,220	23,719	41,788	41,313
<b>F</b>	52	46	35	37	21	14	12	12	5	7	8	10	318	959	4,561	8,028

## Section B: Tourism: The Rise of Airbnb

Figure B1: Five boroughs of New York City (left) and sub-districts of Manhattan (right)

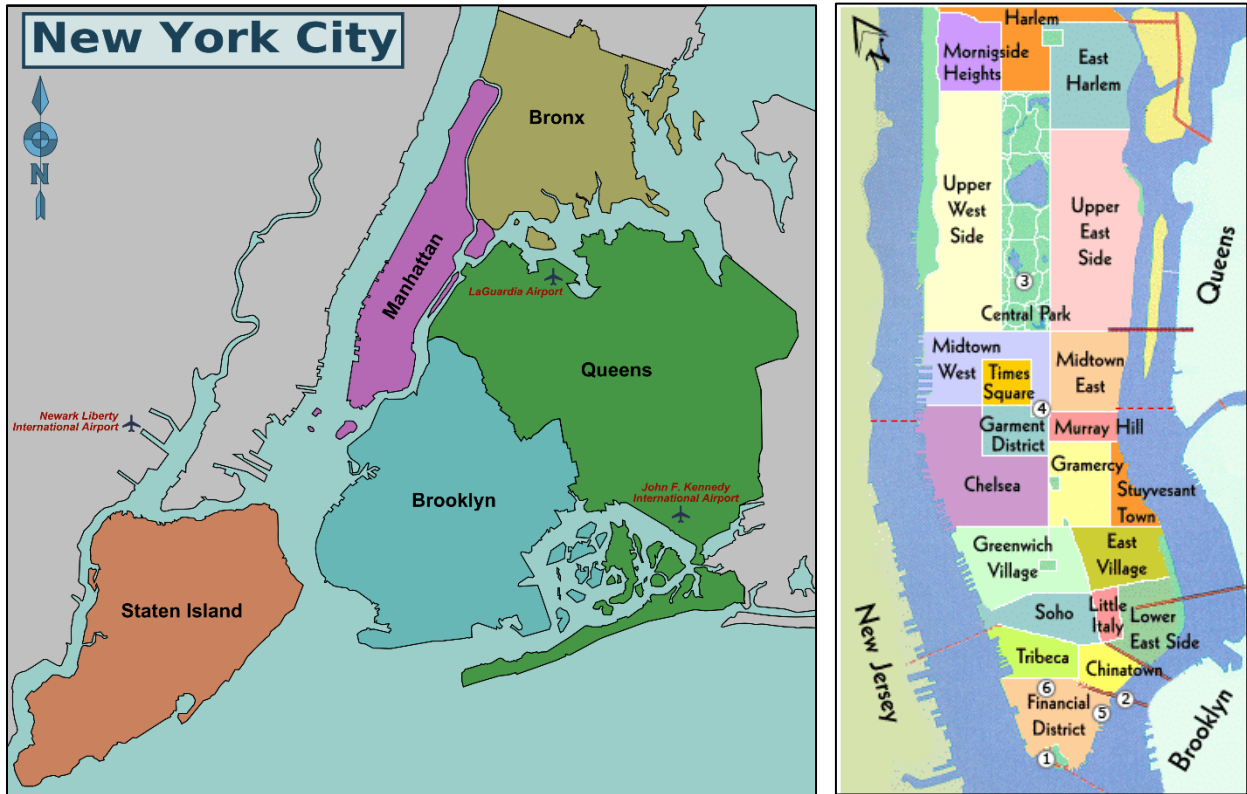
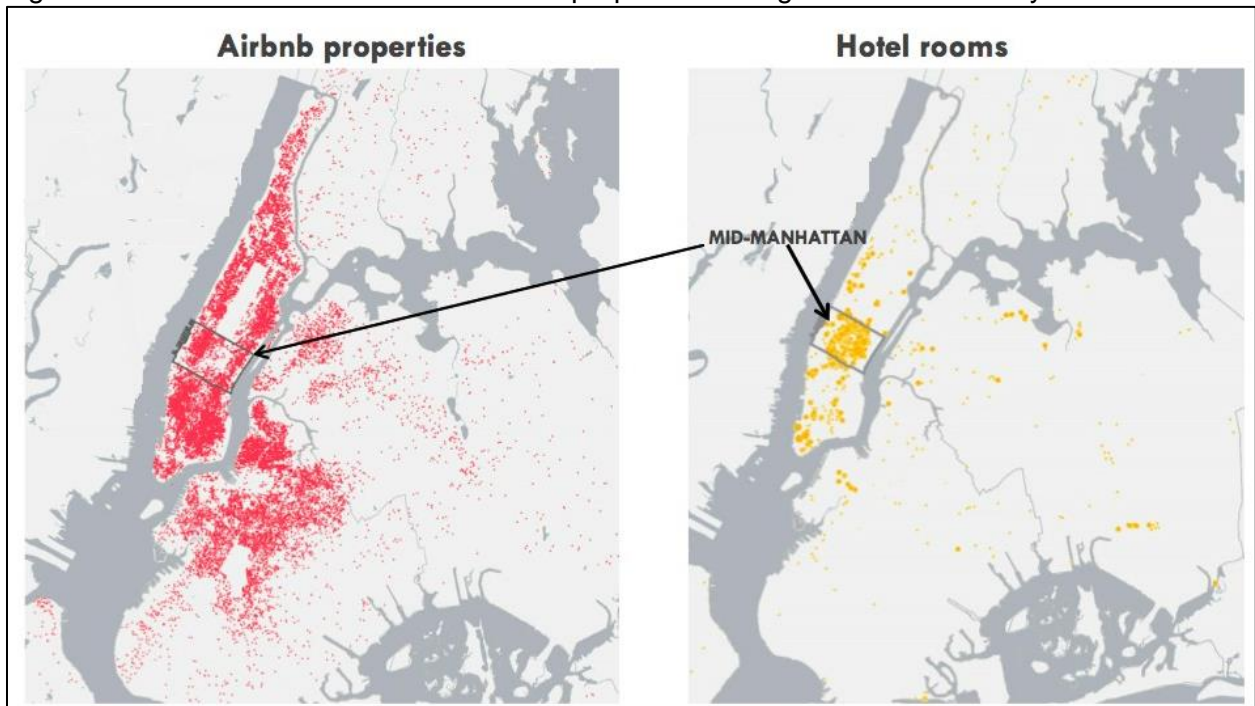


