KS3 Geography. Africa.

2. Overview of climate zones and biomes.

[INTRODUCTION]

When you think of Africa, you may think of a very hot and dry place. But the climate and weather of this great continent is amazingly varied.

The Sahara desert can often reach temperatures of 50 degrees Celsius...but some of the mountains in Tanzania and Kenya hold glaciers!

Savanna regions often get rain during one wet season every year... but the rainforest in the Congo is one of the wettest places on Earth!

[EQUATOR]

The climate and weather patterns of a region depends on a range of factors. And the equator, which crosses the middle of Africa, is one of the most significant!

[TROPICS]

To the north and south, there are two other important zones: the Tropic of Cancer and the Tropic of Capricorn.

They're not just lines that have been drawn on the map, though! Satellite views show some distinct patterns. Across this band here, rainforests are dominant. And to the north and south, there are clear bands of desert. That's because *insolation* - the energy received from the sun - is greatest at the equator.

[CONVECTION CELLS]

That energy creates strong currents of rising air. And they don't just rise - they become circular currents, called *convection cells*, streaming off to the north and the south.

[RAINFORESTS]

The rising air at the equator is charged with water, and in those areas there's a lot of clouds, rainfall, and thunderstorms. All that heat and precipitation creates the rainforest biome of the Congo Basin.

[DESERTS]

So the air that keeps moving around the convection cell has lost all its water, but it still has a lot of heat energy! And the areas where all that hot, dry air descends are the deserts which we can see around 30 degrees to the north, and the south, of the equator.

[SUMMER / WINTER]

And being divided by the equator means that when it's summer in North Africa, it's winter in Southern Africa...the seasons are always opposite. As the Earth tilts on its axis, one end of Africa, or the other, is always tilted towards the sun.

[RIVERS / WATER]

But local climates, and biomes, are formed by far more than just how close to the equator they are. Africa's great rivers - such as the Nile, the Congo, or the Zambezi - channel huge quantities of water, shaping the ecosystems of the land that they run through.

Water stores solar energy, so rivers and lakes and oceans actually influence the weather of their surrounding areas, creating cooler summers and warmer winters.

[ALTITUDE]

Altitude helps to determine local weather too. At higher altitudes, the air is less dense, and holds less moisture, so it's not so good at retaining heat. That means that high altitude areas are usually cooler and dryer.

[CLIMATE CHANGE]

So across Africa, terrains are being shaped by climate patterns. But Africa is being severely affected by climate change, as the planet heats up. Some countries are experiencing droughts year after year, while some regions in the desert are starting to receive far more rain, and across many parts of Africa floods are becoming more frequent.

[SOUTH AFRICA]

In the coastal regions of South Africa, we usually have great weather: not too hot in the summers, not too cool in the winters. And from where I'm standing, I can see exactly how one geographical feature shapes the climate.

[TABLE MOUNTAIN]

That's Table Mountain and here - in Cape Town - it literally makes our weather. That's because moist air is blown up the slopes, cools quickly and creates clouds. That creates rainfall for the area all around and creates a rich biome.

But if it wasn't for Table Mountain giving us clouds and rainfall, this whole area would be almost as dry as a desert!