

REVISION: CLIMATOLOGY

20 MARCH 2014

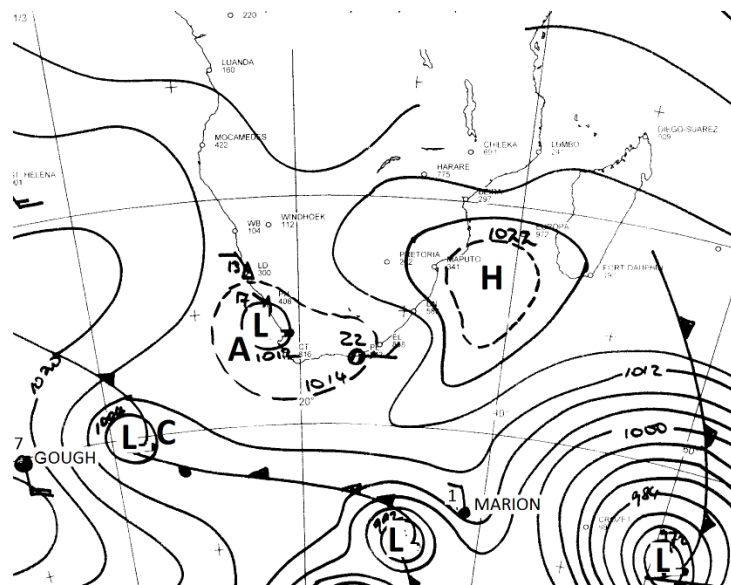
 **Lesson Description**

In this lesson we revise:

- Mid-Latitude Cyclones
- Tropical Cyclones
- Valley & Urban Climates

 **Improve your Skills**

Mid-latitude Cyclones



[Source: SA Weather Service]

Question 1

What season is represented on the synoptic map? Give TWO reasons to support your answer.

Question 2

Estimate the air pressure at the centre of cell C.

Question 3

Describe the air movement associated with cell C.

Question 4

From which pressure belt does cell C originate?

Question 5

Explain why mid-latitude cyclones move from west to east.

Question 6

Mid-latitude cyclones tend to occur in “groups” called.

Question 7

Discuss how weather conditions will change over the Eastern and Western Cape regions over the next two days. Refer only to precipitation, humidity and precipitation.

Question 8

In what stage is cell C? Explain your answer.

Question 9

Explain how the wind direction at Marion Island will change over the next two days.

Question 10

Describe TWO negative effects that mid-latitude cyclones could have on the economy of the Western Cape.

Tropical Cyclones

Tropical cyclone Fanele leaves trail of destruction in Madagascar

For several days in the middle of January 2009, a very weak low-level circulation persisted in the Mozambique Channel. Environmental conditions favoured the rapid development of the cyclone. Fanele quickly strengthened, developing an eye feature late on 19 January.

Fanele slammed into Madagascar in the early hours of Wednesday morning at wind speeds of up to 260 kilometres per hour. As it passed over the southern highlands it weakened quickly over the land. Within four hours of moving ashore its wind speed decreased and the eye feature dissipated.



Formed	18 January 2009
Dissipated	23 January 2009
Highest winds	185 km/h (115 mph) (10 minutes sustained)
	185 km/h

(Source: DoE Prelim 2008)

Question 1

In which hemisphere did this tropical cyclone occur? Give ONE reason from the photograph to support your answer.

Question 2

How many tropical cyclones occurred before Fanele in this season? Explain your answer.

Question 3

In what stage of development is cyclone Fanele? Give TWO reasons to support your answer.

Question 4

Give TWO reasons to explain why cyclones are likely to affect Madagascar fairly often?

Question 5

Explain why tropical cyclones tend to form in the latter part of summer in both the Northern and Southern Hemispheres?

Question 6

Give TWO reasons to explain why the cyclone weakened quickly over land.

Question 7

Explain why an eye forms in a tropical cyclone?

Question 8

Describe TWO weather conditions that are associated with the eye of a cyclone.

Question 9

In a paragraph, discuss the environmental and human effects that cyclone Fanele would have had on Madagascar.

