

# Question Booklet

## 2013 australian geography competition

### I N S T R U C T I O N S

- 1 Fill in your **name**, **school code** (your teacher will give you this), school's **postcode**, your **gender** and **age**. You must fill in the ovals, not just write the letters and numbers, as the computer only reads the ovals. For example, a filled-in postcode (for some other school) would look like the sample on the right. Also fill in an oval in the school assigned column if instructed to do so by your teacher. Otherwise leave it blank.
- 2 If you are 13 years or under on 31 August 2013 complete Questions 1-30.
- 3 If you are 14 or 15 years old on 31 August 2013 complete Questions 1-40.
- 4 If you are 16 to 18 years old on 31 August 2013 complete Questions 16-50.
- 5 Answer all questions by filling in **only one** oval on the answer sheet corresponding to the most appropriate answer for each question. If you change your mind, you must **erase** the wrong answer so that only one oval is filled in for each question.
- 6 You have 35 minutes to answer the questions. The time to fill in the preliminary information is extra.
- 7 Do not mark the front or back of the answer sheet in any other way as this can lead to errors in the computerized marking, or to your not getting a result.

Postcode				
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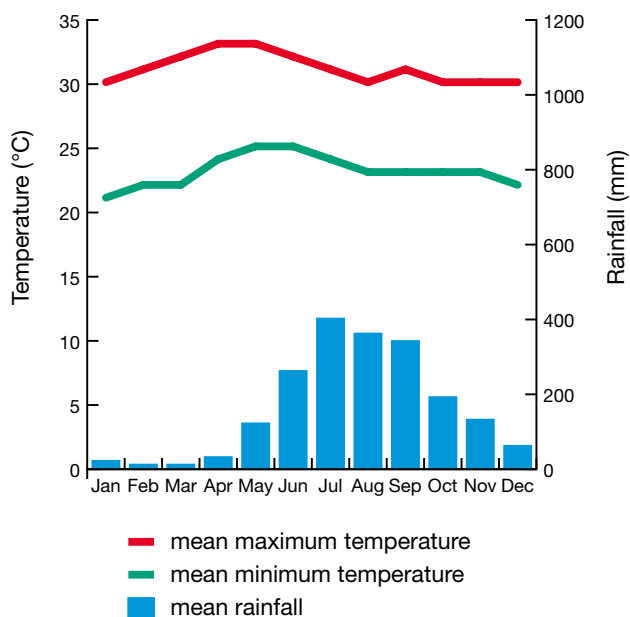
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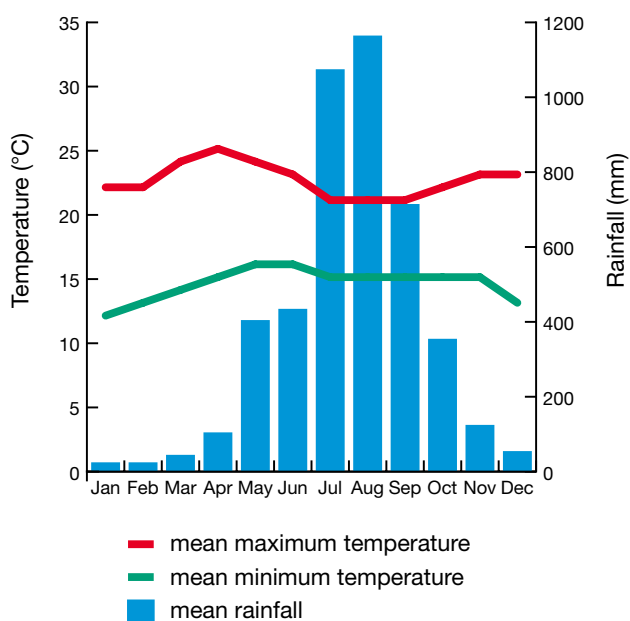
**Figure 1.** Map of Philippines © D. Dalet, d-maps.com

Start at Question 1 if you are **under 16 years** old on 31 August 2013. Start at Question 16 if you are older.

