17th International Geography Olympiad

Istanbul, Turkey

11 August – 16 August 2021

Written Response Test

Question and Resource Booklet

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

Name: _____

Team: _____

iGeo student number: _____

Instructions for Students

1. This booklet contains both the questions (Pages 3 to 7) and resources (Pages 9 to 26) required for each question.

2. This test consists of 5 sections.

3. The maximum total mark is 75.
   The mark for each question is given in the margin at the end of the question.
   There is a maximum of 15 marks for each section.

4. At the beginning of each Section, there will be a description of all resources used for the Section. You will refer to the Resource Booklet (Page 9 to 26) for these resources.

5. Do not write any of your answers in this booklet.
   Only answers written in the Answer booklet will be marked.

6. You may use a calculator during the test.

7. Students not educated in English are allowed to use bilingual dictionaries during the test. Students must ensure that their bilingual dictionaries do not contain unauthorized material such as study notes and named examples of places etc.
   Test supervisors will conduct checks on these bilingual dictionaries.

8. Time:
   150 minutes for students not educated in English.
   120 minutes for students educated in English.

   Good luck!

Section A: Suez Canal Blockage

The container ship "Ever Given" was stuck in Suez Canal from 23rd to 29th March 2021. It was stated that the reasons for losing control of the ship were strong winds and a sandstorm. Resource A1 shows an image of the blockage taken from a satellite. Resource A2 shows the development of international maritime trade by cargo type in selected years. Resource A3 shows the leading 20 global container ports in 2018 and 2019.

(a)	**(i)**	Name the country where the Suez Canal is located.	[0.5 mark]
	(ii)	Name the two seas which the Suez Canal connects.	[0.5 mark]
(b)		Using the Koppen climate classification, identify the climate of the region where the Suez canal is in.	[1 mark]
(c)		Explain why sandstorms might occur at the Suez Canal.	[2 marks]
(d)		Explain two reasons why ships choose to ply the Suez Canal route, instead of taking alternative routes to travel between East Asia and Europe.	[4 marks]
(e)		Study Resource A2. Briefly explain three reasons why containers are used so predominantly in global trade.	[3 marks]
(f)		Study Resource A3. Discuss the advantages and disadvantages associated with the containership transport industry.	[4 marks]

Section B: Energy Sources and Regenerative Cities

Resource B1 shows world energy consumption from 1965 to 2015. Resource B2 shows primary production of energy from renewable sources from 1990 to 2015. Resource B3 shows Cambodia's energy mix in 2011. Resource B4 shows the Vertical Forest in Italy. Resource B5 shows the Bullitt Centre in Seattle with photovoltaic cells on its roof.

(a)   Study Resource B1. Briefly explain two ways in which the trends observed in Resource B1 might differ between more economically developed countries and less economically developed countries.

[2 marks]

(b)   Study Resource B2. Describe the trends observed in the primary production of energy from renewable sources from 1990 to 2015.

[2 marks]

(c)   Study Resource B2. Explain the socio-economic and environmental impacts of using renewable energy sources.

[4 marks]

(d)   Study Resource B3. Explain two issues that may affect the sustainability of Cambodia's energy supply.

[4 marks]

(e)   Study Resources B4 and B5. Explain three ways in which these strategies can contribute to urban sustainability and liveability.

[3 marks]

Section C: The Arctic

Resource C1 shows the Arctic Seasonal Ice Fluctuations between September 2019 and March 2020. Resource C2 shows the average monthly Arctic Sea Ice Extent from 1979 to 2017. Resource C3 shows the Arctic Daily Sea Ice Extent.

(a)   Study Resource C1. List two countries which have a direct strategic interest in the management of the Arctic's resources.   [1 mark]

(b)   Study Resource C1. Describe the changes observed between September 2019 and March 2020.   [2 marks]

(c)   Study Resource C2. Explain two reasons for the pattern shown in Resource 2.   [4 marks]

(d)   Study Resource C3. Explain why daily sea ice in the Arctic reaches its minimum extent in September.   [2 marks]

(e)   "An ice-free Arctic will bring about more positive impacts than negative impacts." How far do you agree with this statement? Explain your stand.   [6 marks]

Section D: Cruise Tourism

Resource D1 shows the share of available beds on cruise ships in 2017 by major world regions. Resource D2 shows the trends in cruise tourism in 2018. Resource D3 shows information on passengers in the busiest Mediterranean cruise ports from 2013 to 2017.

