

# Geography Unit 3: How has climate change affected the tundra biome and the living things within it?

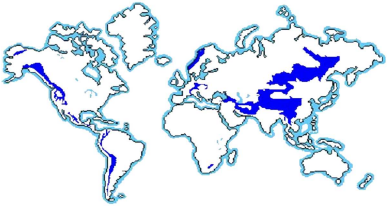

Deserts	Mountains	Oceans	Savanna	Tundra	Rainforests
Dry all year round. Not many plants and adapted animals.	Very cold and windy. The higher the mountain the more severe the climate.	Largest biome on earth. Home to billions of sea creatures and plants.	Hot all year round with long, dry seasons. Small shrubs and trees and lots of animals.	Coldest biome with little rain or snow. Ground frozen so not much grows.	Hot and wet all year round. Home to half of all the types of plants in the world.

## What are biomes?

Biomes are large areas, or ecosystems, of the earth that have similar weather, climates, landscapes, animals and plants. For organisms to survive in a biome they must be able to adapt and cope with how wet or dry it is; how hot or cold it is; how fertile the soil is and how flat or hilly the terrain is.

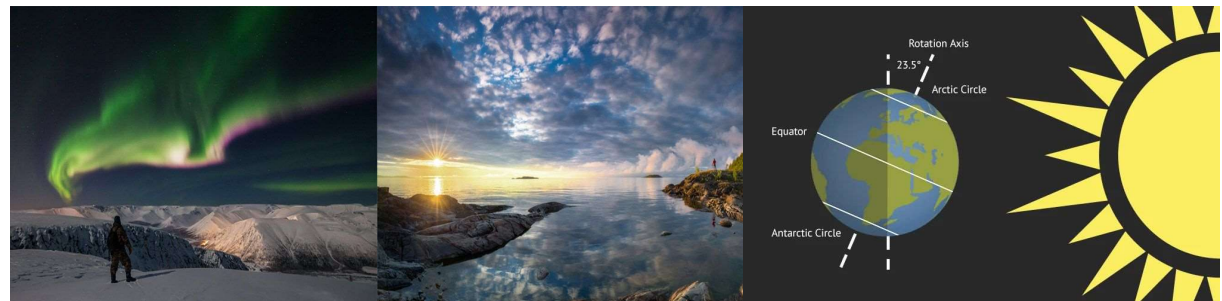
Landscape	Climate
<ul style="list-style-type: none"> <li>• <b>Barren landscape</b> - the soil is not very fertile making it almost impossible for things to grow.</li> <li>• Vegetation only grows for 6-10 weeks a year.</li> <li>• <b>Permafrost</b> - the ground is frozen for most of the year.</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely <b>low temperatures</b> (nearly always below freezing).</li> <li>• <b>High winds.</b></li> <li>• <b>Low levels precipitation.</b></li> </ul>

## Types of Tundra

<p><b>Alpine Tundra</b></p> <p>The alpine tundra can be found in mountainous regions. Because it exists at high elevations and the climate is very cold and windy, trees cannot grow in the alpine tundra. Unlike the arctic tundra, the alpine tundra can exist anywhere on the earth's surface if the land is at a high enough altitude so the temperatures remain cold.</p>	
<p><b>Arctic Tundra</b></p> <p>The arctic tundra can be found in the northern parts of North America, Europe, and Asia. It covers about 20% of the earth's surface but most of the region is found within the Arctic Circle. However, the arctic tundra is shrinking as a result of increasing global temperatures that are causing the permafrost to melt.</p>	

## Polar Day and Night

- In the winter, there are multiple weeks where the sun does not rise and there is only darkness. This is called polar night.
- In the summer, there are multiple weeks where the sun never sets and there is only daylight. This is called polar day.
- This is because the planet Earth does not sit straight in space, it is tilted.
- This means that, during the summer, most of the arctic circle is facing towards the sun and during the winter, most of the arctic circle is facing away from the sun.



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## Animals



**Adaption** - how living things change to survive in a particular place.

**Insulation** - having thick fur or extra body fat to keep warm.

**Camouflage** - changing fur or plumage to blend in with the landscape.

**Hibernation** - entering a very deep sleep to escape very low temperatures in the winter.

**Migration** - moving from one place to another to escape the winter climate.

<b>Alpine</b>	High mountains. Can be used to describe the types of plants that exist at high elevations.
<b>Altitude</b>	The height above sea level.
<b>Arctic</b>	The regions around the North Pole.
<b>Barren</b>	Used to describe land where plants cannot grow.
<b>Climate</b>	Temperature, wind, humidity, snow, and rain in a place over time.
<b>Elevation</b>	The distance of a mountain or hill above sea level.
<b>Fertile</b>	The soil allows plants and crops can be grown.
<b>Organisms</b>	A living thing, such as an animal or plant.
<b>Permafrost</b>	A layer of ground beneath the top layer of soil that is frozen all year and only found in the Tundra. Permafrost prevents trees from growing.
<b>Polar</b>	Relating to the North or South Pole.
<b>Precipitation</b>	Water falling from clouds (e.g. rainfall, snow, hail).
<b>Terrain</b>	The features of the surface of a piece of land (e.g. hilly, flat...).
<b>Weather</b>	Day-to-day temperature, precipitation and wind.
<b>Weathering</b>	Erosion of rocks and soil caused by the weather (e.g. the wind).

## Key Locations



Tibetan Plateau (Asia)



Northern Serbia (Asia)



Greenland (Europe)



Kola Peninsula (Europe)



East African Rift (Africa)



Alaska (Northern America)

## Humans in the Tundra

### Indigenous Populations

- Small groups of people.
- Nomad - travel around with no permanent home.
- No interaction with the outside world
- Hunters and gatherers.



### Modern Populations

- Connected to the rest of the world.
- Living modern lives with some adaptations for the landscape and climate.
- Populations still small - rural.

## Climate Change

The rise of the Earth's temperature caused by global warming.

### Causes of climate change:

- **Fossil Fuels** - materials harvested from the Earth and burned to create energy.
- **Deforestation** - process of cutting down large volumes of trees.
- **Agriculture** - farming animals and vegetation.

The issue for tundras = melting ice

### Causes of climate change:

- **Further Rising Temperatures** - ice reflects heat from the sun back to space.
- **Rising Sea Levels** - more flooding, people losing homes.
- **Habitat Loss** - no food, no where to leave = struggle to survive.