- 1 Which ocean is shown in Figure 1?
  - A Arctic
  - B Atlantic
  - C Indian
  - D Pacific
  - E Southern
  
- 2 From Figure 2 or 3, in which months does Manila have the hottest maximum temperatures?
  - A January and February
  - B March and April
  - C April and May
  - D May and June
  - E July and August



**Figure 2.** Climate graph for Manila © Weatherbase



**Figure 3.** Climate graph for Baguio © Weatherbase

**Table 1.** Climate types of the Philippines

Source: PAGASA

Type	Description
Type I	two pronounced seasons – wet and dry; maximum rain June to September
Type II	no dry season; maximum rain December to February
Type III	no pronounced maximum rain period; short dry season (1-3 months)
Type IV	rainfall is evenly distributed throughout the year





**Figure 4. Manila**

© M. Gonzalez



**Figure 5. Baguio**

© Haveblue

- 3 From Figure 2 or 3, what is Baguio's mean rainfall in August?  
A 15 mm  
B 34 mm  
C 398 mm  
D 515 mm  
E 1160 mm
- 4 Using Figure 2 or 3, Manila has which climate type, as classified in Table 1?  
A Type I  
B Type II  
C Type III  
D Type IV  
E between Types II and IV
- 5 Using Figures 1-5, what is the primary reason for the climate variations between Manila and Baguio?  
A distance from Equator  
B height above sea level  
C Northern vs Southern Hemisphere  
D prevailing winds  
E typhoons not affecting Baguio
- 6 Which term refers to a group of islands such as the Philippines?  
A archipelago  
B atoll  
C continent  
D isthmus  
E peninsula
- 7 On which island is Manila located?  
A Hainan  
B Honshu  
C Java  
D Luzon  
E Taiwan
- 8 Baguio City is at high risk from landslides. Which of these is NOT a risk factor for landslides?  
A deforestation from development  
B earthquakes  
C flat terrain  
D high rainfall  
E occurrence of typhoons
- 9 What is the approximate population of the Philippines?  
A 4 million  
B 13 million  
C 23 million  
D 104 million  
E 313 million
- 10 Which religion do most Filipinos follow?  
A Buddhism  
B Christianity  
C Hinduism  
D Islam  
E Judaism
- 11 Bushfire behaviour is affected by:  
A humidity  
B rainfall  
C temperature  
D wind  
E all of the above
- 12 The official name of Australia's largest salt lake now also includes its Arabana name, Kati Thanda. What is its European name?  
A Lake Disappointment  
B Lake Eildon  
C Lake Eyre  
D Lake George  
E Lake Pedder

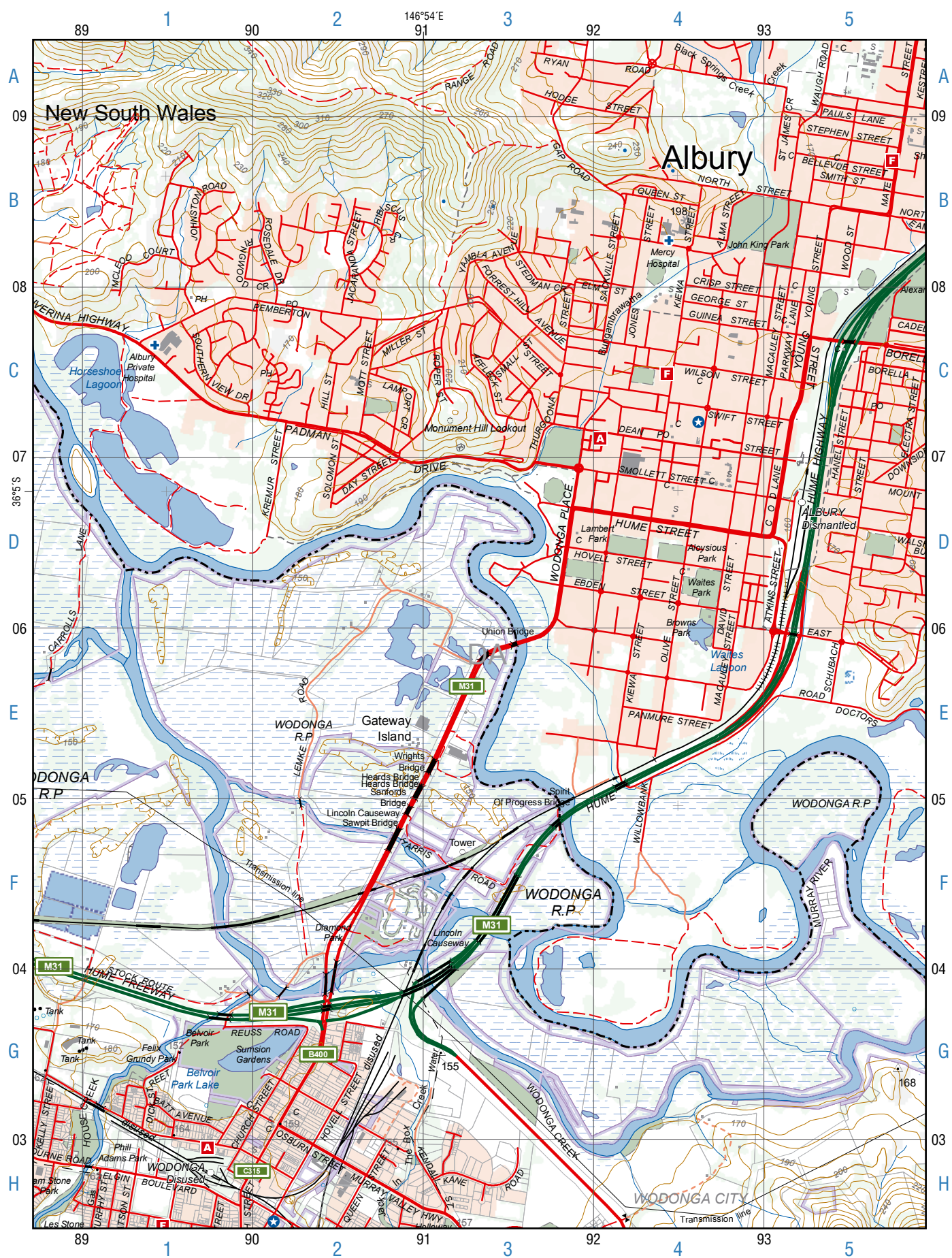
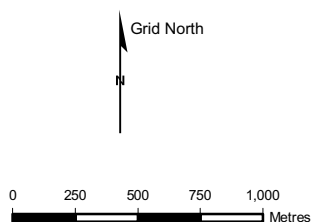