(a) (i) Study Resource D1. Suggest two characteristics of the Caribbean region which might attract tourists on cruise holidays. [1 mark]

(ii) Study Resource D1. Suggest two characteristics of the Alaskan region which might attract tourists on cruise holidays. [1 mark]

(b) Study Resource D2. Explain two reasons why North America and Europe are the main source markets of cruise tourism. [4 marks]

(c) In cruise tourism, a home port is a port in which a cruise starts and ends, in which passengers embark and disembark. Explain 4 ways in which a city can become an ideal home port. [4 marks]

(d) Study Resource D3. Use an appropriate data representation method to display the rate of change of cruise passengers from 2013 to 2017 (%). You should use the blank page provided in the Answer Booklet for this question. [5 marks]

Section E: Rivers

Resource E1 shows an idealised model of changes in channel variables along the Sutlej River in North India. Resource E2 shows load size in the Sutlej River. Resource E3 shows a fluvial landform and its fluvial feature. Resource E4 shows a fluvial landform.

(a)		Study Resource E1. Describe the downstream changes in the channel variables.	[2 marks]
(b)		Study Resource E1. Give reasons for the downstream changes in the channel variables.	[2 marks]
(c)		Study Resource E2. Explain how load size can affect the types of fluvial transportation processes present in the Sutlej River.	[3 marks]
(d)	**(i)**	Study Resource E3. Identify the fluvial feature identified as 'RF'.	[1 mark]
	(ii)	Study Resource E3. Explain the formation of this fluvial landform and its feature 'RF'.	[4 marks]
(e)		Study Resource E4. Sketch and annotate the cross section 'AB' as shown in Resource E4. You should use the blank page provided in the Answer Booklet for this question.	[3 marks]

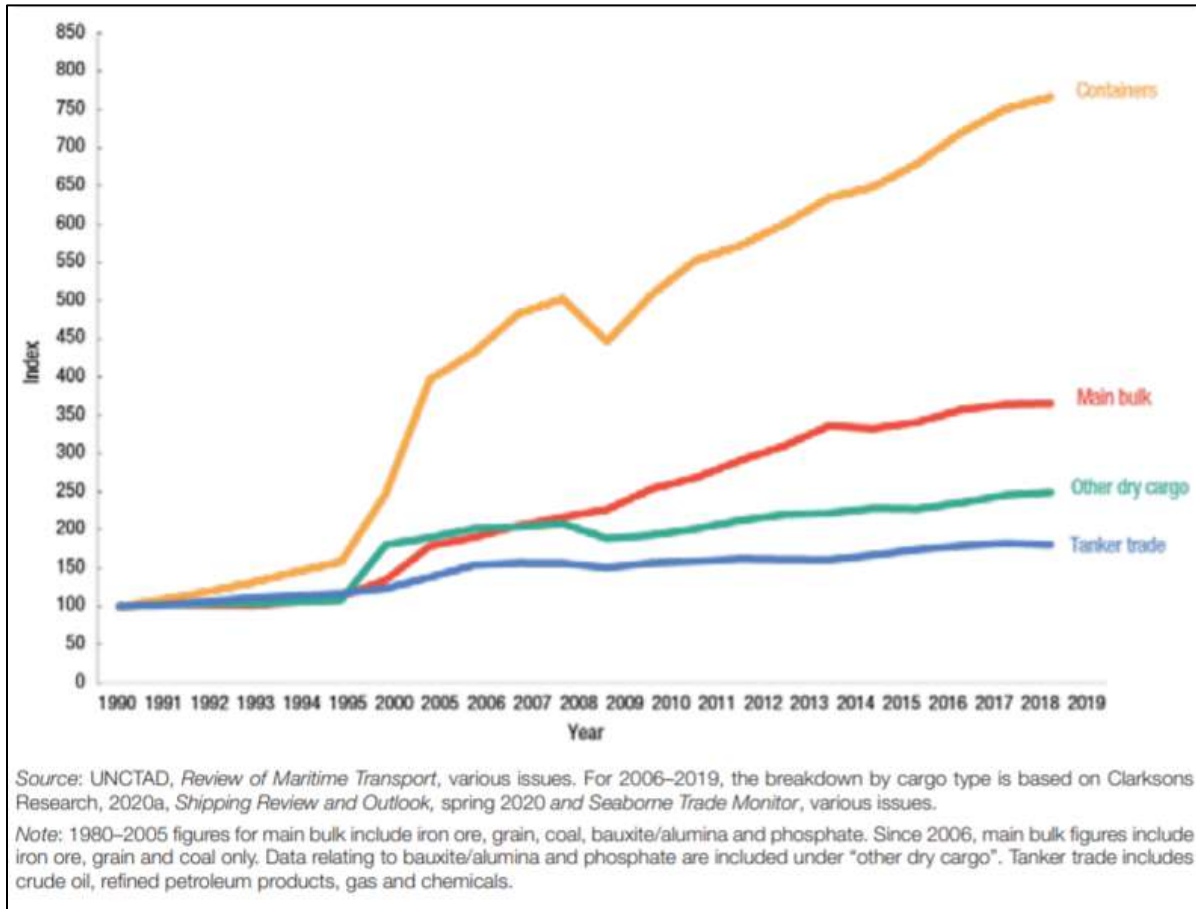Resources for each Section are found from
Page 9 to Page 26

