	Geography	Year 4
	Term 6	Water and Climate

Key Question: How does the world's water move around? What are the world's climates and biomes, and how are they changing?

National Curriculum Objectives:

- Describe and understand the key aspects of physical geography including climate zones, biomes and vegetation belts and the water cycle
- Describe and understand the key aspects of human geography including the distribution of natural resources including food, minerals and water
- Identify the position and significance of latitude, longitude, Equator, Arctic and Antarctic Circle
- Locate the world's countries using maps to focus on Europe and South America, concentrating on their environmental regions and key physical characteristics
- Use maps, atlases and globes to locate countries and describe features studied
- Use fieldwork to observe, measure and record the physical features in the local area

Vocabulary:

Solid, liquid, gas, Freshwater, saline water, glaciers and ice, Pacific Ocean, Atlantic Ocean, Indian Ocean, Southern Ocean, Artic Ocean, precipitation, rain, sleet, snow, hail, evaporation, condensation, condensing, air mass, Tropical Maritime (sea), Tropical continental (land) Polar Maritime (sea) and Polar Continental (land), climate zone, Tropical rainy climate, Dry/desert climate, warm temperate climate, cold temperate climate, polar climate, biome, vegetation belt, Aquatic biome, forest biome, grassland biome, savannah biome, rainforest biome, Tundra biome, desert biome, climate change, atmosphere, gases, deforestation

Prior Learning:

In Year 2 Term 2 children have studied the weather in their Weather Watchers unit and been introduced to basic climate zones
They have been introduced to biomes in Year 3 Term 2 One World Topic.
They have learnt about water (but not the water cycle) in Year 3 Term 4 in their Rivers topic
They have learnt a song to remember the 5 world oceans in KS1

End Point:

Create own Greta Thunberg inspired "Wicked Weather" speeches. Choose a climate zone and biome – what is the weather like and how has it changed? What can we do to slow this process

Knowledge:

- I know what the world's oceans are and some of the other large bodies of water in our world and where they are
- I know what precipitation is
- I know that the UK 's weather is affected by air masses
- I know the 5 main climate zones of the world
- I know what the 6 main biomes of the world are
- I know what the earth's atmosphere is
- I know some of the things that humans can do to slow down climate change

Skills:

- I can describe the water cycle and the process that makes it rain, snow or hail
- I can take and record measurements of our weather
- I can read a weather forecast
- I can compare some aspects of the physical geography of Greece to the UK
- I can describe the characteristics of different climates
- I can describe some of the animals and plants that characterise biomes
- I can describe some of the causes and effects of climate change

Map Work:

Use atlases to locate the world's climate zones, biomes and vegetation belts
Use atlases to identify the Equator, Arctic and Antarctic circles and use lines of latitude and longitude

Field Work

Observe, measure and record data on weather. Use graphs and tables to analyse and record the data.

Cross Curricular Links:

Science – the water cycle (changes in matter), living things (ecosystems and habitats) the earth's atmosphere and climate change
Maths – percentages and graphs/tables

Oracy:

Debate – what can we do about climate change?
Instructional/exploratory – describe the water cycle and the process of precipitation
Building understanding – what are the characteristics of the world's climate zones and biomes

Wider Reading	Enrichment
It's Your World – Chelsea Clinton One World – Michael Foreman No one is too small to make a difference – Great Thunberg Greta's story – Valentina Camerini	Weather Station readings daily