Figure 6. Topographic map

## Legend

TRANSPORT	Built up area.....	
	Freeway, route marker, highway, bridge.....	
	Secondary road: sealed, unsealed.....	
	Local road: sealed, unsealed.....	
	Vehicular track: 2WD, 4WD.....	
	Private access, proposed road.....	
	Walking track and/or bicycle track.....	
	Gate or cattlegrid, levee bank.....	
	Embankment, cutting.....	
	Railway, tramway.....	
FEATURES	Railway station, railway siding.....	
	Railway: disused, dismantled.....	
	Railway bridge, railway tunnel.....	
	Building, post office, church, public hall.....	
	School, police station, fire station, ambulance.....	
	SES, Hospital, Neighbourhood Safer Place.....	
	Pipeline, disappearing underground.....	
	Power transmission line.....	
	Trigonometric station, spot elevation.....	
	Landmark object: tank or well, tanks to scale.....	
VEGETATION	Mine, helipad.....	
	Landmark area, recreation area.....	
	Tree cover: scattered or medium, and dense..	
	Plantation.....	
	Orchard or vineyard.....	
	Contours, rocky outcrop, hill shading.....	
	Depression contours.....	
	Cliff.....	
	Sand.....	
	Sand dunes.....	
RELIEF	River, creek, crossing, adit.....	
	Aqueduct, channel, drain.....	
	Lake: perennial, intermittent.....	
	Waterholes, swimming pool.....	
	Water well or bore, spring.....	
	Land subject to inundation.....	
	Swamp or marsh.....	
	Crown land, cadastre, restricted area.....	
	Parks under National Parks Act .....	
	Local Government Area boundary.....	
HYDROGRAPHY	State boundary.....	
ADMINISTRATION		



© Dept of Sustainability and Environment 2011

13 Which physical feature dominates the area mapped in Figure 6?

- A built-up area
- B delta
- C floodplain
- D mountain range
- E plateau

14 In which state or territory is the area shown in the southern section of the map (Fig. 6)?

- A Australian Capital Territory
- B New South Wales
- C Northern Territory
- D South Australia
- E Victoria

15 Range Road (A3, Fig. 6) is a:

- A 2WD vehicular track
- B 4WD vehicular track
- C private access road
- D sealed road
- E walking track

Start at Question 16 if you are 16 to 18 years old on 31 August 2013. If you are younger, continue answering questions.

16 Range Road (A3, Fig. 6) follows:

- A an escarpment
- B a peak
- C a ridge
- D a spur
- E a valley

17 One centimetre on the map (Fig. 6) represents how much on the ground?

- A 100 m
- B 300 m
- C 1000 m
- D 3000 m
- E 10 km

18 How long is Olive Street (E4 to C4, Fig. 6)?

- A 275 m
- B 1.75 km
- C 2.5 km
- D 2.75 km
- E 17.5 km



Fold this page back on itself to see the map at the same time.

