The Challenge of Natural Hazards

Weather & Climate

internet geography

Contents

Using this booklet

Welcome to the Internet Geography Work Booklet for The Challenge of Natural Hazards – Weather and Climate. There are a range of resources on Internet Geography to support you studying this unit. Head over to https://www.internetgeography.net/aqa-gcse-geography/the-challenge-of-natural-hazards/ to access them.

As well as the resources in this booklet, there are a number of online quizzes to check your learning as you work your way through this booklet.

This icon lets you know when you should attempt the online quizzes developed to support your learning and check your knowledge. Your scores should be recorded on the tracking table at the back of this booklet. It is useful to revisit the quizzes to help your learning stick.

QR codes are included throughout the booklet to support you in researching the information you need to complete the activities. You will need to download a free QR code scanner to your mobile phone or tablet. Just go to your app store and search for "QR Code scanner" and download a free one.

After each section in this booklet there is a summary page for you to record the main points for each sub-topic. We recommend you use dual coding for this. Dual coding sounds a bit complicated, however, it's not. It simply involves combining text and images when you are studying. There are many ways you can present text and images, such as with infographics, timelines, cartoon strips, diagrams, and graphic organisers. We've pulled together a guide to help you do this with examples on Internet Geography. Either go to https://www.internetgeography.net/dual-coding/ or scan the QR code below.

Introduction to weather hazards and climate change

There are a number of key words you need to know about natural hazards.
Complete the key terms list below by adding the correct definitions.

Global atmospheric circulation	
Trade winds	
High pressure	
Low pressure	
Climate	
Weather	
Natural climate change	
Greenhouse effect	
Climate change	
Tropical storm	
Drought	

Global Atmospheric Circulation and Heat Transfer

Annotate the diagram below to show how latitude influences the effect of solar radiation on the Earth's surface.

Complete the paragraph below to explain how winds are formed.

The _____heats the surface of the _____ unevenly. Differences in temperature affect air pressure. Where the sun's concentration is highest, air _____ and rises e.g. at the _____. Winds blow from areas of low pressure to areas of high _____ to fill the gap caused by rising _____. This helps transfer energy from the _____ and redistributes it around the _____.

Winds are part of global _____ circulation loops, called cells. These loops have warm rising air, which creates _____ pressure. The air travels in the upper atmosphere, cools then sinks, creating a high-pressure belt.

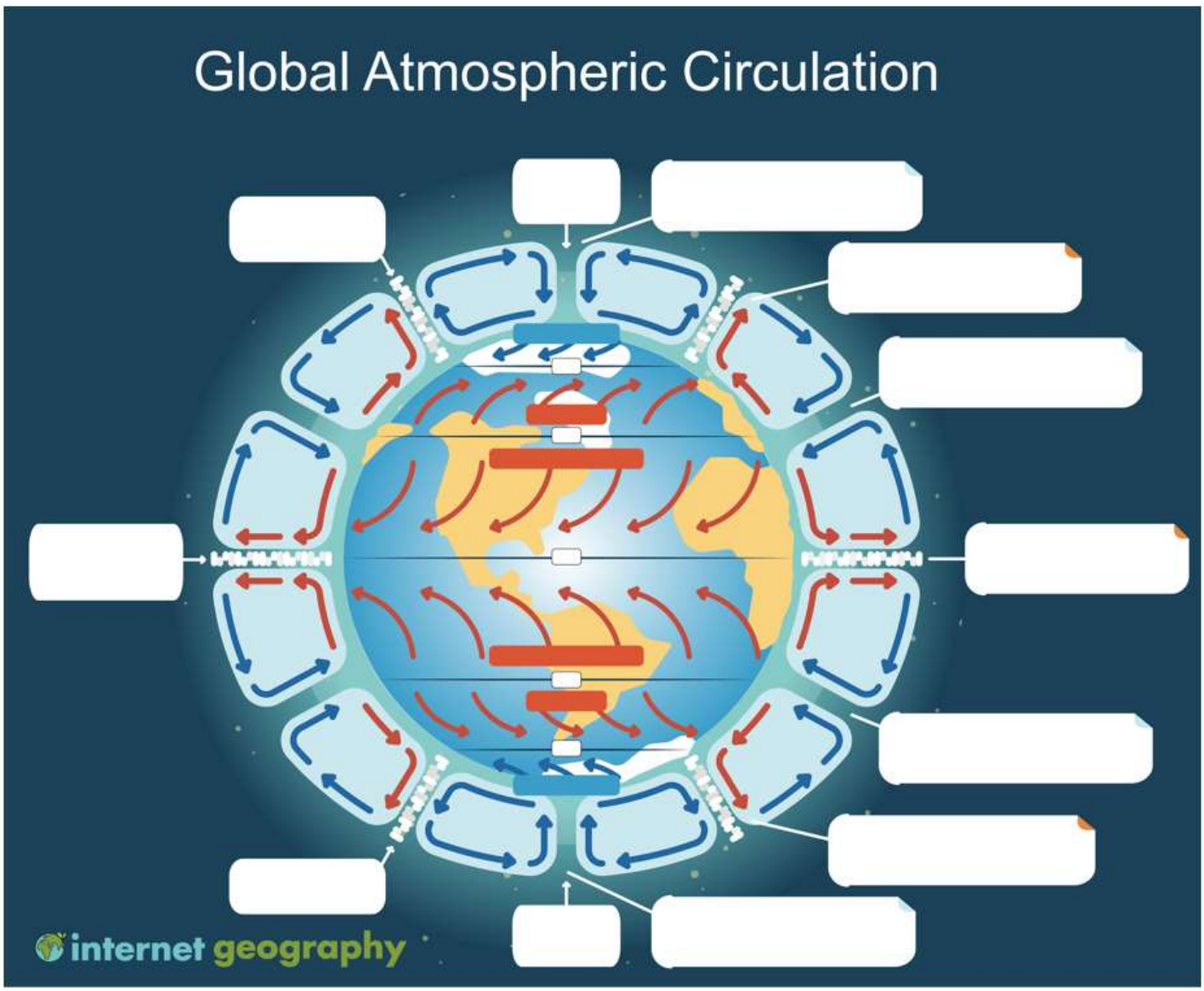
There are three cells in each hemisphere. These are the Hadley, _____, and Polar Cells.