Resource A1 for Section A

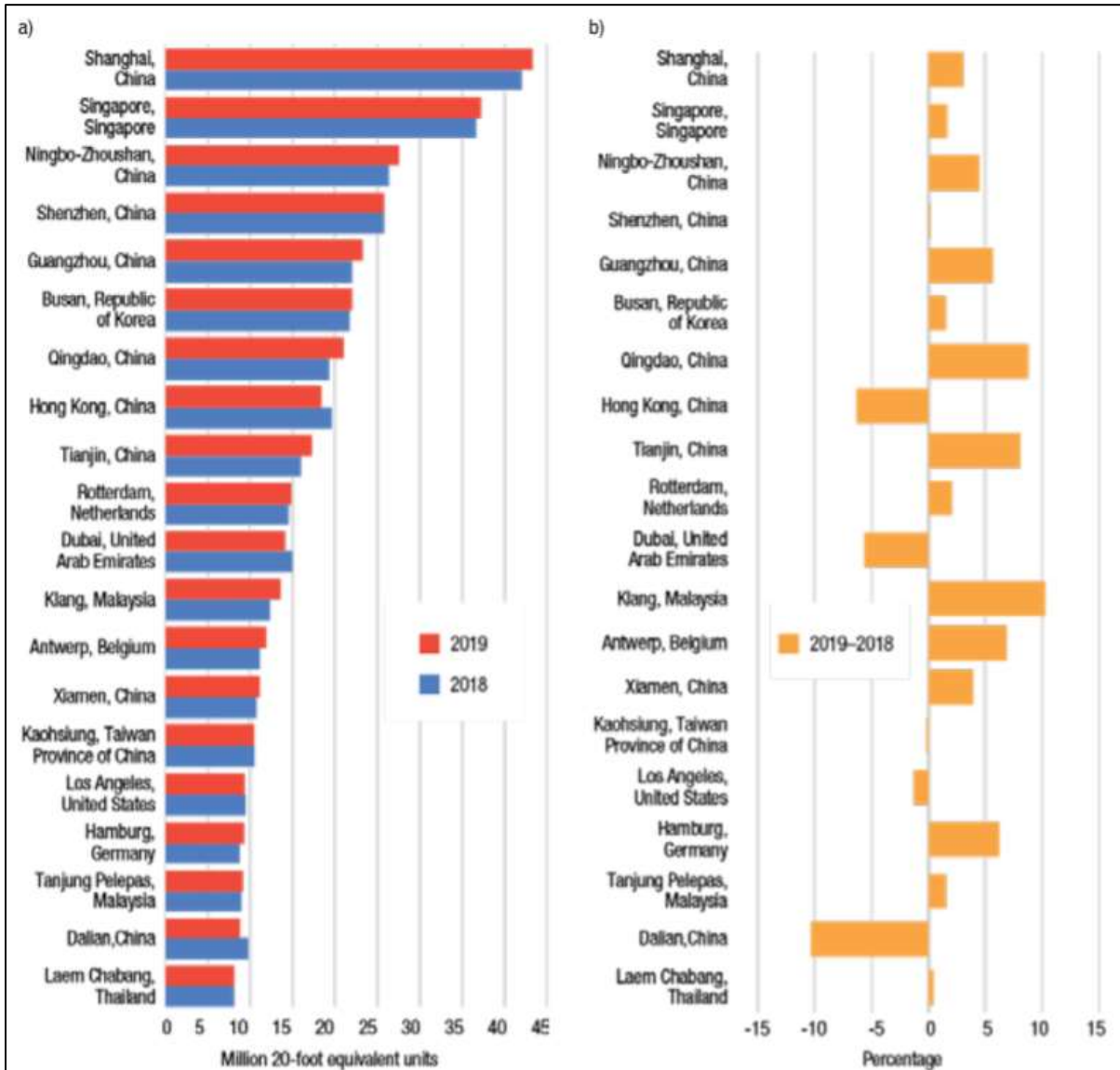**Satellite image of Suez Canal blockage**

Resource A2 for Section A

**International maritime trade by cargo type in selected years**

Source: UNCTAD, *Review of Maritime Transport*, various issues. For 2006–2019, the breakdown by cargo type is based on Clarksons Research, 2020a, *Shipping Review and Outlook,* spring 2020 *and Seaborne Trade Monitor*, various issues.