Figure B2: Distribution of hotels and Airbnb properties throughout New York City



(<https://www.airbnbcitizen.com/the-tremendous-impact-of-airbnb-in-new-york/>)

Figure B3: Airbnb protest in Barcelona in 2017



(<http://www.independent.co.uk/travel/news-and-advice/barcelona-locals-hate-tourists-why-reasons-spain-protests-arran-airbnb-locals-attacks-graffiti-a7883021.html>)



# Section C: Environmental Geography: Coral reefs

Figure C1: Location of coral reefs

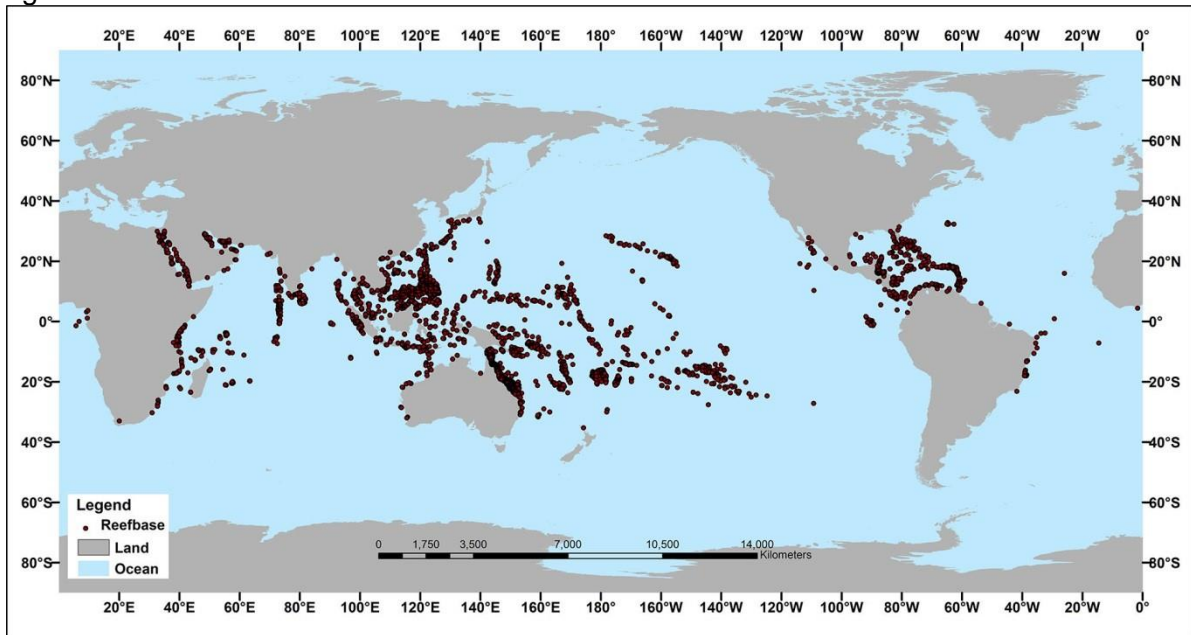
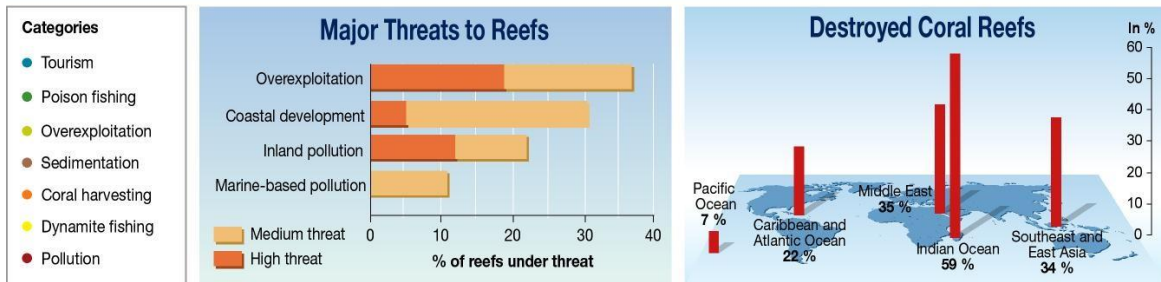
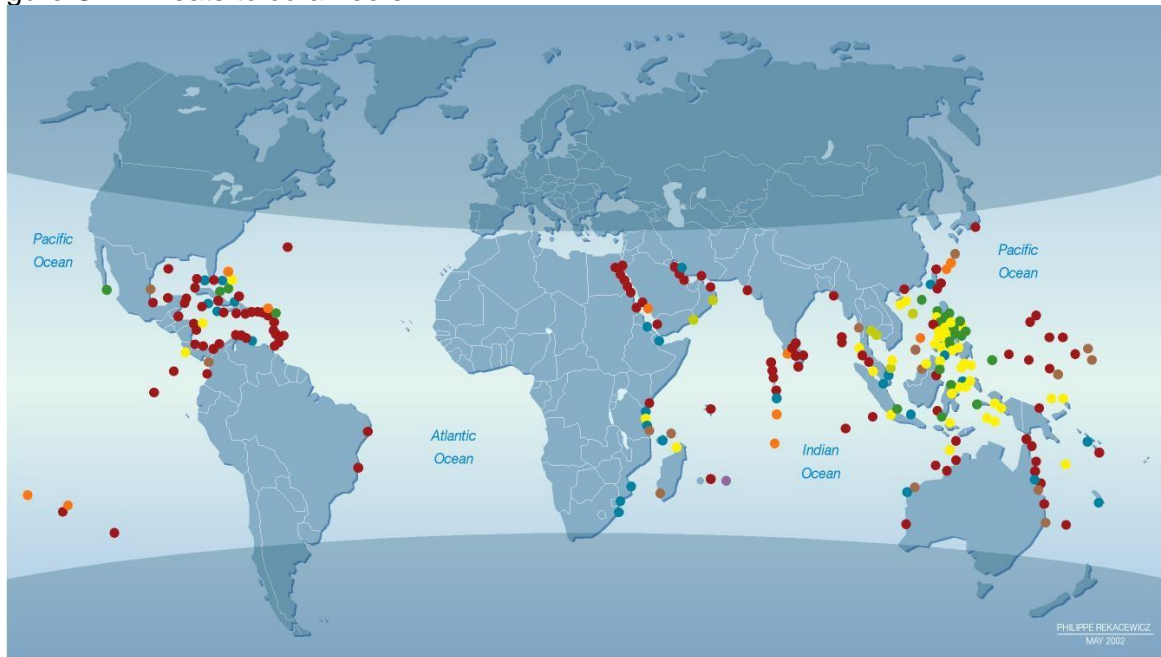