At the _____ the Sun warms the Earth, which transfers heat to the air above, causing it to rise, creating a _____ pressure belt. As the air rises, it cools and condenses forming cloud and rain.

This cool air moves away from the equator in the upper atmosphere. At 30° north and south of the Equator, the air _____. This creates _____ pressure with cloudless skies and low _____.

The cool air reaches the _____ surface and moves as surface _____ either back to the equator or towards the poles.

Annotate the diagram below to explain how global atmospheric circulation works.



What is the name of surface winds that blow towards the equator?

_____

What direction do surface winds move in the northern hemisphere?

_____

What direction do surface winds move in the southern hemisphere?

_____

What happens when trade winds meet at the equator?

_____

What is the name of surface winds that blow towards the poles?

_____

What happens at 60° north and south of the equator when warmer surface winds meet colder air from the poles?

_____

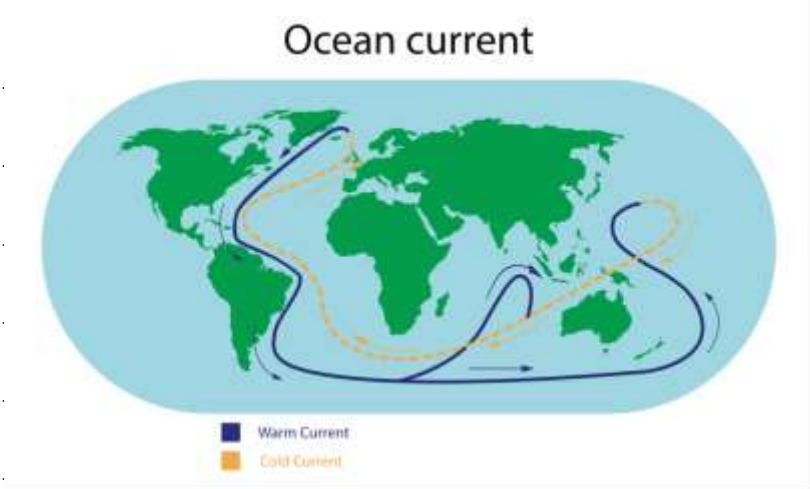
_____

At the poles, cold air sinks creating high pressure. What happens to surface winds?

_____

_____

Using the map below, explain how heat is transferred by ocean currents.



_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

What is thermohaline circulation?

_____

_____

_____

_____

Check your learning

Head over to www.internetgeography.net/wb80 and complete the quiz. Add your score for quiz 1 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

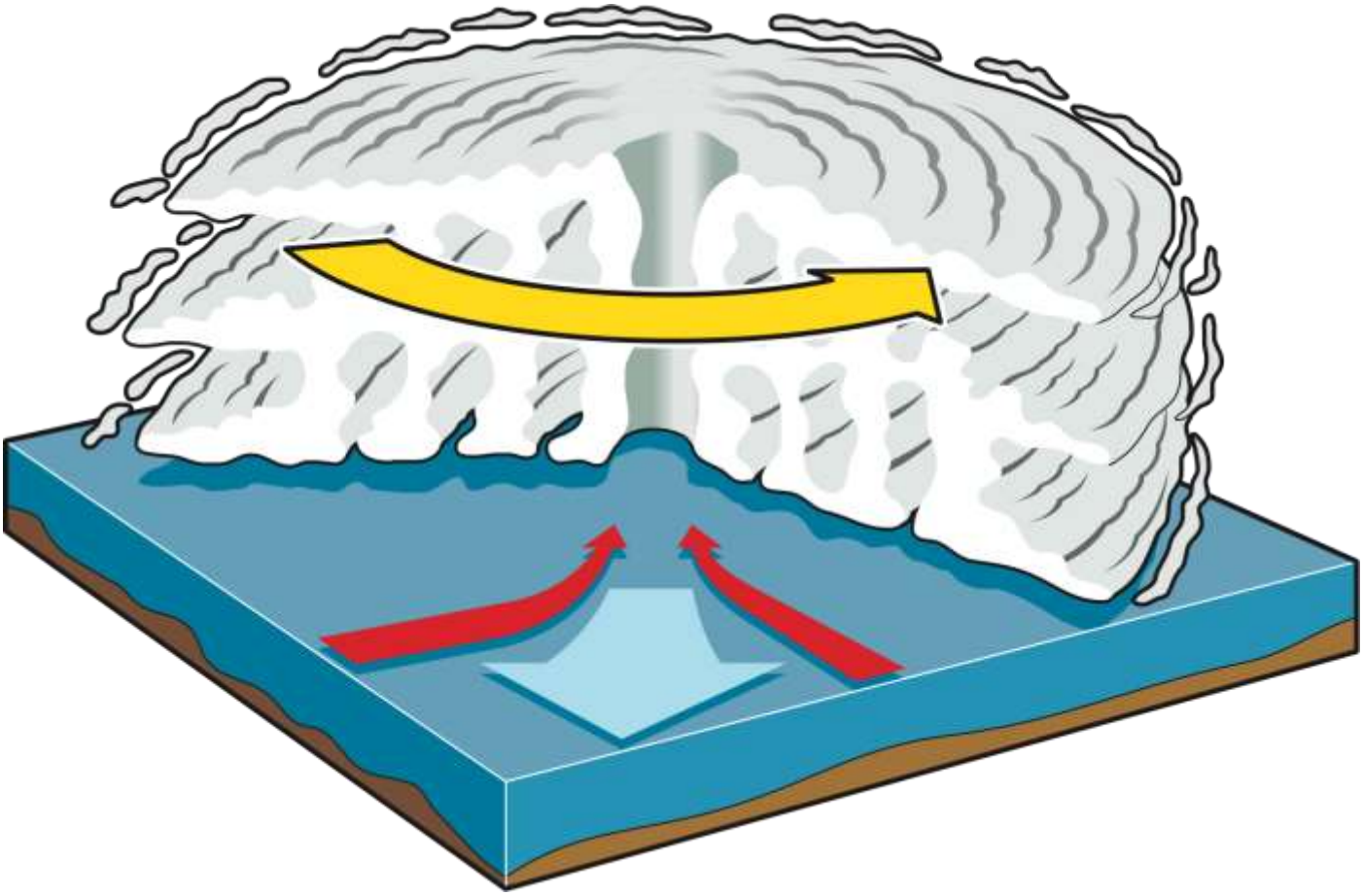
Tropical Storms

What is a tropical storm?