Note: 1980–2005 figures for main bulk include iron ore, grain, coal, bauxite/alumina and phosphate. Since 2006, main bulk figures include iron ore, grain and coal only. Data relating to bauxite/alumina and phosphate are included under "other dry cargo". Tanker trade includes crude oil, refined petroleum products, gas and chemicals.

Leading 20 global container ports in 2018 and 2019

Sources: UNCTAD calculations, based on Lloyd's List, 2020a, *One Hundred Ports*.

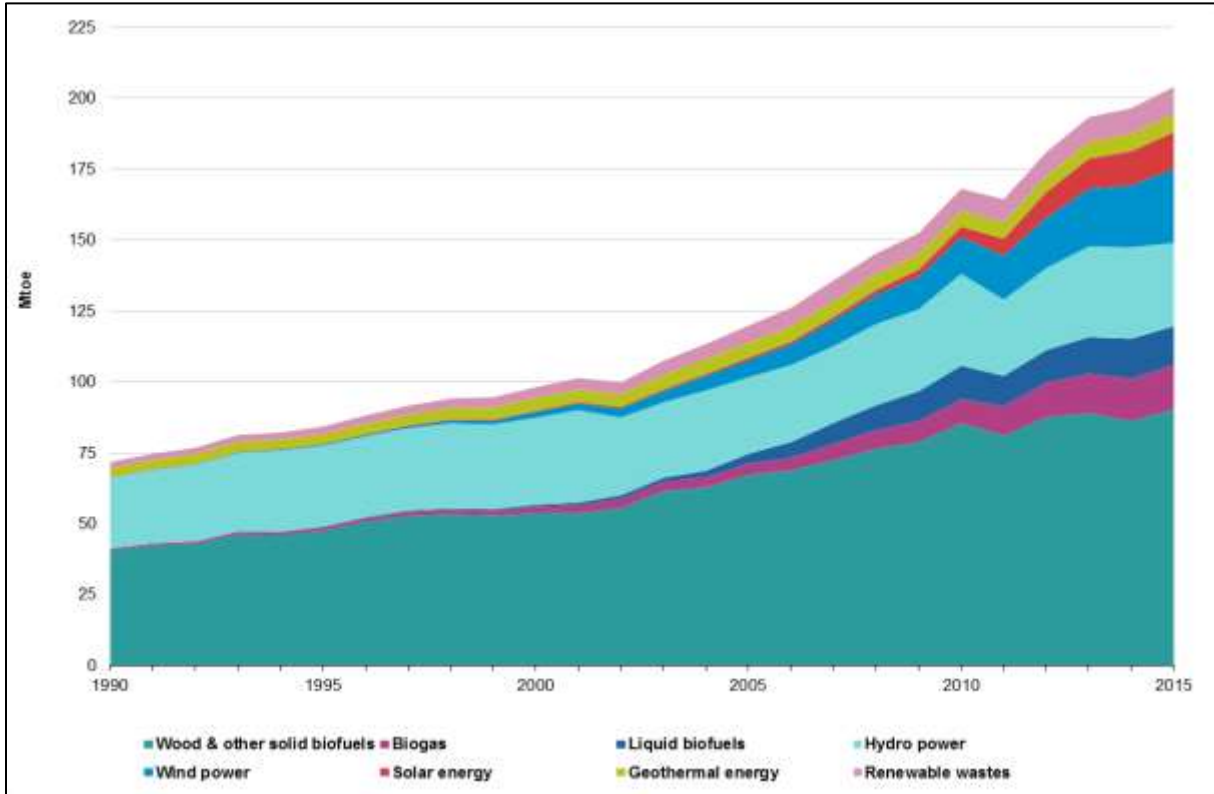**World energy consumption from 1965 to 2015**
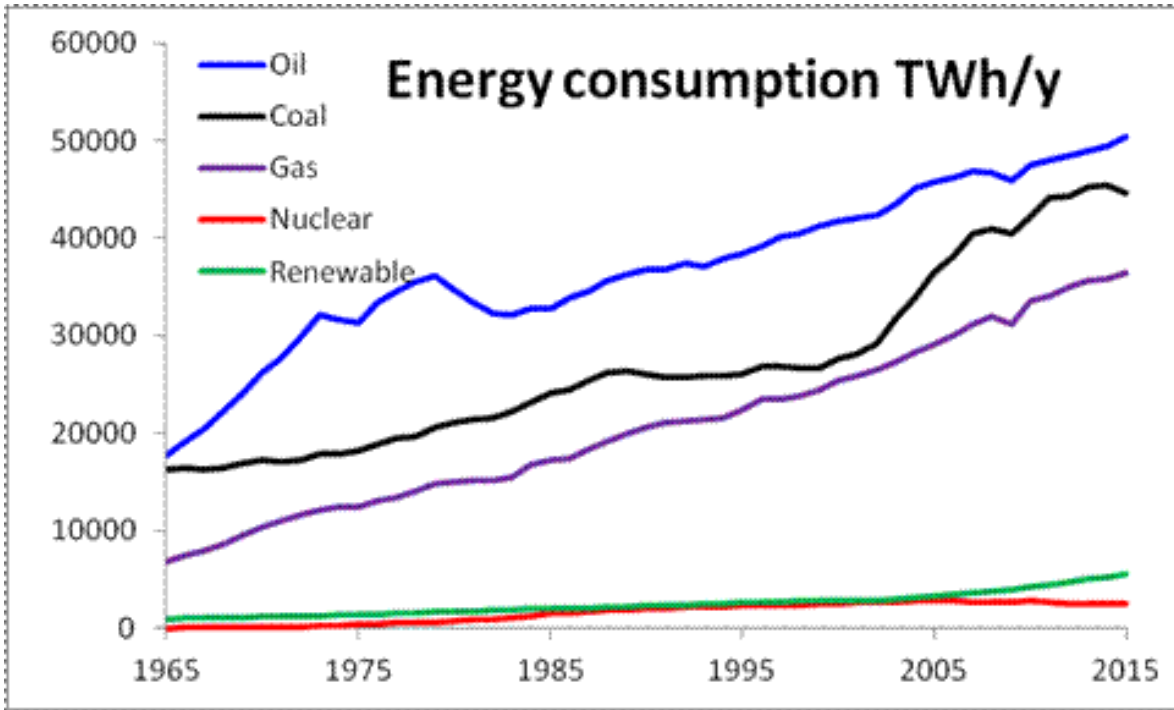
TWh: Terawatt-hour, a measure of electrical energy, 10^{12} watt-hours.