**19 Range Road terminates at a T-junction (A2, Fig. 6) at approximately what height above sea level?**

- A 295 m
- B 305 m
- C 315 m
- D 325 m
- E 335 m

**20 What is located at grid reference 924083 (Fig. 6)?**

- A fire station
- B hospital
- C North St
- D Small St
- E Yambla Ave

**21 The curved stretch of river in square E5 (Fig. 6) will in time probably become:**

- A a meander
- B a meltwater channel
- C an oxbow lake
- D a river terrace
- E a watershed



**Figure 7.**

© J. Grant

**22 Which type of rock is shown in Figure 7?**

- A basalt
- B conglomerate
- C limestone
- D marble
- E pumice

**23 Which type of vegetation is shown in the background of Figure 7?**

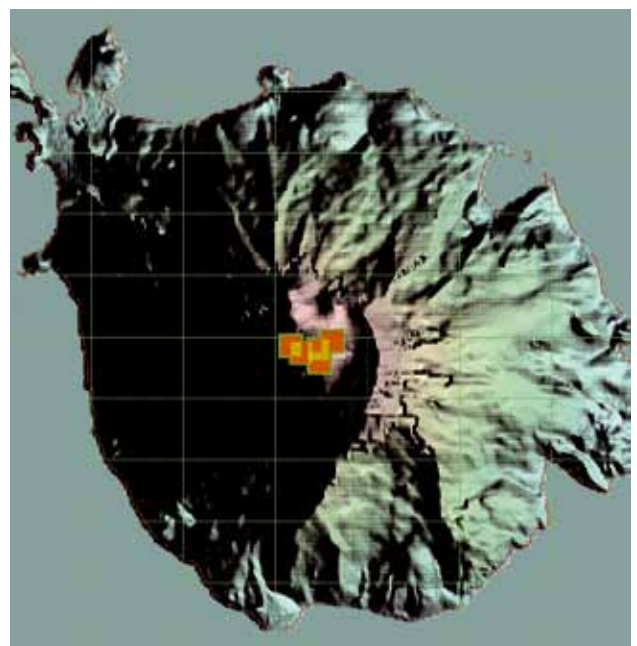
- A forest
- B grassland
- C mangroves
- D open woodland
- E savannah

**24 Where was the photo in Figure 7 taken?**

- A Blue Mountains, NSW
- B Flinders Ranges, SA
- C Great Barrier Reef, Qld
- D Little Desert, Vic
- E Pilbara, WA

**25 Figure 8 shows volcanic activity on which Australian island?**

- A Flinders Island, Bass Strait
- B Groote Eylandt, Gulf of Carpentaria
- C Heard Island, Sub-Antarctic Region
- D Phillip Island, Western Port
- E Thursday Island, Torres Strait



**Figure 8.** MODIS infrared satellite image, 30 Dec 2012

© University of Hawai'i

**26 Which term best describes the spread of a city's suburbs into surrounding agricultural areas?**

- A gentrification
- B rural crisis
- C rural decline
- D urban blight
- E urban sprawl

**27 Due to soil and water requirements, where is cotton commonly grown in Australia?**

- A along sandy coastlines
- B at high altitudes
- C in deserts
- D in rainforest clearings
- E near rivers

**28 Which of these cities is on a similar line of latitude to Hobart?**

- A Boston, USA
- B Christchurch, New Zealand
- C Port Moresby, Papua New Guinea
- D Rio de Janeiro, Brazil
- E Tokyo, Japan

**29 From Figure 9, which state's population had the highest growth rate from 2001 to 2006?**

- A New South Wales
- B Queensland
- C South Australia
- D Tasmania
- E Western Australia

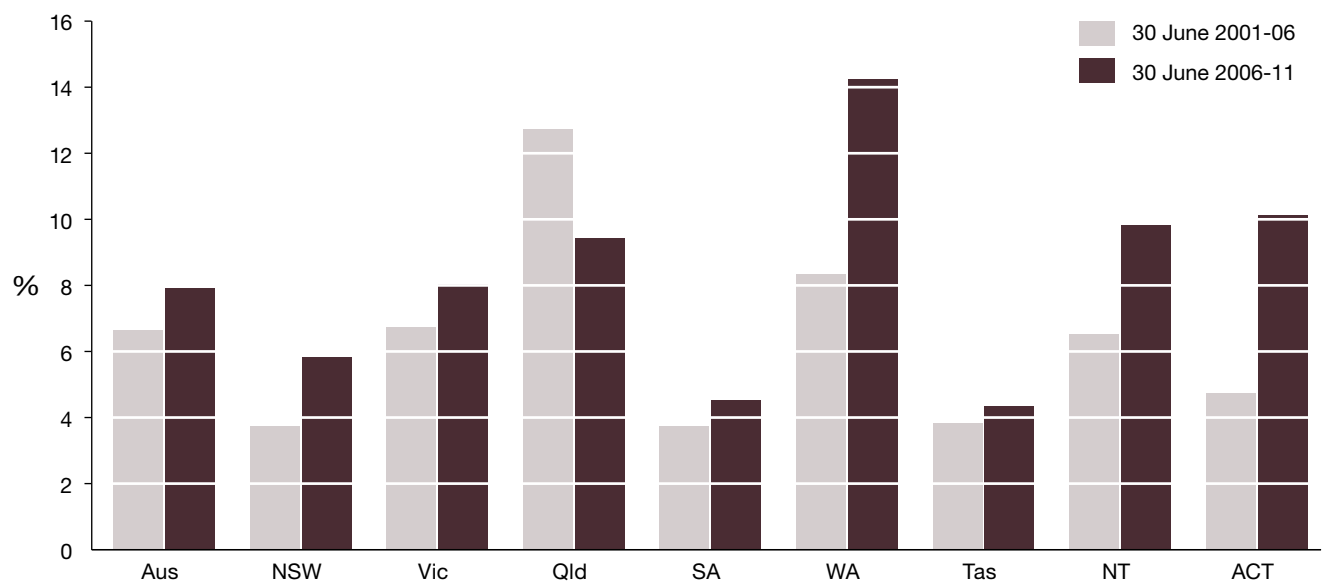
**30 From Figure 9, which statement is true of the intercensal period 2006-2011?**