Annotate the map below to show where tropical forms occur.

Explain how tropical storms develop.

Annotate the diagram below to show the main features and structure of a tropical storm.



When tropical storms make land-fall they become natural hazards. Discuss the hazards associated with tropical storms.

High winds

_____

_____

_____

Intense rainfall

_____

_____

_____

Storm surges

_____

_____

_____

Coastal flooding

_____

_____

_____

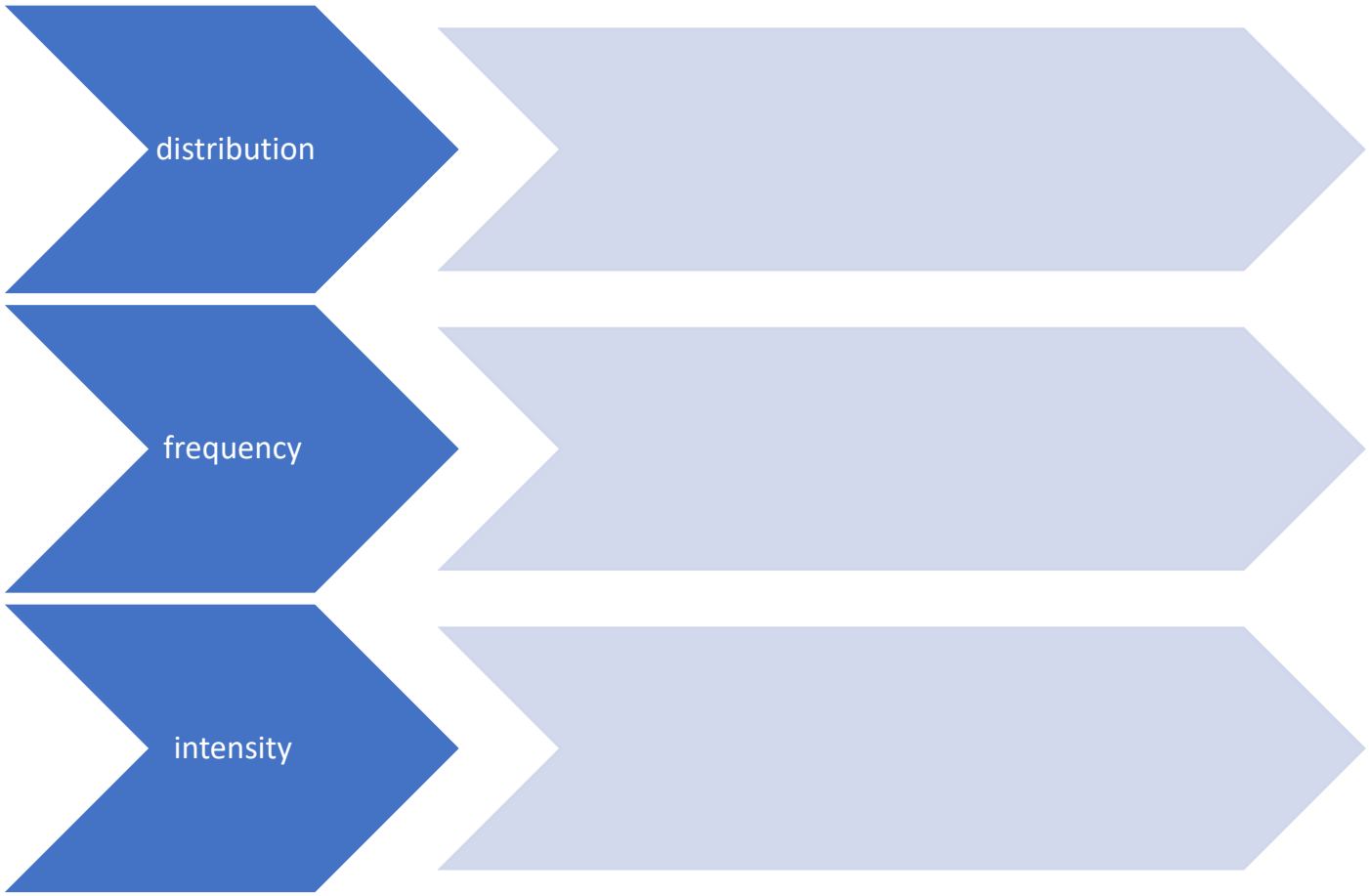
Landslides

_____

_____

_____

How might climate change affect the distribution, frequency and intensity of tropical storms?



Check your learning

Head over to www.internetgeography.net/wb85 and complete the quiz. Add your score for quiz 2 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

Tropical Storm Case Study

You need to study a case study of a tropical storm. Complete the following fact file on your chosen case studies.

