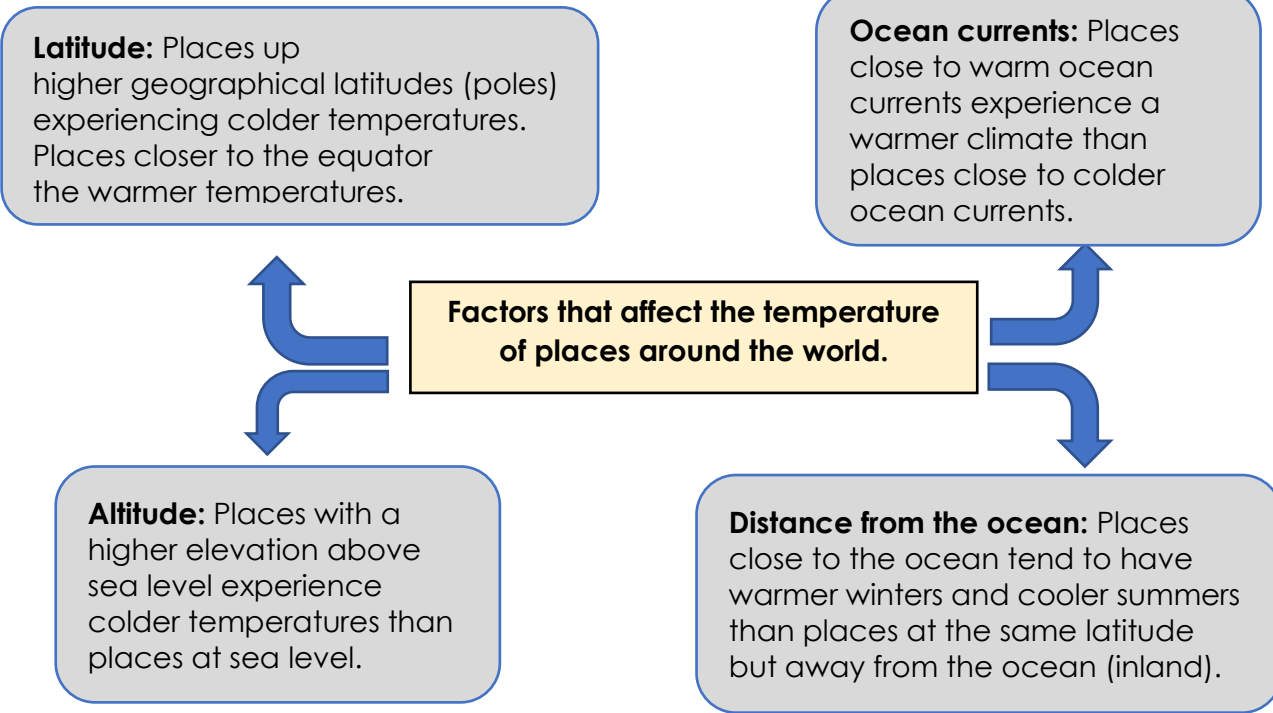




Geography:		Grade 10
TERM 1		Week 2 Lesson 2 (b)
TOPIC	Heating of the Atmosphere: Factors that affect the temperature of different places around the world – latitude, altitude, ocean currents and distance from the ocean.	
AIMS OF LESSON	What factors influence the temperature in different places around the world?	
RESOURCES	Paper based resources	Digital resources
	Refer to your textbook: Read the topic: Factors that affect the temperature of different places around the world.	https://youtu.be/Y-2-QN5iKS4 https://youtu.be/dkify2hW2qY https://youtu.be/9i8NOe0foh0
INTRODUCTION	<ul style="list-style-type: none"> • Why does temperature differ in different parts of the world? • What factors influence the temperature of different places? 	
CONCEPTS AND SKILLS	<ul style="list-style-type: none"> • Concepts: latitude; ocean currents; maritime climate; continental climate; normal lapse rate. • Identify the factors that affect the temperature? • Explain in a paragraph how the different factors affect the temperature of different places in the world. 	CAN YOU? <ul style="list-style-type: none"> • Name the factors that affect the temperature of places around the world? • Explain how the different factors influence temperature?
ACTIVITIES/ ASSESSMENT	Complete the attached activities as well as those in your textbook.	
CONSOLIDATION	<ul style="list-style-type: none"> • Complete the activities. • Study the diagrams and maps to understand the factors that affect the temperature of different places around the world. • This information is important to understand the factors that affect the temperature of different places around the world. 	
VALUES	<ul style="list-style-type: none"> • It is important to understand the preservation of the Atmosphere of the Earth is crucial to maintain sustainable living conditions on earth. • The application of geographical knowledge and skills in learners' personal lives. 	
Factors that affect the temperature of different places around the world.		
Why do temperature differ in different parts of the world?		
<ul style="list-style-type: none"> • Temperatures in different places in the world differ because the earth and the lower layer of the atmosphere are not heated in the same way. • Different parts of the world receive and retain different amounts of heat. 		