- A The ACT's population grew at a higher rate than the national average.
- B The population of all states grew at a higher rate than in the previous 5 years.
- C The population of Western Australia passed that of Queensland.
- D Queensland's population decreased.
- E all of the above

If you are **under 14 years** old on 31 August 2013 stop at Question 30. if you are older, continue answering questions.

**31 Which industry sector was a key driver in Western Australia's high population growth from 2006 to 2011?**

- A agriculture
- B financial services
- C manufacturing
- D mining
- E retail



**Figure 9.** Total population growth, intercensal periods 2001 to 2011

Source: ABS

**32 The world's longest high-speed rail route, opened in December 2012, links China's capital with its southern provinces. It extends from:**

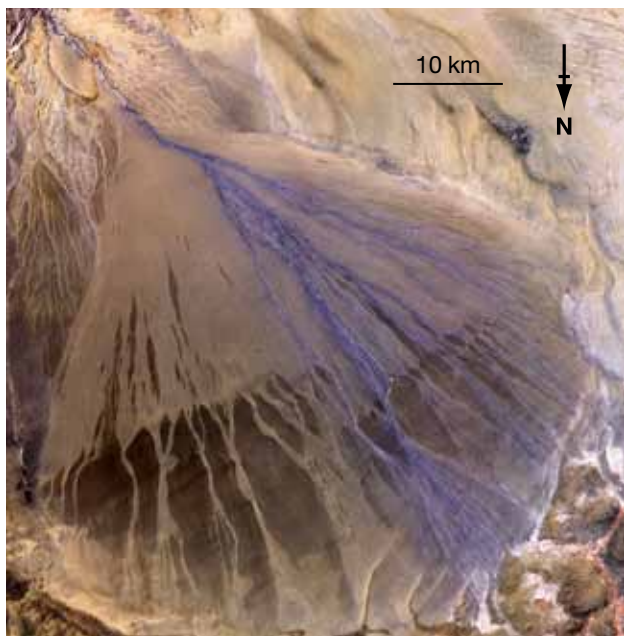
- A Beijing to Guangzhou
- B Guangzhou to Hong Kong
- C Hong Kong to Shanghai
- D Shanghai to Xian
- E Xian to Beijing

**33 Refugees fleeing the fighting in Syria have escaped to adjacent countries. Which of these countries does NOT border Syria?**

- A Iran
- B Iraq
- C Jordan
- D Lebanon
- E Turkey

**34 Which type of landform is shown in Figure 10?**

- A alluvial fan
- B coral island
- C delta
- D impact crater
- E volcano



**Figure 10.** Satellite image, Taklimakan Shamo, China (blue indicates active stream flow)

Source: NASA Earth Observatory

**35 The feature in Figure 10 formed primarily due to:**

- A an abrupt change in slope
- B changes in rainfall patterns
- C climate change
- D a significant landslide
- E tectonic activity