Case study of a tropical storm: _____

Sketch map to show the path of the tropical cyclone	Primary effects – Social

Primary effects – Economic

Primary effects – Environmental

Secondary effects - Social	Secondary effects - Economic

Secondary effects – Environmental

Immediate responses:

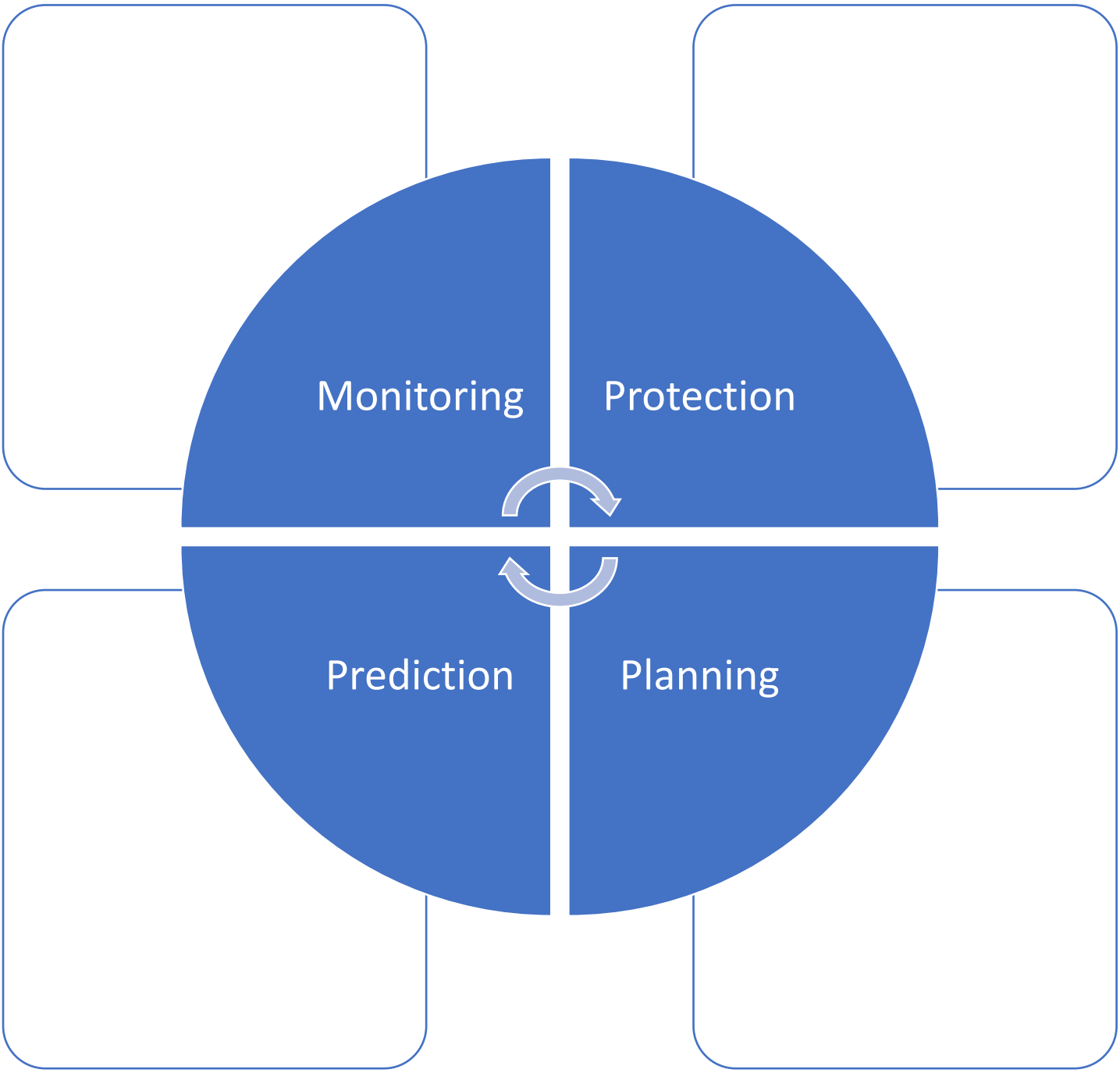
Long-term responses

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

How can the effects of tropical storms be reduced?

There are four main management strategies to cope with tropical storms. Complete the diagram below to explain how monitoring, prediction, protection and planning can reduce the impacts of tropical storms.



Check your learning

Head over to www.internetgeography.net/wb87 and complete the quiz. Add your score for quiz 3 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

UK Weather Hazards

The UK experiences a range of weather hazards. Most parts of the UK are at risk from one or more types of extreme weather.

What is an air mass?