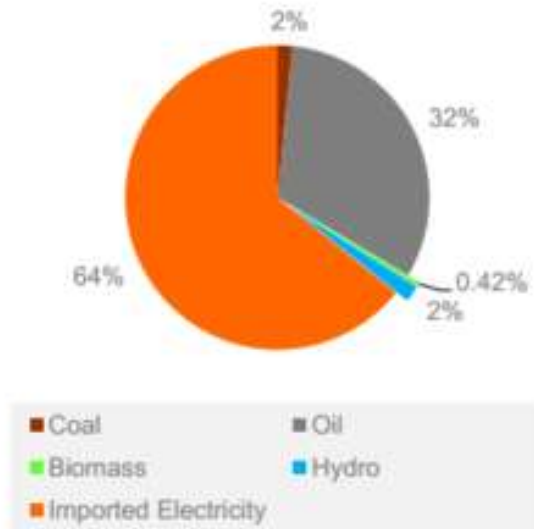**Primary production of energy from renewable sources from 1990 to 2015**

Cambodia's energy mix in 2011

Generation of electricity by source (2011)

	Source	Electricity Generation [GWh]
	Coal	46.50
	Oil	908.61
	Biomass	11.91
	Hydro	51.52
	Imported electricity	1,829.79
	Total	2,848.33

Source: EAC: Annual Report 2011

Share of each energy source in the supply of electricity in Cambodia (2011)