**36 Features like the one in Figure 10 are commonly found in areas with which type of climate?**

- A arid
- B maritime
- C polar
- D temperate
- E tropical

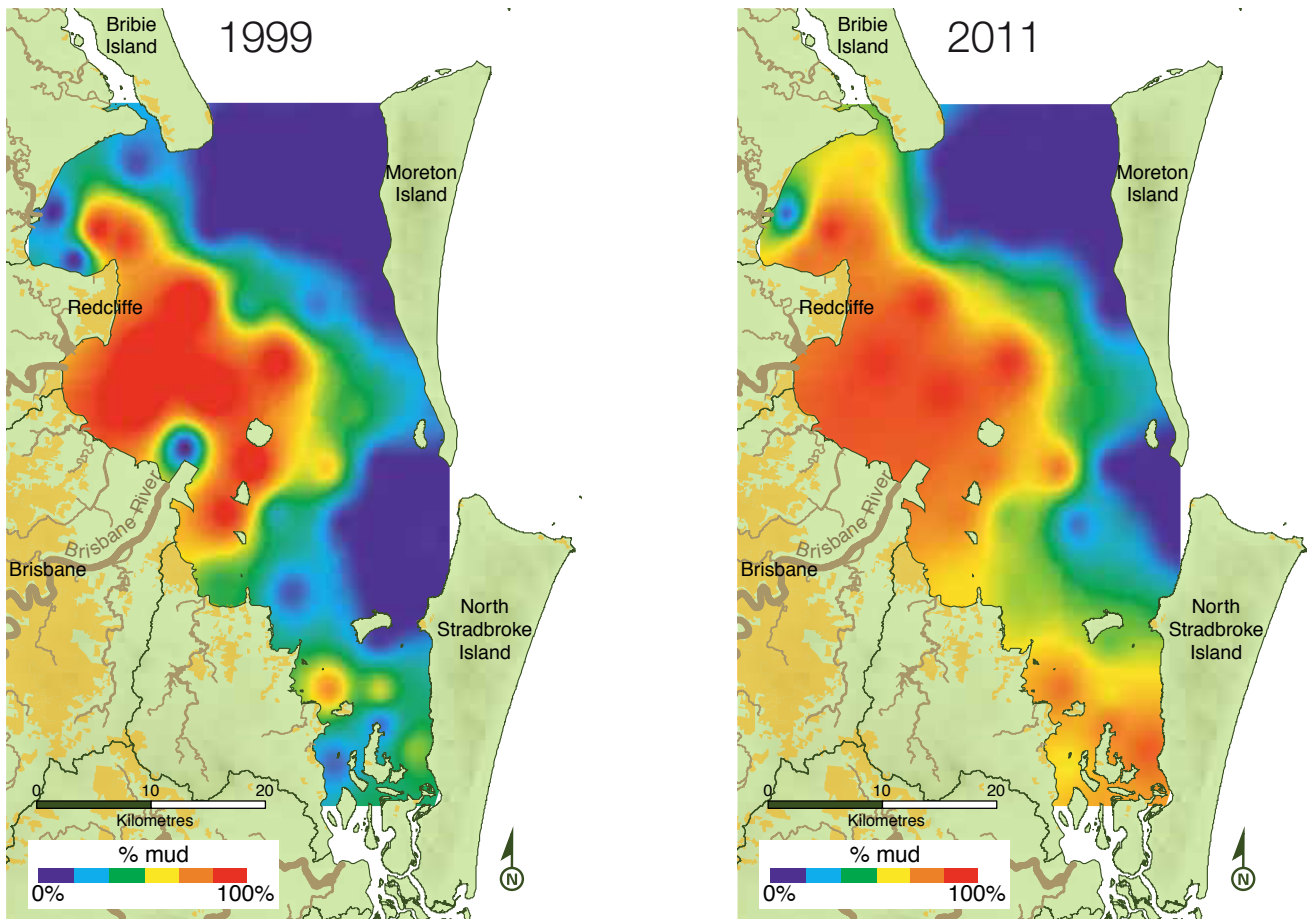
**37 The Mekong River Commission manages natural resources and sustainable development along the Mekong. Which of these countries is NOT a Commission member?**

- A Cambodia
- B Laos
- C Malaysia
- D Thailand
- E Vietnam

**38 The Human Development Index measures three basic dimensions of human development – health, education and income – by combining statistics on:**

- A average personal income; hospitals per 10,000 people; wage gender disparity
- B doctors per 1,000 people; gross domestic product per capita; infant mortality
- C gross national income per capita; life expectancy; years of schooling
- D highest educational attainment; average household income; literacy levels
- E preventable disease rates; gross domestic product; age starting school





**Figure 11.** Mud levels on the floor of Moreton Bay

© Healthy Waterways

**39 From Figure 11, which statement accurately describes an effect of the 2011 Brisbane flood?**

- A As the water slowed, vast amounts of chemical precipitate settled in the northern Bay.
- B Fast flowing flood water carried large amounts of coral fragments into the Bay.
- C Many square kilometres of the once muddy Bay floor were covered with sand.
- D Millions of tonnes of soil were washed from the river catchments into the southern Bay.
- E Upon reaching the Bay, the speed of the water flow increased.