Figure C2: Threats to coral reefs



Source: Bryant et al., *Reefs at Risk; a Map-Based Indicator of Threats to the World's Coral Reefs*, World Resources Institute (WRI), Washington DC, 1998.

Figure C3: Photographs showing change in a coral reef

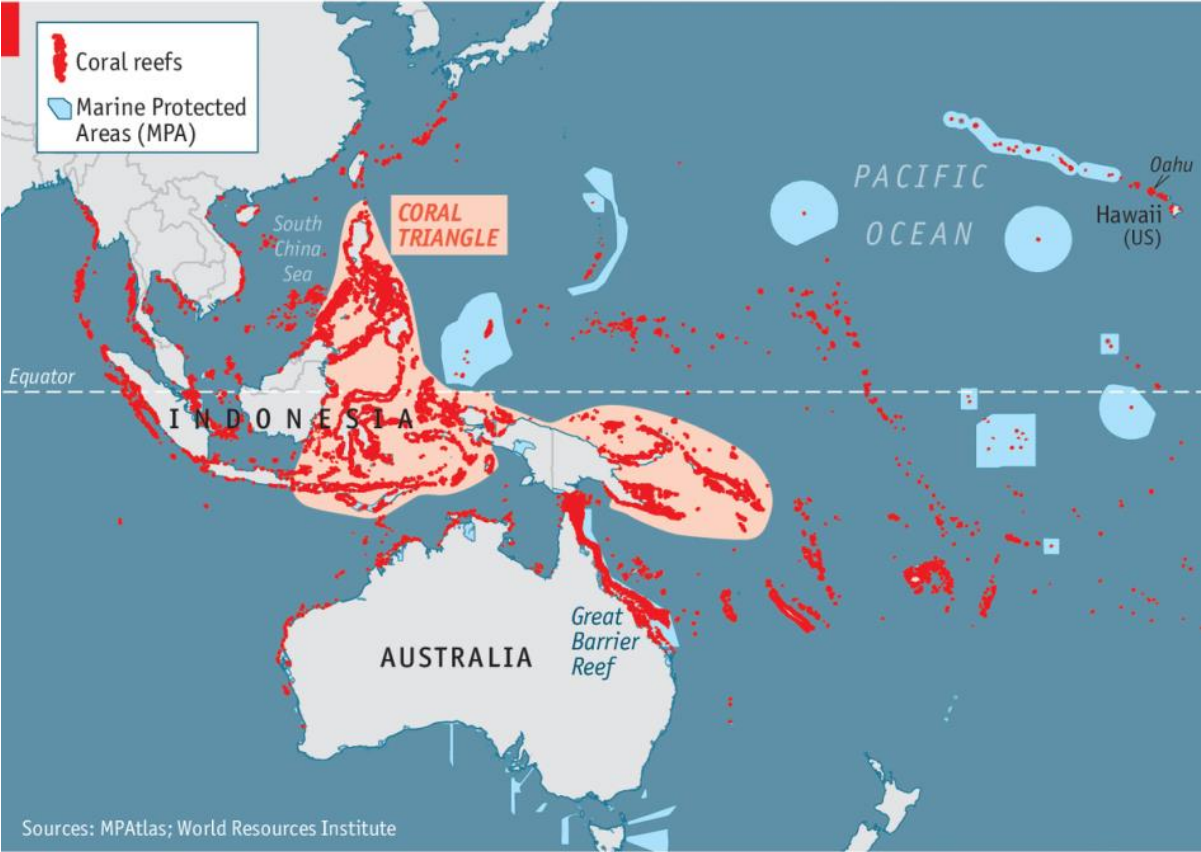
Photograph A



Photograph B



Figure C4: Marine Protected Areas



Sources: MPAtlas; World Resources Institute  
Economist.com

## Section E: Ebola Outbreaks

Figure E1: Key facts on Ebola (Source: World Health Organization, WHO)

- Ebola virus disease is a severe, often fatal illness in humans.
- The virus is transmitted to people from wild animal hosts and spreads in the human population through human-to-human transmission.
- The first outbreaks, from 1976, occurred in remote villages in Central Africa, but the 2014-15 outbreak in West Africa has involved major urban as well as rural areas.
- The West African outbreak was declared over in June 2016.
- In May 2018, New cases of Ebola have been detected in the Democratic Republic of the Congo.

Figure E2: Distribution, frequency and magnitude of Ebola outbreaks to 30th November 2014 (Source: <http://www.economist.com/blogs/graphicdetail/2014/12/ebola-graphics?fsrc=nlw/newe|13-10-2014>)