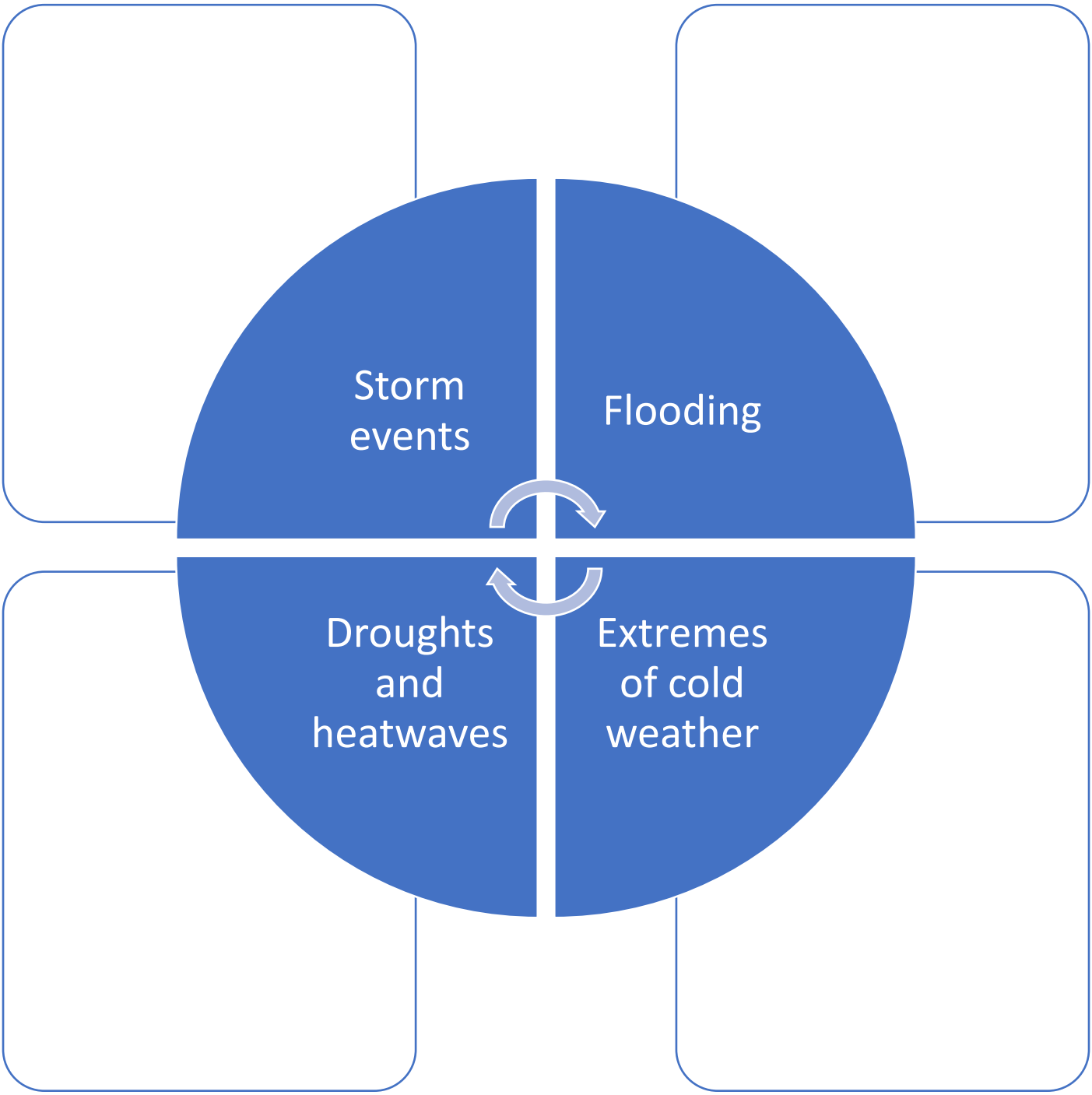
_____

_____

_____

Annotate the diagram below to identify the air masses that affect the UK and the weather they bring.

Complete the diagram below to describe the four main weather hazards experienced by the UK.



Check your learning

Head over to www.internetgeography.net/wb88 and complete the quiz. Add your score for quiz 4 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

UK Weather Hazard Case Study

You need to know about a recent extreme weather event in the UK. Complete the fact file below for your chosen case study.

Case study of a UK weather hazard: _____

Sketch map to show the location of the case study.	Causes:

Social impacts

Economic impacts

Environmental impacts

Management strategies to reduce risk

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

Is the UK's weather becoming more extreme?

Extreme weather is not new to the UK. There are many examples of extreme weathers in the past. However, the frequency of extreme weather in the UK is increasing.

Give examples of extreme weather records in the UK.

Temperature	Rainfall

What are the predictions for future UK weather?

Is climate change responsible?

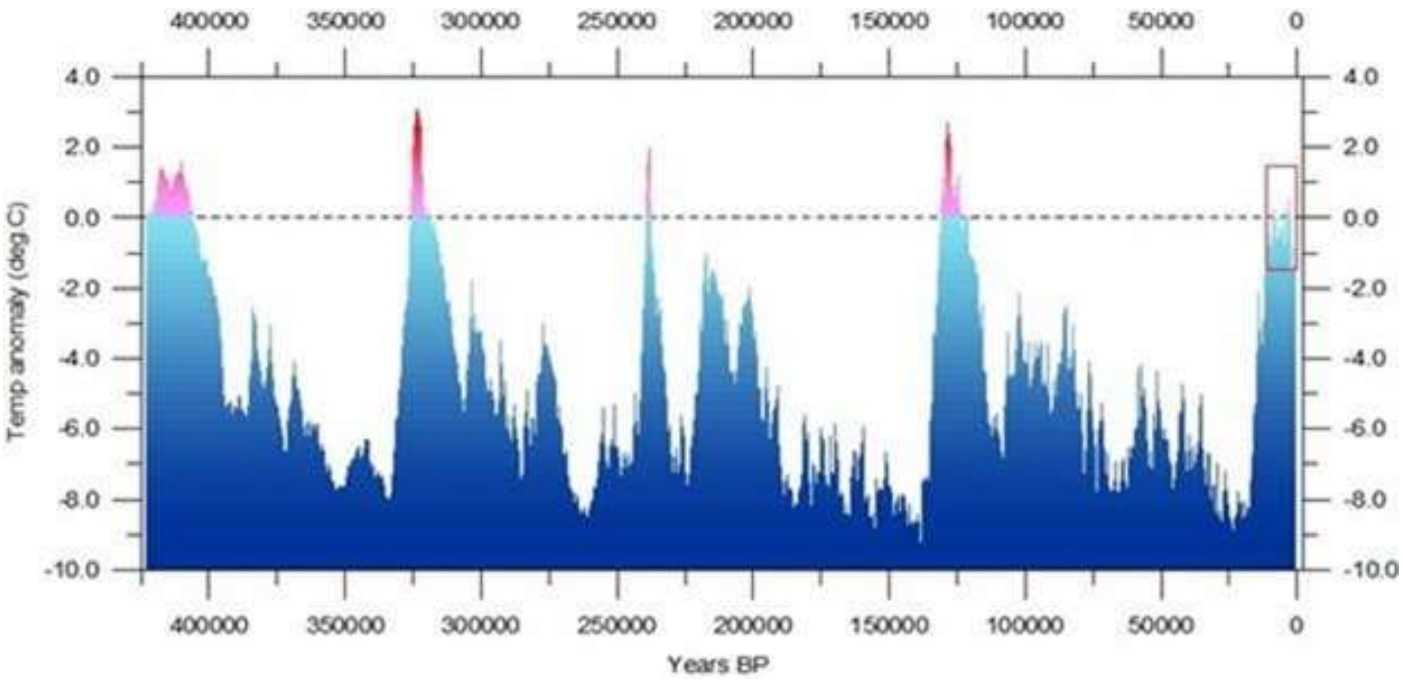
Check your learning

Head over to www.internetgeography.net/wb90 and complete the quiz. Add your score for quiz 5 on the recording sheet.