2%
32%
64%
0.42%
2%

- Coal
- Oil
- Biomass
- Hydro
- Imported Electricity

Resource B4 for Section B

The Vertical Forest in Italy

The Bullitt Centre in Seattle, USA with photovoltaic cells on its roof

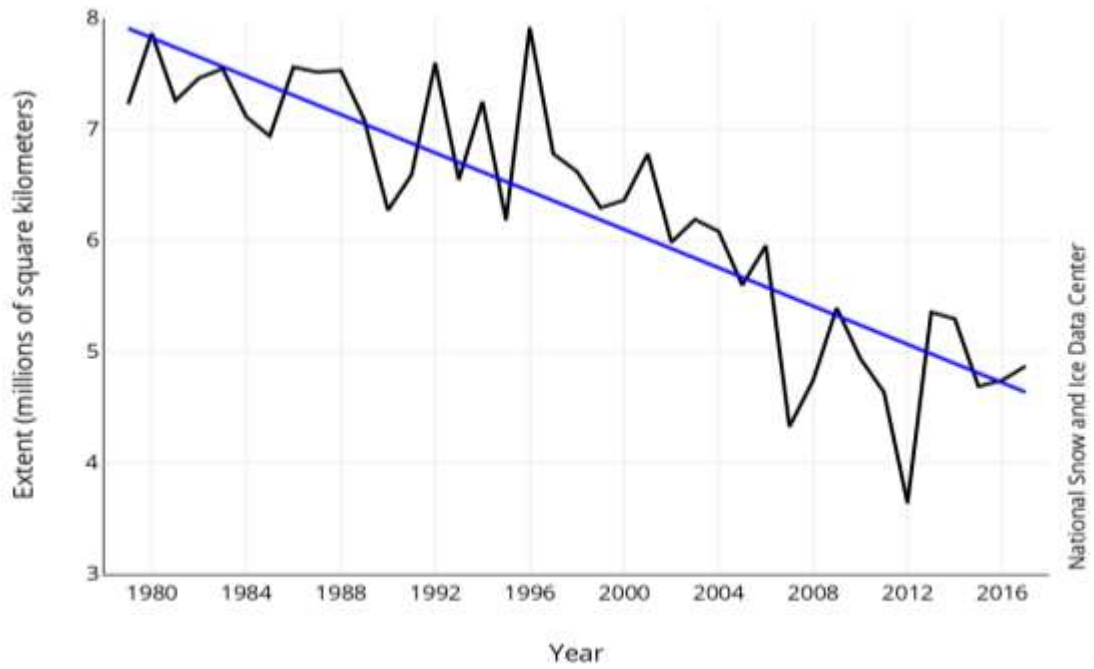**Resource C1 for Section C**

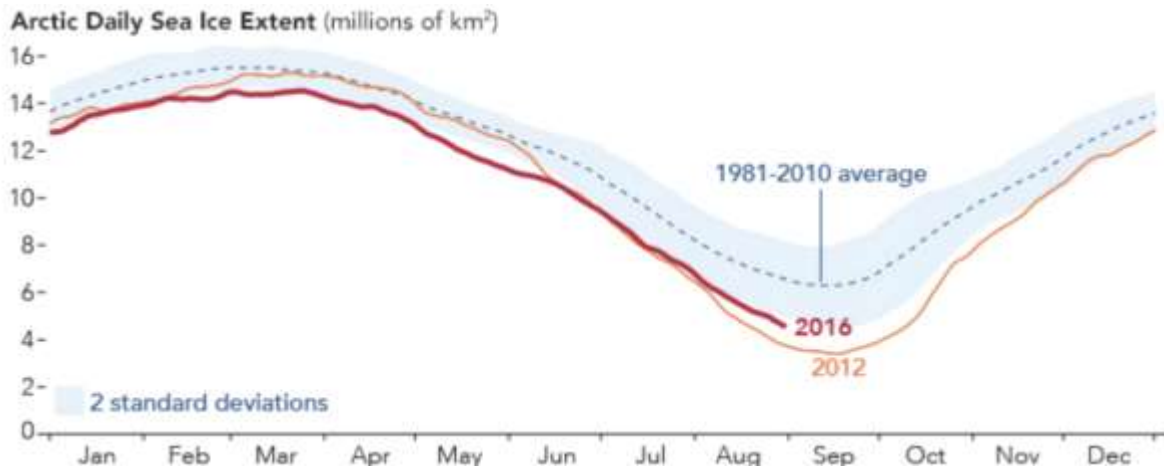**Arctic seasonal ice fluctuations between September 2019 and March 2020**