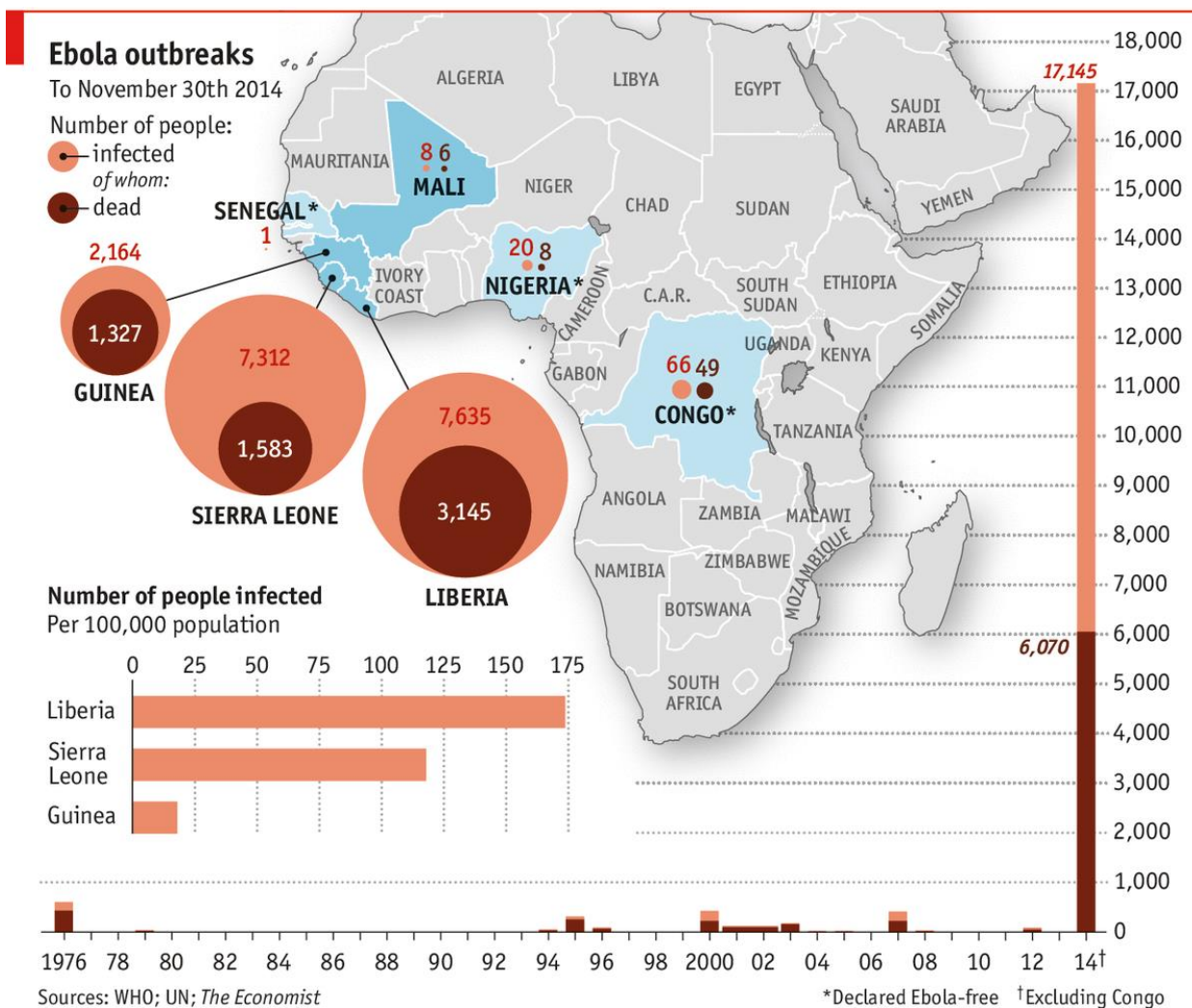




Figure E3: Cases and deaths, Ebola outbreak to 27 March 