

## Weather, Climate and Climate Zones

### What is weather and what is climate?

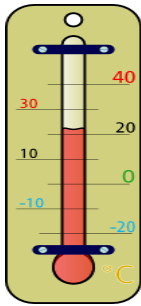


Fig. 1: Thermometer

Different places around the world have very different weather and climates. Weather is the temperature and precipitation from day to day. In contrast climate is the average temperatures and precipitation over a much longer time period like 100 years. Temperature is how hot or cold it is and is measured in degrees (°) centigrade or degrees (°)



Fig. 2: Rain gauge

Fahrenheit by a thermometer (fig. 1). Precipitation is the collective word for all the different ways that water can fall from the sky, such as rain, snow, hail and sleet, and is measured in mm, cm or inches by a rain gauge (fig. 2).

### What is a climate zone?

Large areas of the Earth have the same sort of climate, and these areas are known as climate zones. In a climate zone the temperatures and precipitation are similar. The four major climate zones are temperate, desert, polar and tropical. Temperate areas are mild, which means they are comfortable to live in because they get enough rain, but not too much, and temperatures are not too high or too low. Deserts are arid (dry) and hot, whereas the Polar Regions are extremely cold. Tropical regions have high temperatures and rainfall all year round. A region is a large area of the Earth's surface. Each of these climate zones can be further split up into smaller areas, as shown in fig. 3.

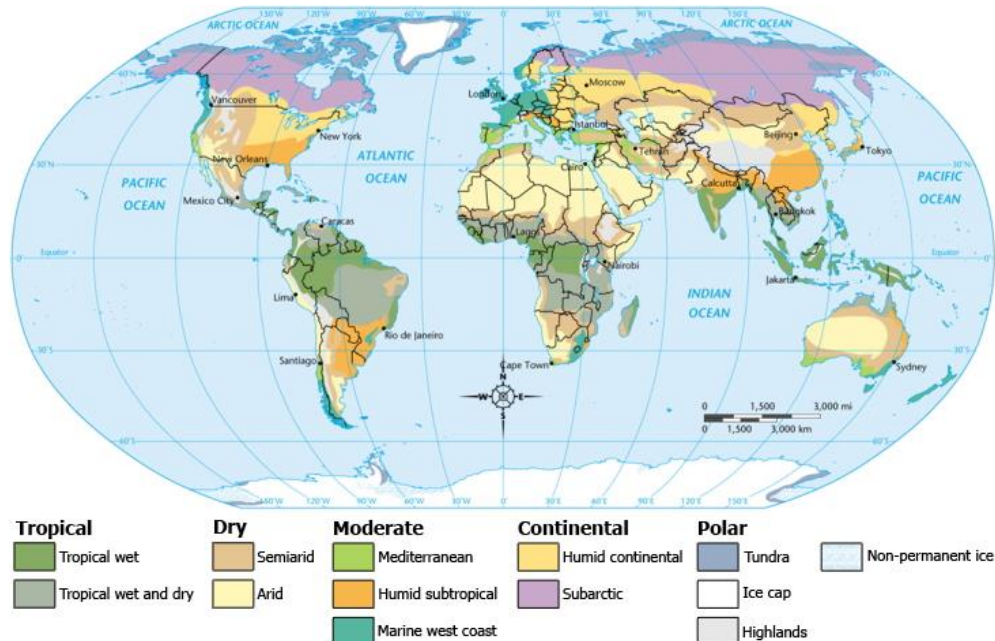


Fig 3: Map of climate zones around the world

## Why do different places have such different climates?

The main influence on climate is distance from the equator, which is measured in degrees (°) of latitude e.g. 27° north. Each degree of latitude represents around 70 miles. The equator is an imaginary line running around the middle of the Earth (see fig. 3). At the top of the Earth is the North Pole and at the bottom is the South Pole. The poles are the coldest places on Earth because they are the furthest places from the equator.

## Does anything else influence weather?

Other influences on weather include mountains and the sea. Close to mountains rainfall is higher because when clouds reach the mountains they are pushed higher into cool air, the water they are carrying condenses (turns from a gas into a liquid) and falls as rain (see fig. 4). Usually closer to the sea weather is less extreme, with winters and summers both being milder. Further inland (away from the sea) normally summers are warmer and winters are colder.

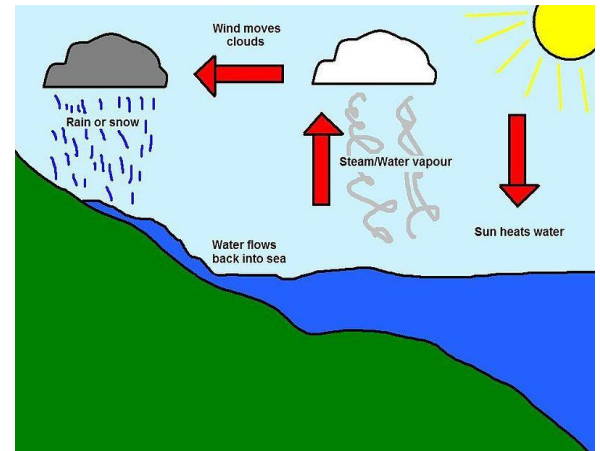


Fig. 4: The water cycle

## So with these different influences can a country be in more than one climate zone?

Countries, especially the bigger ones like Russia and the USA, do not always fit into one climate zone. Indeed you can find desert, polar and temperate climates in different parts of the USA. For example, New York on the east coast of the USA has a temperate climate, while Las Vegas in the south-west of the USA has a desert climate, and Alaska in the north-west has a polar climate (see fig. 5). Smaller countries like Britain and New Zealand tend to be in just one climate zone; in their cases it is temperate.

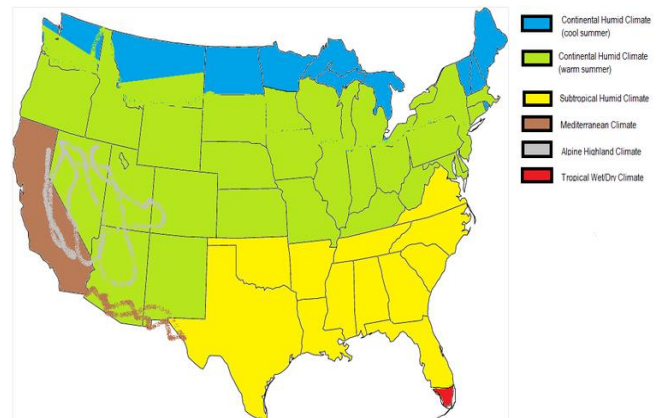


Fig. 5: USA Climate map

## What use is it studying all these climate zones?

Splitting the world up into climate zones helps us see patterns of climate and weather. Doing this helps us to explain why different places have different climates. For example, if you see that as you move away from the equator temperatures get colder this raises the question, why does this happen? Realising that different places have different weather also helps us to make decisions, such as what clothes we need to bring on holiday, where it would be best to live and where it would be best to grow different crops.