Evidence of Natural Climate Change

The graph below shows temperature changes at the Antarctic based on the analysis of ice cores.

Annotate the graph to show when glacial and interglacial periods occurred.



Describe changes in the climate over the last 450,000 years.

_____

_____

_____

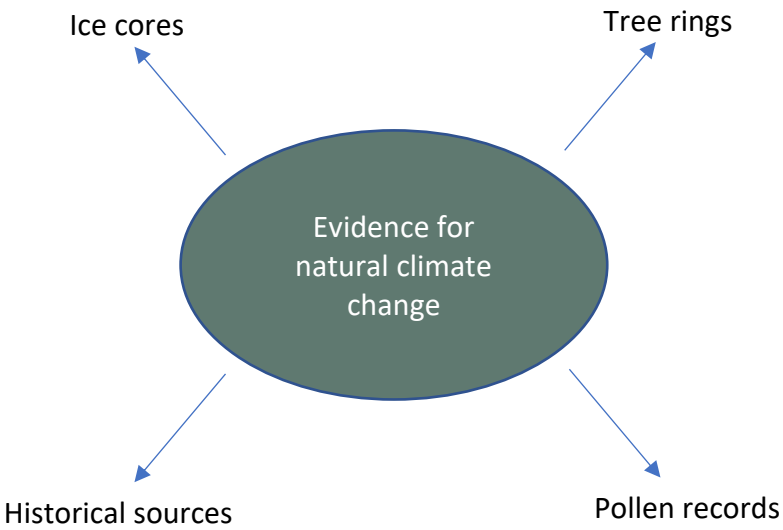
_____

_____

_____

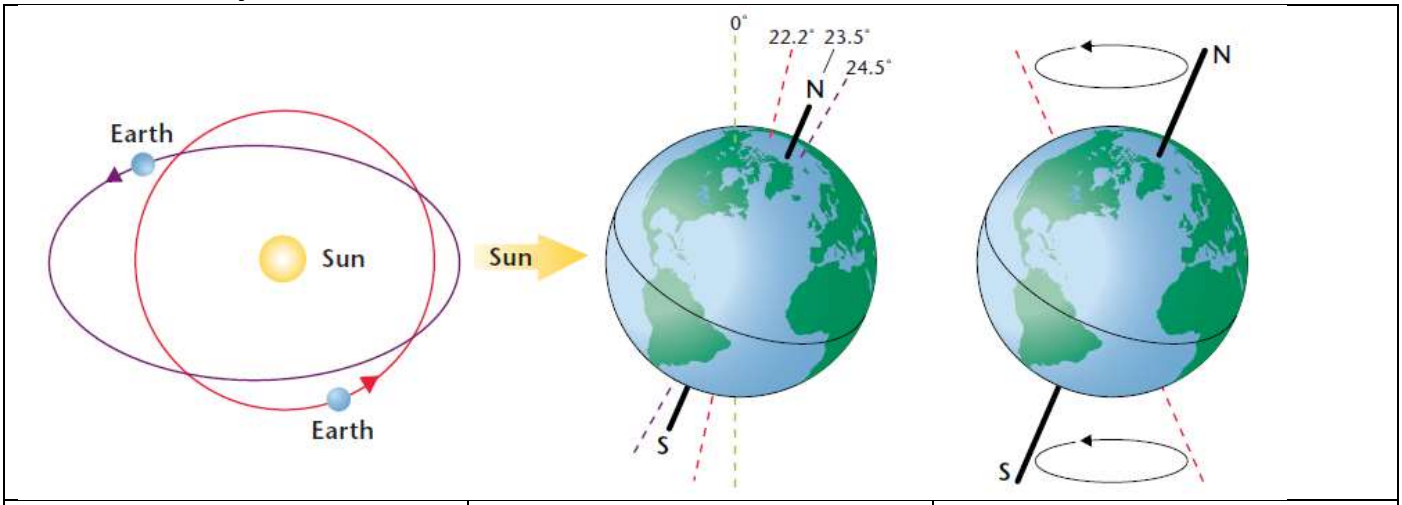
_____

Complete the diagram below to explain evidence for natural climate change.



There are three main natural causes of climate change, Milankovitch cycles, solar variation and volcanic activity.

Milankovitch Cycles



Stretch	Tilt	Wobble

Solar Variation

Volcanic Activity

Check your learning

Head over to www.internetgeography.net/wb81 and complete the quiz. Add your score for quiz 6 on the recording sheet.