2016 (Source: WHO)

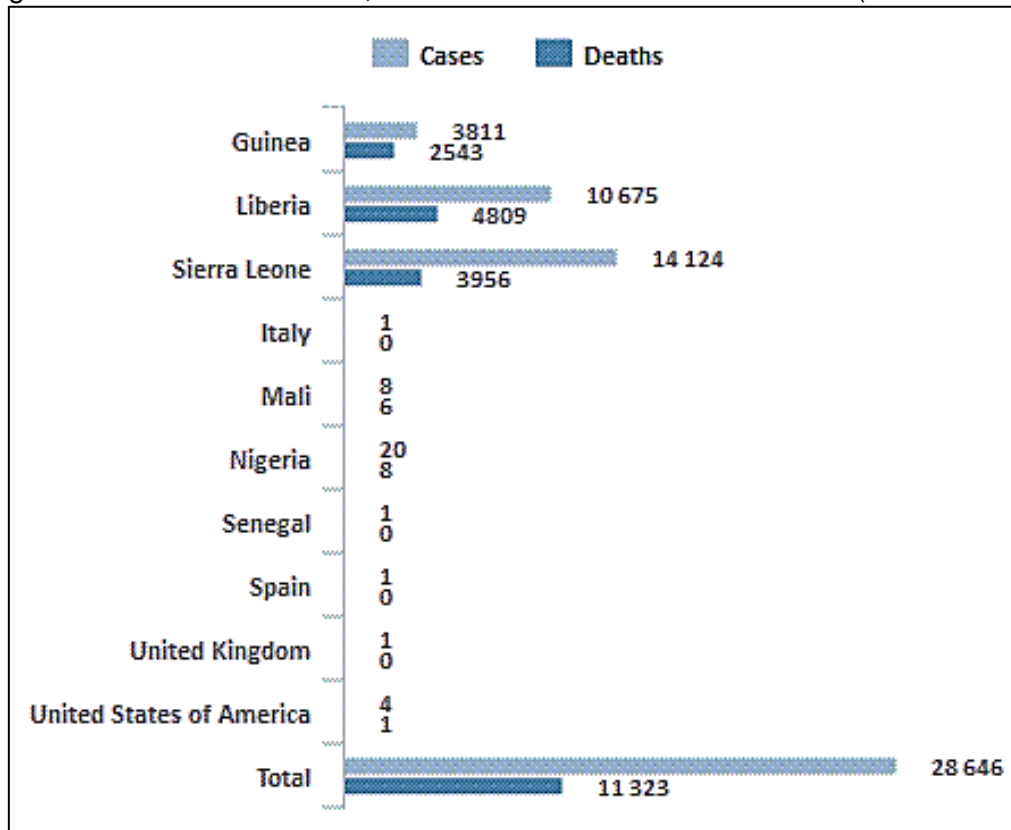
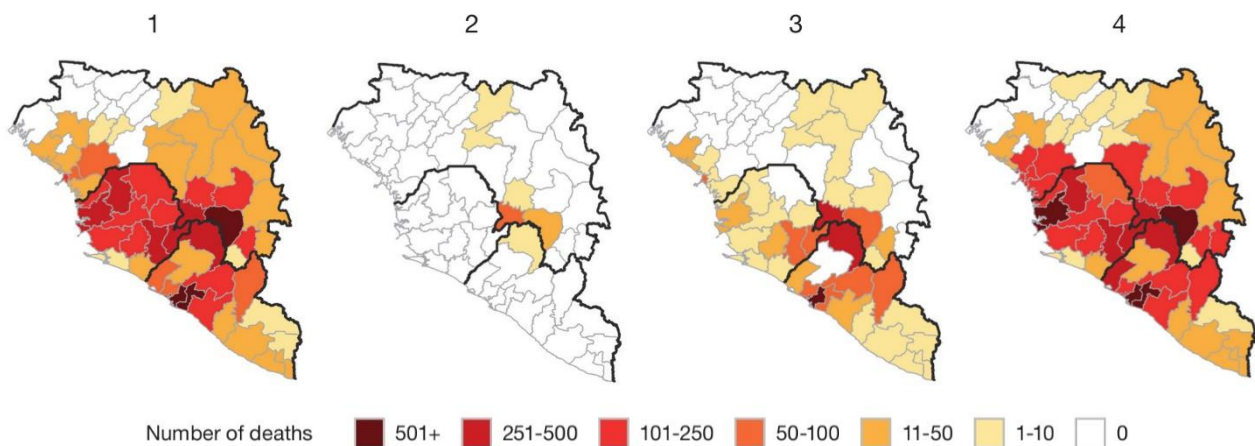