Sea Ice Concentration (%)
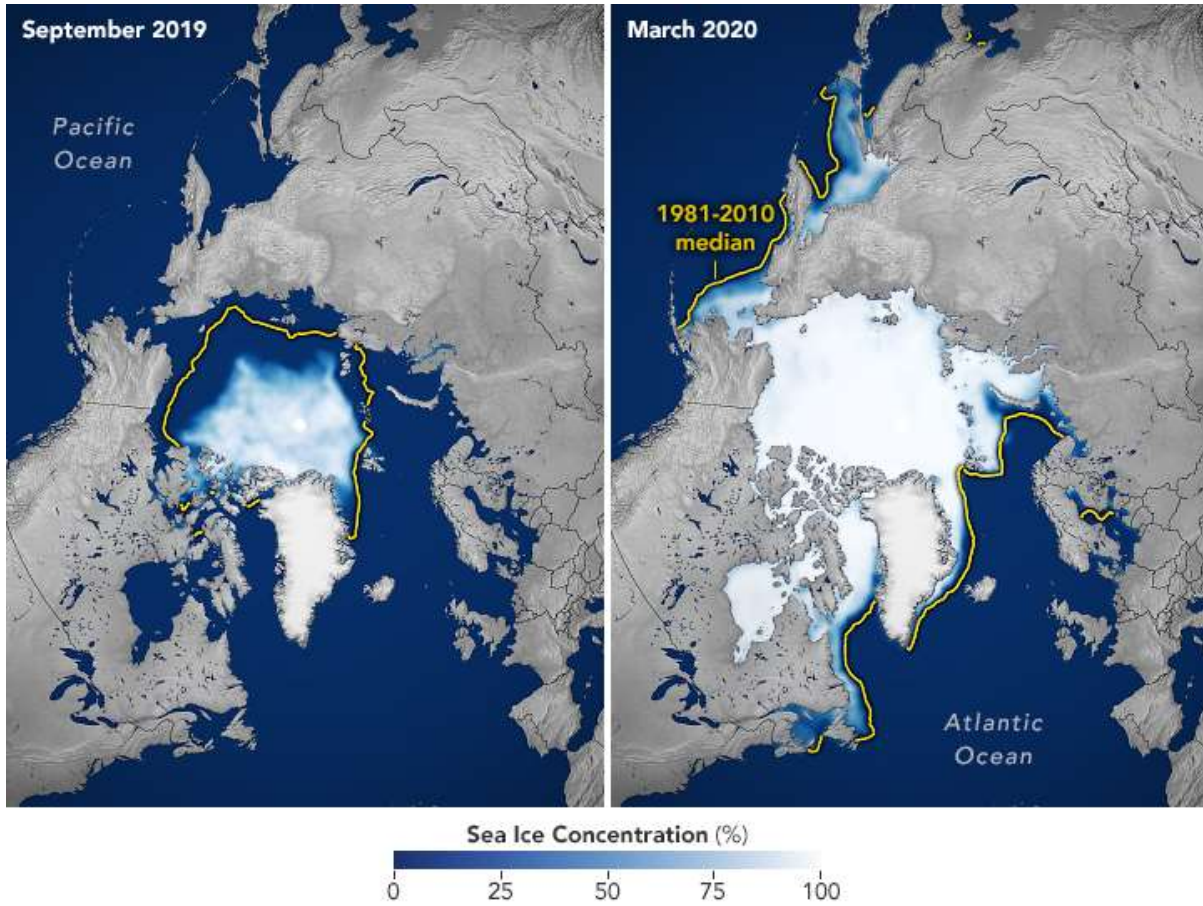
Resource C2 for Section C

Average monthly Arctic sea ice extent from 1979 to 2017

Arctic daily sea ice extent

Arctic Daily Sea Ice Extent (millions of km²)

Share of available beds on cruise ships in 2017 by major world regions
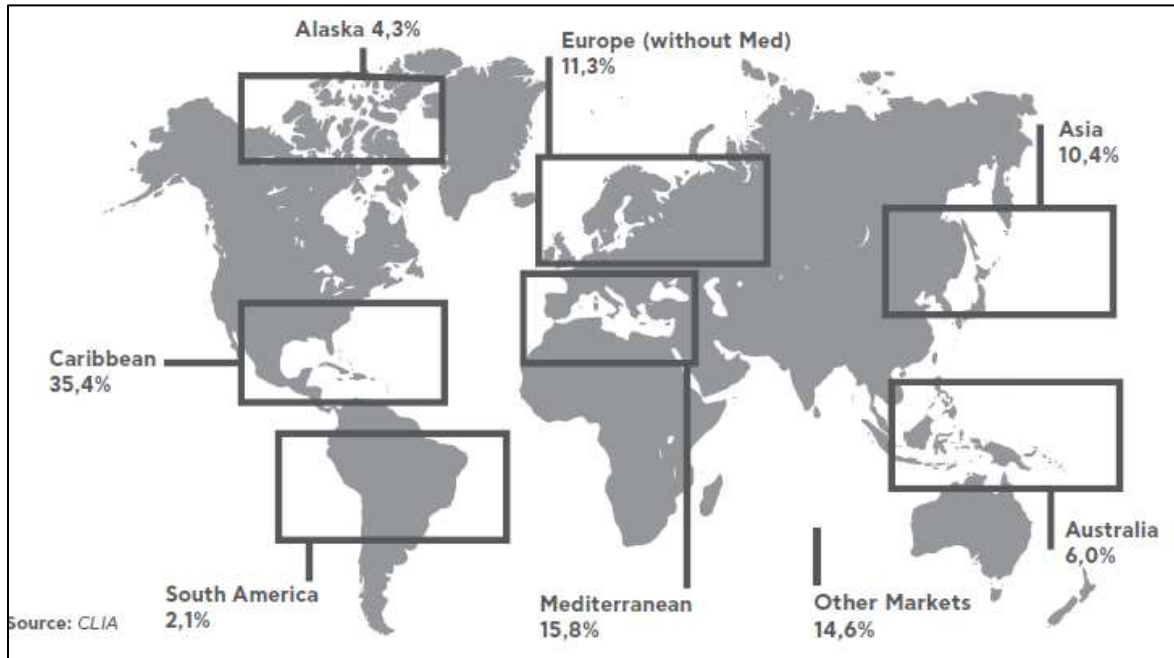
Resource D2 for Section D