What factors influence the temperature of different places?

What is it?



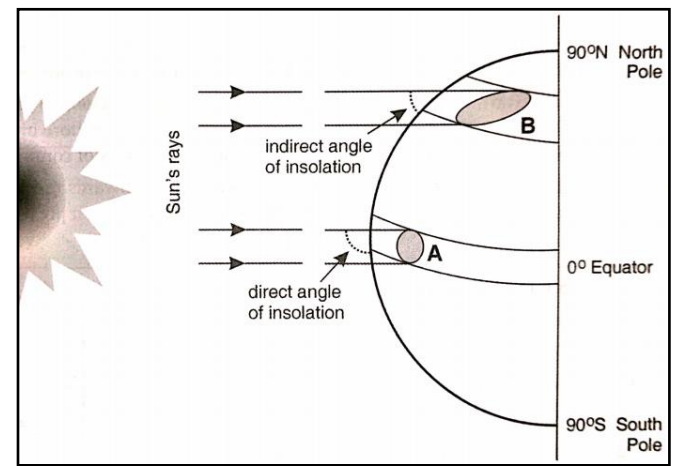
Why is it there?

1. Latitude

- At **A (Fig.1)** the Sun's rays are directly perpendicular to the place and heating is concentrated in a very small area. The sun's rays pass through a small part of the atmosphere; with the result that a minimal amount of heat is lost. As a result, it is hot.
- At **B (Fig.1)** the sun's rays shine at an acute angle and heat is spread over a larger area. The rays are less concentrated and pass through a larger amount of the atmosphere; consequently, more heat is lost. As a result, it is cooler.

What is it like?

Figure 1

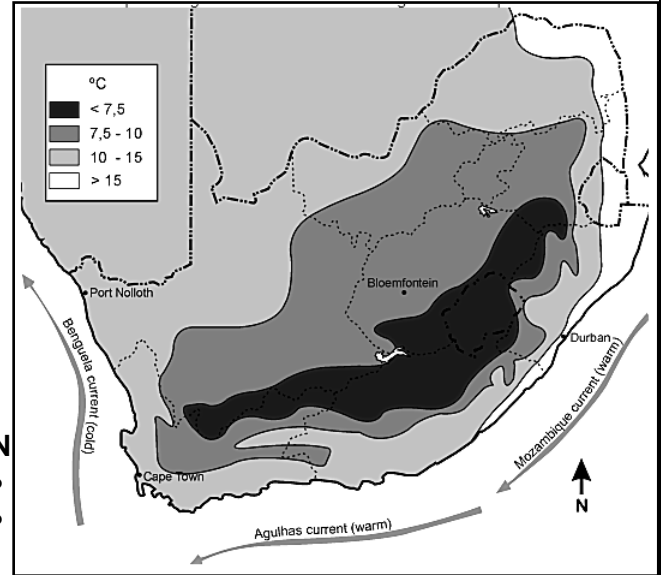


2. Ocean currents

- Ocean currents are the large-scale circulation of seawater.
- The purpose of ocean currents is to balance sea temperatures.
- If an ocean current is warm, it brings warm water from equatorial regions towards the poles. The air above the ocean current is warmer, which in turn warms the land mass through a warm onshore breeze. Over a warm ocean current to land warms the land. Warm currents flow along the eastern coast lines of continents.
- If an ocean current is cold, it carries cold water from polar regions towards the equator. The air above the ocean current is cooler, which in turn lowers the temperature over the land mass.

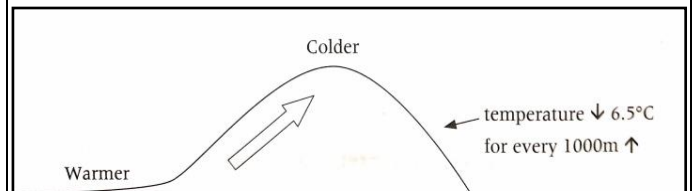
Example:

- Two South African towns have a similar latitude - **Port Nolloth** on the west coast and **Durban** on the east coast. However, their average annual temperatures differ:
Port Nolloth - 14.2 ° C (cold Benguela current)
Durban - 18,6° C (warm Agulhas / Mozambique current).