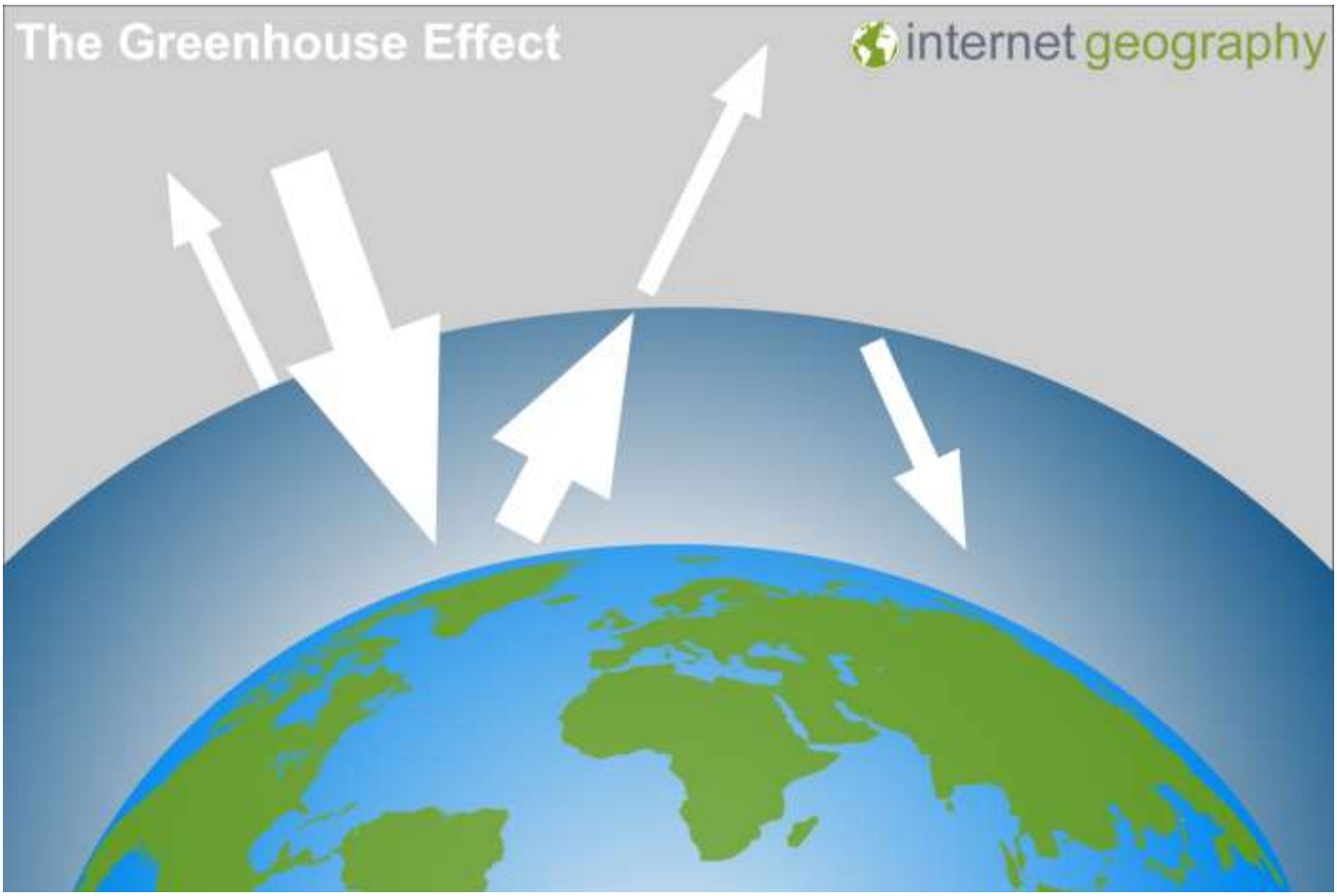
Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

Climate Change – Human Activity

The greenhouse effect is a natural phenomenon that supports life on Earth. Without it, the Earth would be a very different place.

Complete the diagram below to explain how the greenhouse effects works.



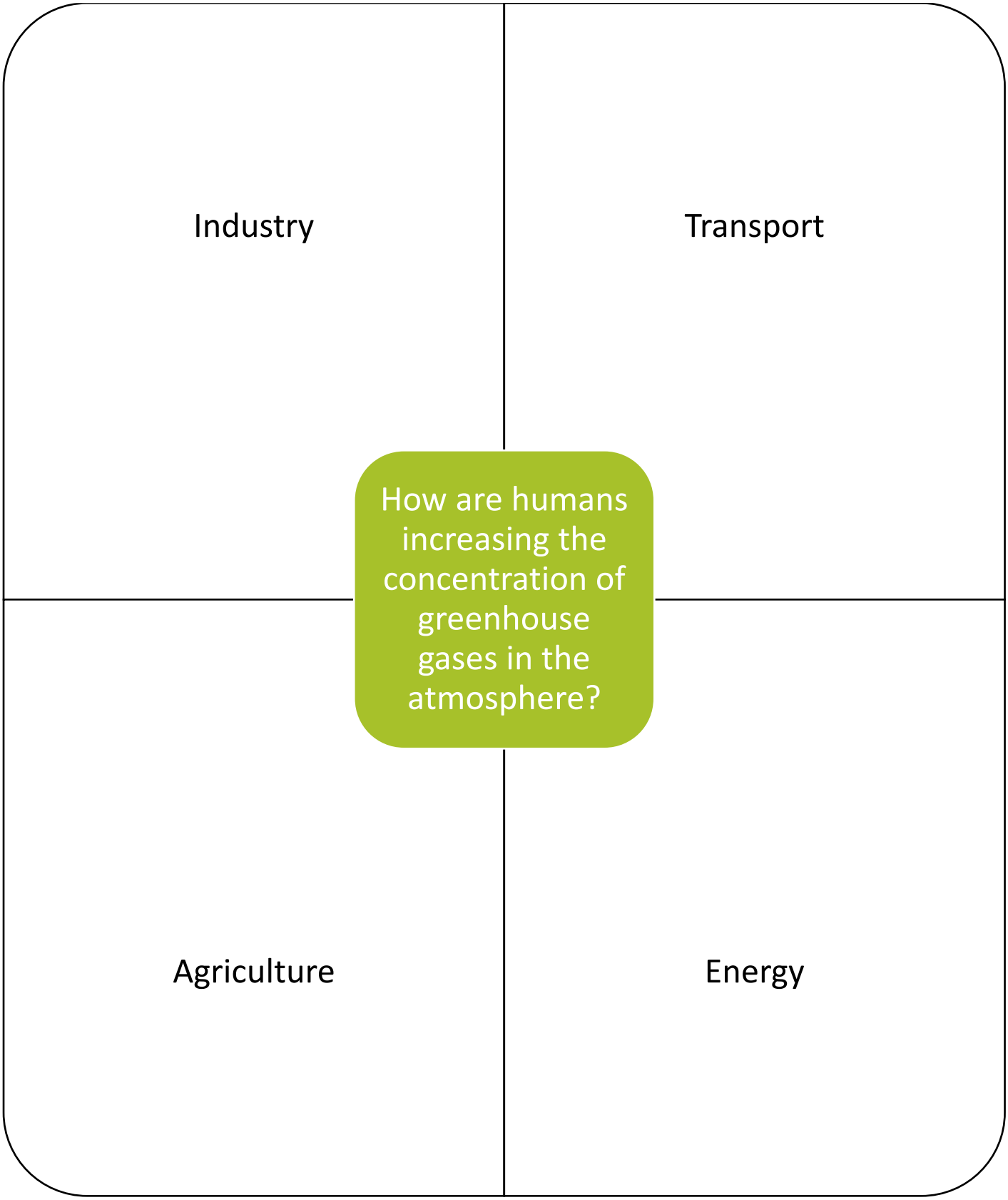
Identify examples of greenhouse gases that trap heat in the atmosphere.