**40 Sediment deposited in Moreton Bay during the 2011 flood is expected to lead to:**

- A improved growth of coral due to greater nutrient levels
- B improved habitat structure as spaces between gravel are filled by mud
- C no impact, as ocean currents would quickly clear away the mud
- D reduced disease levels in fish due to the clarity of the water
- E reduced number of turtles and dugongs as light levels for plants are reduced

If you are **under 16 years** old on 31 August 2013 stop at Question 40. If you are older, continue to the end of the questions.



**Figure 12.** Transport of water in the Arctic

Source: Arctic Monitoring and Assessment Programme

To answer Questions 41 to 50 use the information in Figures 12 to 16, Table 2, and your own knowledge.

**41 The major inflows into the Arctic Ocean come from:**

- A Atlantic Ocean
- B Beaufort Gyre
- C Pacific Ocean
- D precipitation
- E Transpolar Drift

**42 Which current flows by Point F in Figure 12?**

- A Circumpolar Current
- B Equatorial Countercurrent
- C Gulf Stream
- D Labrador Current
- E North Atlantic Drift

**43 The outflow of the Lena River is marked by which letter in Figure 12?**

- A A
- B B
- C C
- D D
- E E

**Table 2.** Geomorphological features of the terraces and lakes of the Lena Delta

Source: A. Morgenstern et al

Geomorphological variable		Terrace 1	Terrace 2	Terrace 3
Terraces	Area in km <sup>2</sup>	15,840.1	6,098.6	1,711.6
	% of delta area	54.6	21.0	5.9
Lakes ≥20 ha	Number	1,796	792	81
	Total area in km <sup>2</sup>	997.0	808.1	56.7
	% of terraced area	6.3	13.3	3.3
	Mean area in ha	55.5	102.0	70.0
	Mean elongation (length ÷ breadth)	2.26	1.83	1.49
	Mean orientation in deg. (N = 0 deg.)	355.1	11.4	359.2
	Mean deviation from mean orientation in deg.	47.5	12.9	29.1

The Lena River Delta in northern Siberia is the largest Arctic river delta, with an area of approx 30,000 km<sup>2</sup>. Three main terraces (see Figure 14) can be distinguished by their geomorphology:

**Terrace 1 (T1)** is the modern active delta, comprising the present-day floodplains along with the first terrace. It is composed of alluvial Holocene sands with silts and peat.

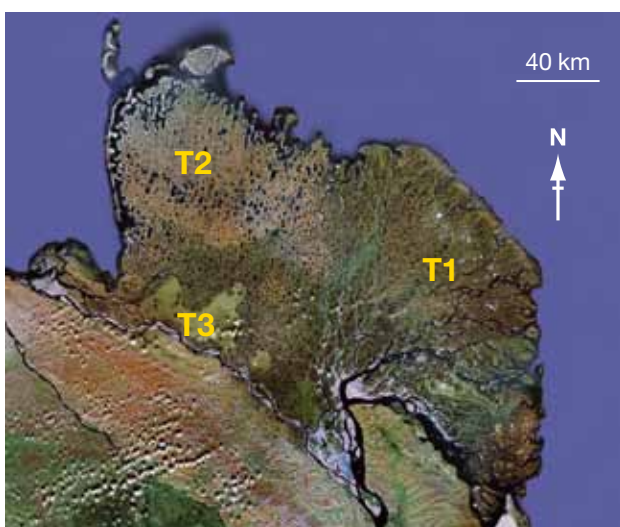
**Terrace 2 (T2)** is the second terrace. It consists of Late Pleistocene to Early Holocene sands, but is hardly influenced by modern fluvial processes.

**Terrace 3 (T3)** is the third main terrace, a relic of a Late Pleistocene accumulation plain with fine-grained and ice-rich deposits.

The delta contains many lakes of varying characteristics, including size, shape and directional orientation. A survey by A. Morgenstern et al examined the delta's 2,669 non-marine lakes over 20 ha in area, and found significant differences between lakes on different terraces. Some of the results are included in Table 2.