3. Altitude

- The earth's surface which is heated by insolation, heats up the air that is in contact with the surface by terrestrial radiation.
- As the warm air rises, it expands and cools. As a result, the temperature decreases with an increase in height.
- At higher altitudes the air is less dense and consequently more heat can escape into the atmosphere, cooling the air further.
- Temperature decreases with altitude at a rate of 6.5 ° C for every 1000 meters. This is known as the **normal lapse rate**.

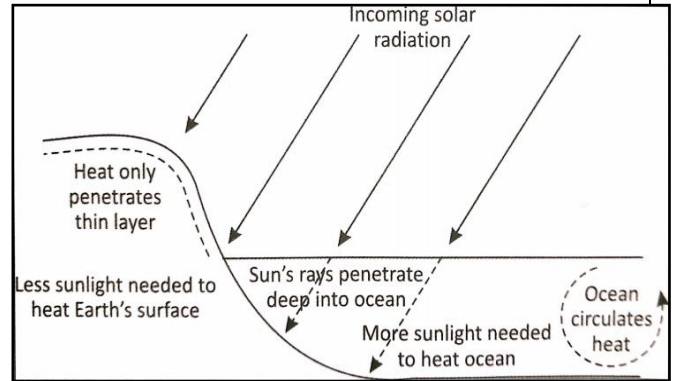


Kilimanjaro in Tanzania - the higher you climb, the colder it gets.

4. Distance from the ocean.

- Land surfaces are solid and are heated up rapidly by conduction. The land surface will also radiate its heat rapidly and cool down quickly.
- Water takes a long time to heat up as it is transparent and the sun's rays can penetrate deep into the ocean. Oceans are heated by convection and take a long time to cool.
- Land and water react differently to insolation and consequently result in two main types of climate:

(a) Maritime climates – are found at places close to the ocean. Warm summers and mild winters, with a small annual temperature range are experienced. An example is Durban.



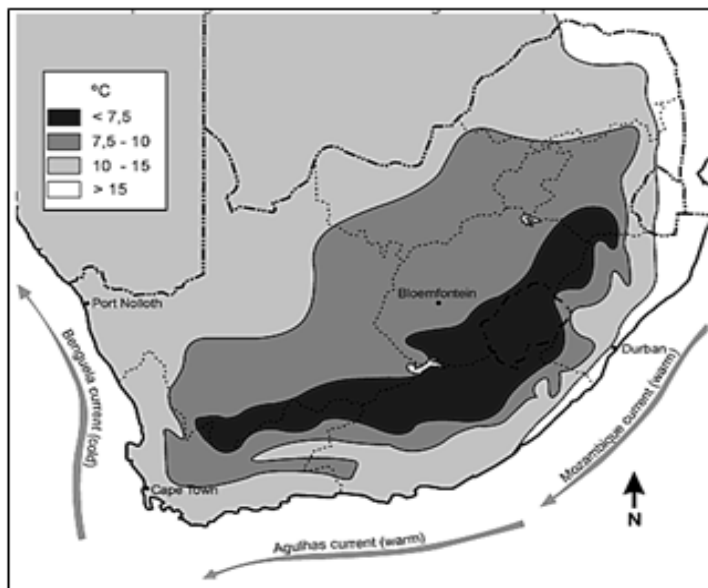
(b) Continental climates – are found at places located inland. Very hot summers and cold winters, with a large range in annual temperature are experienced. An example is Bloemfontein.

Consolidation: Activity 1

1.1 Choose a term in Column B that matches the description in COLUMN A. Write only the letter (A-E) next to the question number (1.1.1-1.1.5), for example 1.1.6 F.

KOLOM A	KOLOM B
1.1.1 Are found at places close to the ocean.	A Benguela current
1.1.2 Temperature decreases with altitude at a rate of 6.5 °C for every 1000m.	B Maritime climate
1.1.3 Ocean current along the west coast of South Africa.	C Continental climate
1.1.4 Associated with warm summers and very cold winters.	D Agulhas current
1.1.5 This ocean current is warm.	E Normal lapse rate

1.2 Study the map of South Africa below and answer the questions that follow.



1.2.1 Identify the ocean currents along:

- (a) west coast of South Africa
- (b) east coast of South Africa

1.2.2 (a) Which of Bloemfontein or Durban on the map experiences the lowest temperature?
 (b) Give evidence from the map to prove your answer.

1.2.3 Briefly explain the factor that influences the temperature of Bloemfontein and Durban.

1.2.4 Explain in a paragraph of about EIGHT lines why Port Nolloth (29 ° 14 'S) has an average annual temperature of 14,2 ° C, while Durban (29 ° 32' S) has an average annual temperature of 18,6 ° C.