Figure E4: Time series of cumulative Ebola deaths in the districts of Guinea, Liberia, and Sierra Leone, 2014-15 (Source: WHO and Humanitarian Data Exchange)





## Section F: Glaciers

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Figure F1: Photographs of main types of glaciers

Selected example of a continental glacier



Selected example of a valley glacier

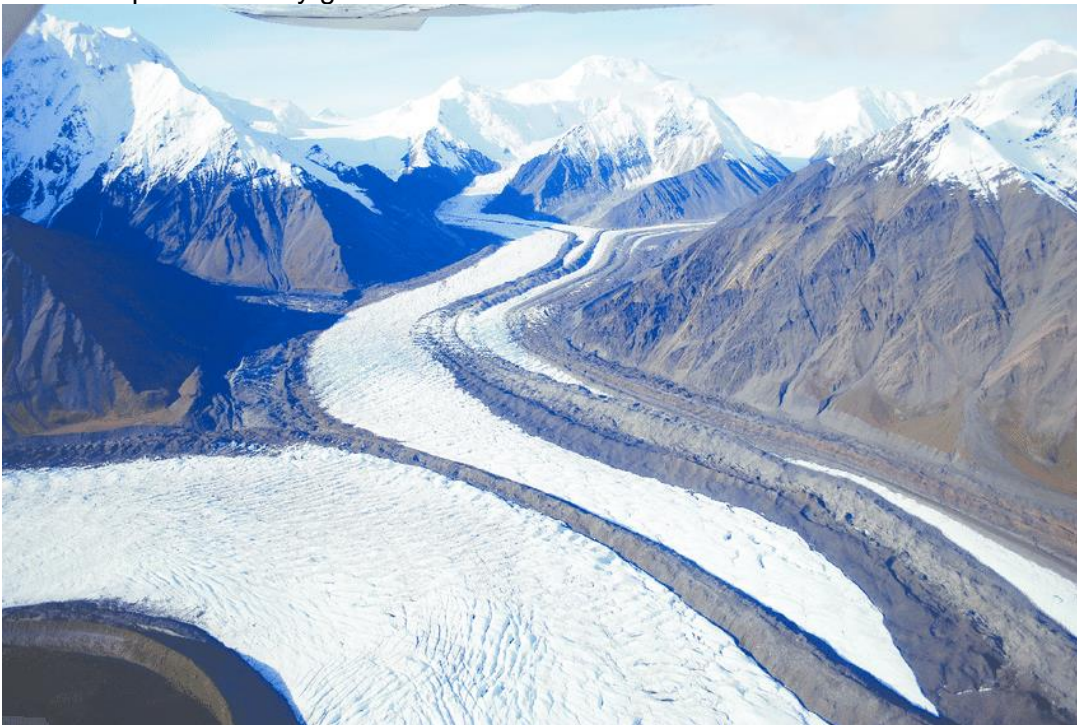


Figure F2: Global Glacier Thickness Change

(Source: M. Dyurgerov, Institute of Arctic and Alpine Research, University of Colorado, Boulder, CC BY)

It shows average annual and cumulative glacier thickness change of mountain glaciers of the world, measured in vertical metres, for the period 1961 to 2005.

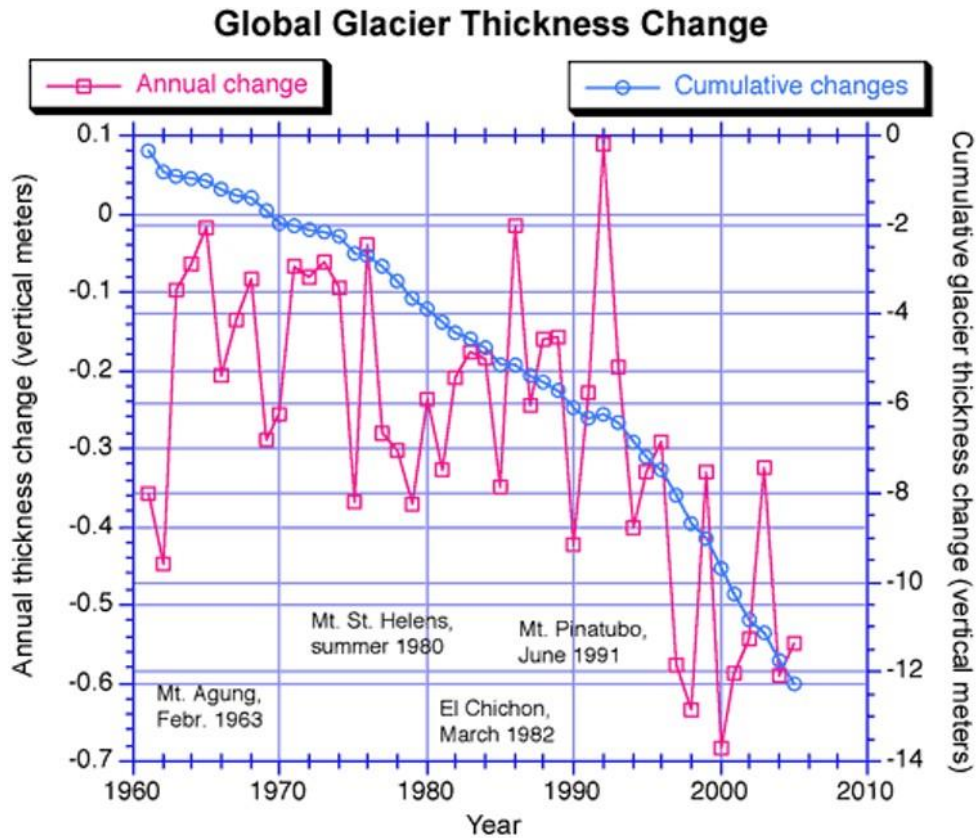


Figure F3: Climatic snow line