Sequence of Learning		
Lesson	Key Question	Key learning/notes
1	Where is the Earth's water?	• Water covers 71% of the earth's surface. Water comes in three states – what are they? (refer to Science learning) Water in the world is held in these three states • Research the percentage of water in these three states – the world's water distribution (98% saline water, 2% fresh water of which most of it is ice with the remainder being in the ground and rivers/lakes, and a small percentage in the atmosphere) • Revise and label where the world's oceans are. Note that they all actually flow into each other. But there are other bodies of water. • Use atlases and globes to locate other seas and very large lakes – identify which countries they form the coastline to.
2	What is precipitation and why does it happen?	• Precipitation is the release of water from the sky, it can be liquid or solid, for example, rain, sleet, hail and snow. • Revise what the water cycle is (covered in Science) If necessary use a model to show the changes in the state of water from liquid to gas and back to water, using a metal tray (with ice on to make it colder) held over a boiling kettle. Note how the water evaporates and then condenses when it hits the cold surface. Shake the tray with the condensed water droplets on the underside to compare to rain. • The above is a simple explanation of how we get rain but warm air rising is a key process in how we get rain. A hot air balloon rises because the air inside is warmed – the air is less dense than the surrounding air so it rises. When the flames is turned off the air cools so the balloon sinks. • Rain can form when a pocket of warm air meets a pocket of cold air and the cold air forces the warm air to rise, • Watch https://www.bbc.co.uk/bitesize/clips/z8qtfg8 • Children write their own Water Cycle Stories
3	What is our weather like and why do we have such wild weather?	• Recap learning from Weather Watchers unit in Year 2 and set up a rota and weather station to monitor our weather over the next few weeks. • Watch a weather forecast – What is being forecast and how is this shown? • Why are weather forecasts so variable in the UK? In Greece the weather forecast is the same for weeks on end (refer to previous unit of work) • The UK is affected by air masses that bring very different weather. An air mass is a large body of air that is usually thousands of kilometres wide. Each air mass will bring different weather characteristics. • Research what each air mass can bring . We will focus on four - Tropical Maritime (sea), Tropical continental (land) Polar Maritime (sea) and Polar Continental (land), • https://www.bbc.co.uk/bitesize/guides/zstcv9q/revision/1
4	How is weather different to climate and what are the world's climate zones?	• Revise that climate is different to weather as it is the different weather conditions in a place over time. *(Note -In Year 2 the children have learnt that there are 5 main climate zones - tropical, dry, mild, cold, and polar) • https://www.bbc.co.uk/bitesize/clips/zr7hyrd • Revise where the equator, Arctic and Antarctic are and how this affects climate zones. • Which climate zones are Reading and Greece in? • Use the climate region map in the junior Atlas to classify countries into Tropical rainy climate, Dry/desert climate, warm temperate climate, cold temperate climate and polar climate. Describe the characteristics of these climates
5	What are vegetation belts and biomes? Where in the world are they?	• Recap which climate zones Reading and Greece are in. Can we grow the same crops? Discuss and refer back to learning from previous units. We can grow olives and tomatoes BUT they don't grow as well. The vegetation grown in a place will depend on the climate. Hence vegetation belts are governed by climate zones. • Revise that an ecosystem (previous Science learning) is a system of plants and animals which are interconnected and working together. An ecosystem covering a large area of a continent is called a biome. A biome is a natural area of plants and animals. (Note – the words vegetation belt and biome can be used interchangeably but the vegetation growing will also be affected by the type of soil in a place, however this is related to climate zones too) • Use the Junior Atlas to identify the different biomes (they are all different depending on their climate) . *Note in Year 3 children were taught four main biomes – desert, forest, tundra and grassland. • Classify biomes further so children know characteristics of 6 (there is no exact number when it comes to biomes but they can be subdivided in much greater detail) • The aquatic biome is the largest biome, covering nearly 75% of our planet and can be divided into two main categories: freshwater and saltwater. However in Primary

		school we focus on land biomes. So the below are the main 6 world biomes. Sort landscape pictures into the biome using the characteristics. • Desert biomes cover about one fifth of our planet (land) and are extremely dry areas. Depending on their location, they can be either hot or cold. Plants and animals have evolved over time to adapt to the harsh environment F • Forest biomes are home to a variety of trees and other plants. They cover about 30% of our Earth's surface (land) and are extremely important to our ecosystem as they store carbon and provide many materials that we use • The grassland biome is made up of a variety of grasses with very few trees or large plants. The two main types of grasslands found are 'tall-grass' (humid and wet), and 'short-grass' (dry). This biome is very popular for farming due to the rich soil. • The rainforest biome is home to a variety of tropical plants and animals and found in regions that are warm all year round. Unfortunately, rainforests now cover less than 6% of our planet but still produce about 40% of our oxygen • The tundra biome is the coldest biome and therefore has little plant and animal variety. Tundra biomes cover one fifth of the earth's surface (land) • Savannah biome is hot all year round with a long, dry season. Only grasses and shrubs grow here but it is home to lots of different types of animals. It covers approx. one fifth of the earth's surface. • Extend to Research Bizarre Biomes (in groups or pairs) to find the animals and plants that thrive there
6	What is climate change and what can we do about it?	• Surrounding and protecting the Earth there is a layer of different gases which is called the atmosphere. One of the important things that the atmosphere does is to keep our planet the correct temperature. The sun warms the Earth and the atmosphere traps some of the heat preventing us from being a planet of ice! • We are adding more gases to the atmosphere. Discuss what we are adding (gases from industry, transport, methane from cattle, deforestation) This thickens the atmosphere making it harder for any heat to escape • Look at images of weather changing because of climate change: floods in the UK, hottest recorded summer temperatures last year, droughts in India, melting ice caps… • Brainstorm positive steps we can take to try and slow climate change • Create an issue tree with causes of climate change in the roots and the branches with the effects of climate change and the fruits with the possible actions we could take. See below for more ideas • https://www.oxfam.org.uk/education/resources/climate-challenge-7-11