**Figure 13.** Lena Delta

Source: adapted from A. Morgenstern et al

**Figure 14.** Satellite image of the Lena Delta, with terraces labelled

© TerraMetrics

**44 In the area of the Beaufort Gyre, in which direction does water circulate at different depths?**

- A 5 m anticlockwise; 100 m anticlockwise; 500 m anticlockwise
- B 5 m anticlockwise; 100 m clockwise; 500 m anticlockwise
- C 5 m anticlockwise; 100 m clockwise; 500 m clockwise
- D 5 m clockwise; 100 m anticlockwise; 500 m anticlockwise
- E 5 m clockwise; 100 m clockwise; 500 m clockwise

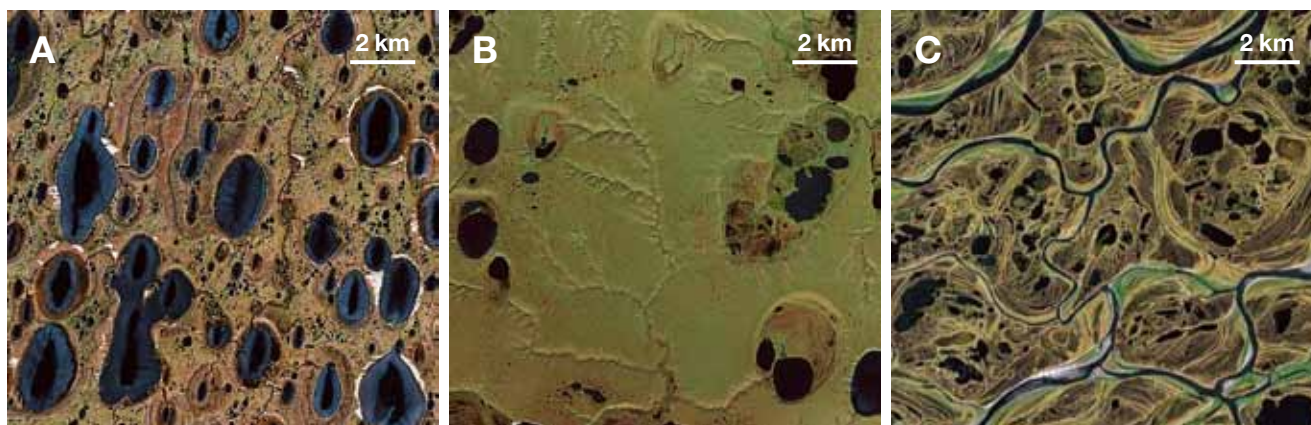
**45 Small lakes formed through the present-day fluvial processes of channel meandering and braiding are found where on the Lena Delta?**

- A on all terraces
- B on no terraces
- C Terrace 1
- D Terrace 2
- E Terrace 3

**46 Compared to the other terraces in the Lena Delta, Terrace 2 can best be described as having lakes that are:**

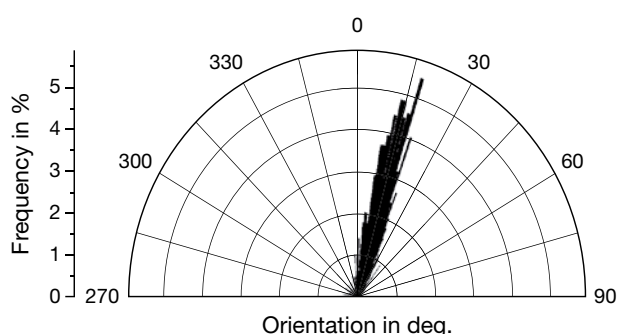
- A large, elongated and present in high density
- B large, nearly circular and present in low density
- C small, circular and present in high density
- D small, circular and present in low density
- E small, elongated and present in high density





**Figure 15.** Satellite images of individual terraces in the Lena Delta

© TerraMetrics



**Figure 16.** Frequency distribution of lake orientation ( $N = 0$  deg.)  
Source: A. Morgenstern et al

- 47 The erosion of Arctic river deltas is promoted by all of the following EXCEPT for:**
- A decreasing coverage of sea ice connected to the land
  - B freezing of deltaic permafrost
  - C greater wind fetch produced by shrinking sea ice coverage
  - D retreating near-shore sea ice
  - E thawing of deltaic ground ice

- 48 Most of the land area of the Lena Delta is tundra. What grows there in summer?**
- A deciduous trees and flowering plants
  - B grasses and small bushes
  - C mosses, lichens and creeping plants
  - D nothing as the top soil layer is permanently frozen
  - E stunted pine trees and understorey

- 49 Where on the Lena Delta are the lakes whose orientation distribution is shown in Figure 16? (See also the information in Table 2.)**
- A on all terraces
  - B on the shoreline
  - C Terrace 1
  - D Terrace 2
  - E Terrace 3

- 50 Which option correctly matches the Lena Delta terraces with their images in Figure 15?**
- A T1 = A; T2 = B; T3 = C
  - B T1 = B; T2 = A; T3 = C
  - C T1 = B; T2 = C; T3 = A
  - D T1 = C; T2 = A; T3 = B
  - E T1 = C; T2 = B; T3 = A

Thank you for taking part in the 2013  
Australian Geography Competition.