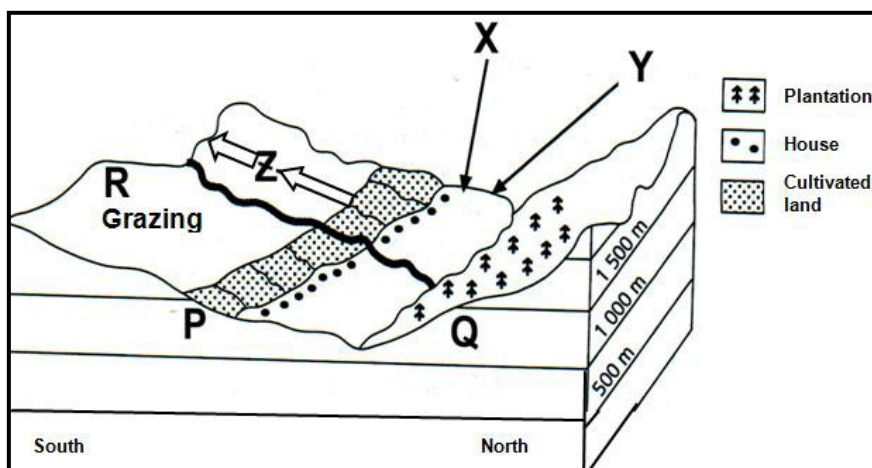
Question 10

Describe THREE strategies that can be implemented to reduce the effects caused by tropical cyclones.

Valley & Urban Climates

Question 1

Study the diagram below and answer the questions that follow

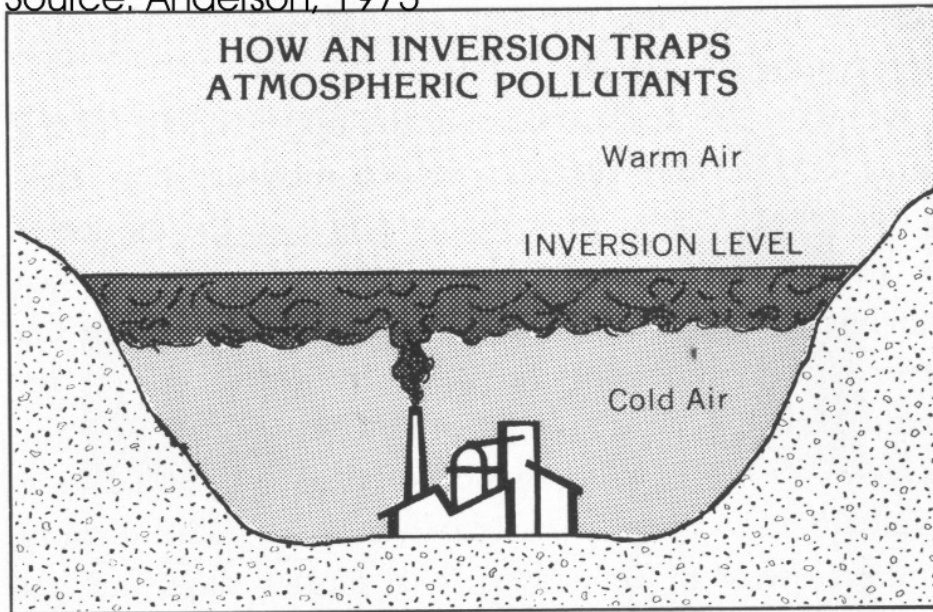


- 1.1 Explain the concept slope aspect
- 1.2.1 In which hemisphere is this valley situated?
- 1.2.2 Provide reasons for your answer for your answer to QUESTION 1.2.1.
- 1.3. The houses are situated on the slopes of the valley. Give possible reasons for this location.
- 1.4.1 State the type of wind that people, living on the slopes, will experience during the day
- 1.4.2 Explain the formation of this wind, answer to QUESTION 1.4.1.

Question 2

Study the diagram and answer the questions that follow

Source: Anderson, 1975



- 2.1 Explain the term *temperature inversion*
- 2.2 Does a temperature inversion in a valley generally occur during the day or night?