_____

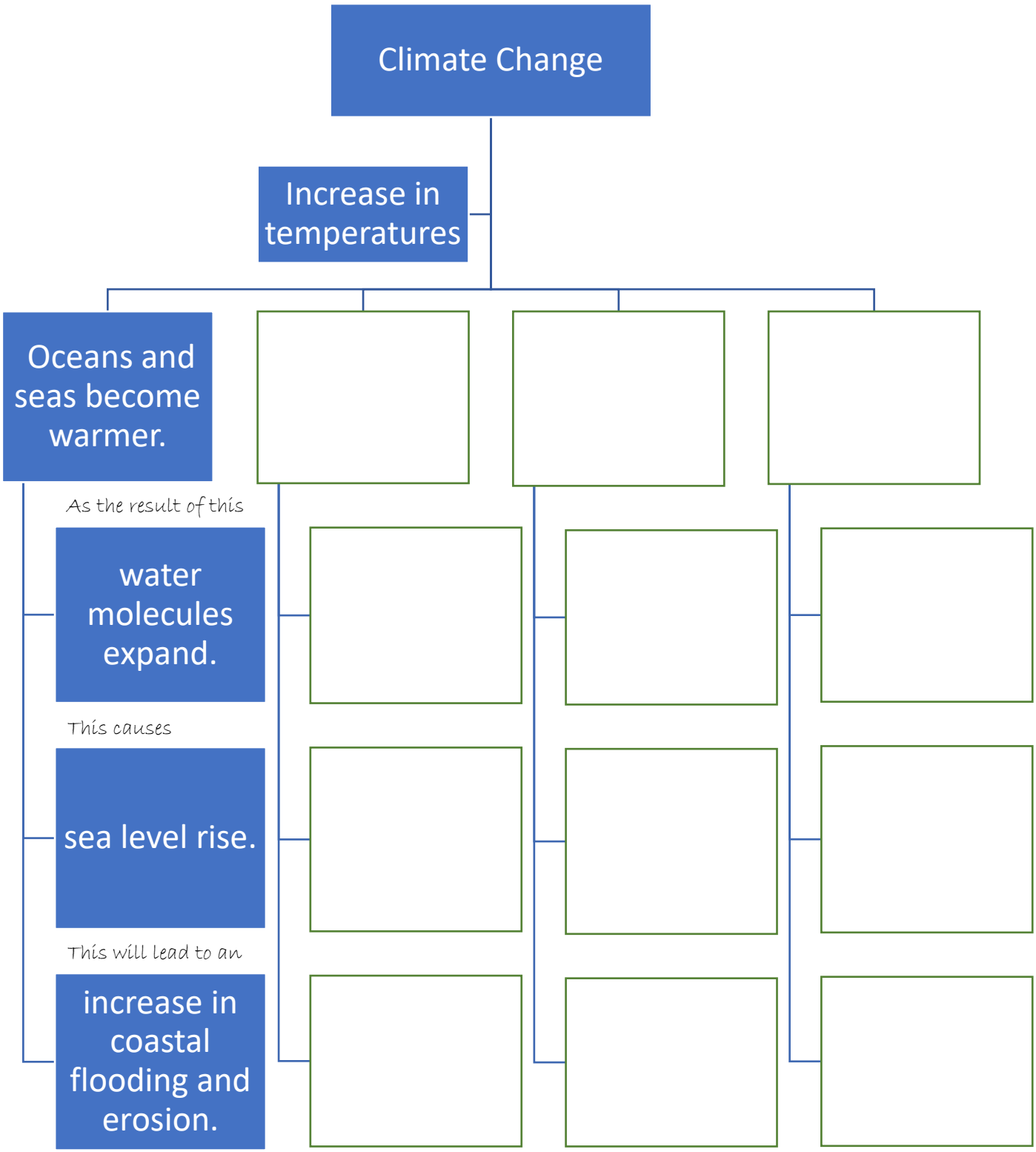
_____

_____

There is a scientific consensus (agreement) that human activities are causing climate change by contributing to the greenhouse effect. This is known as the enhanced greenhouse effect. An increase in greenhouse gas in the atmosphere means more energy is trapped and the planet is warming up. Humans are increasing the concentration of greenhouse gases.



Climate change will negatively affect people and environment. Complete the diagram below to explain these impacts. Add connectives to the statements you write.



Check your learning

Head over to www.internetgeography.net/wb82 and complete the quiz. Add your score for quiz 7 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

Managing Climate Change

Climate change can be managed by mitigation and adaption. Complete the diagrams on the following pages to explain how each example can reduce climate change.

Alternative energy production

Carbon capture

Mitigation

Planting trees

International agreements

Changes in agricultural systems

Managing water supplies

Adaption

Reducing riskInternational agreements

Check your learning

Head over to www.internetgeography.net/wb89 and complete the quiz. Add your score for quiz 8 on the recording sheet.

Dual coding

Use dual coding to summarise what you have studied in this section. Take a look at https://www.internetgeography.net/dual-coding/

Check your learning recording table

	Attempt 1	Attempt 2	Attempt 3
Quiz 1 www.internetgeography.net/wb80	/20	/20	/20
Quiz 2 www.internetgeography.net/wb85	/20	/20	/20
Quiz 3 www.internetgeography.net/wb87	/5	/5	/5
Quiz 4 www.internetgeography.net/wb88	/10	/10	/10
Quiz 5 www.internetgeography.net/wb90	/10	/10	/10
Quiz 6 www.internetgeography.net/wb81	/20	/20	/20
Quiz 7 www.internetgeography.net/wb82	/20	/20	/20
Quiz 8 www.internetgeography.net/wb89	/10	/10	/10