Trends in cruise tourism in 2018

Resource D3 for Section D

Passengers in the busiest Mediterranean cruise ports from 2013 to 2017

Port city	Total 2017	Total 2013	Home in/out 2017	Transit 2017	Rate of change 2013-2017 (%)
Barcelona	2,712,247	2,599,232	1,440,383	1,271,864	4.3
Venice	2,204,336	2,538,259	849,993	1,354,343	-13.2
Civitavecchia	2,110,663	1,541,376	737,810	1,372,853	36.9
Balearic Islands	1,487,313	1,188,031	414,880	1,072,433	25.2
Genova	1,427,812	1,815,823	1,226,471	201,341	-21.4
Savona	1,055,559	1,302,581	332,611	722,948	-19.0
Marseilles	964,337	794,151	138,076	826,261	21.4
Piraeus	927,458	1,175,018	113,325	814,133	-21.1
Valletta	925,188	1,050,085	540,592	384,596	-11.9
Bari	854,443	939,038	518,850	335,593	-9.0

Idealised model of changes in channel variables along the Sutlej River, North India
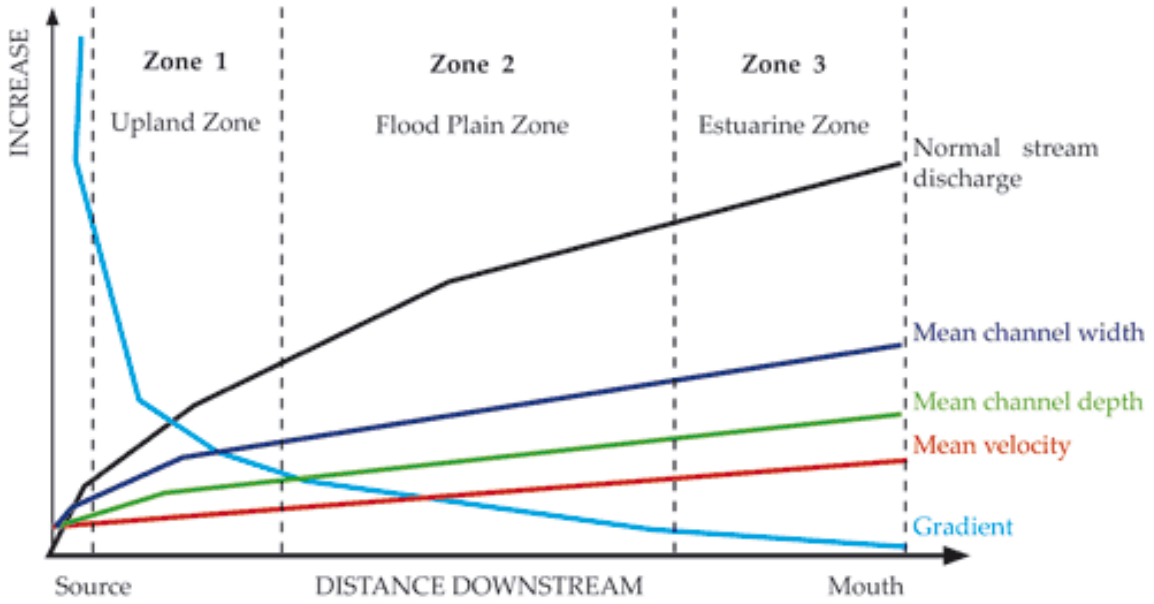
Load size in Sutlej River

Classification	Particle size (diameter)
Boulder	Above 256 mm
Cobble	64–256 mm
Pebble	4–64 mm
Gravel (or Granule)	2–4 mm
Very coarse sand	1–2 mm
Coarse sand	0.5–1 mm
Medium sand	0.25–0.5 mm
Fine sand	0.125–0.25 mm
Very fine sand	0.062–0.125 mm
Silt	0.004–0.062 mm
Clay	Less than 0.004 mm

Resource E3 for Section E

Fluvial landform and its fluvial feature, 'RF'

Fluvial feature 'RF'

Fluvial landform

END OF PAPER