

## What is Climate?

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Climate describes the long term variations of the atmosphere.

It is based on historical weather records for a particular location.

It tells us what the weather is like over a certain time frame, usually 30 years.

Think about the climate of Ireland - how would you describe our seasons?

### What is the climate of Ireland?

The dominant influence on Ireland's climate is the **Atlantic Ocean**.

Ireland does not suffer from the extremes of temperature experienced by many other countries at the same latitude.



The average annual temperature for Ireland is about 9 °C. However there are slight climate variations even within our own country.

For example, sunshine duration is highest in the southeast of the country. It is sometimes known as the sunny southeast!

Average rainfall varies between about 800 and 2,800mm per year.

With south-westerly winds from the Atlantic dominating, rainfall figures are highest in the northwest, west and southwest of the country, especially over higher ground.

### How do we measure climate?

We use data from our weather monitoring network and work out what the averages over a given time period.

**HOWEVER**, in the past there weren't any meteorological weather stations, balloons or buoys to give us weather information.

This means that we need to use a wide range of evidence to reconstruct the earth's climate.

## Ice Cores

Scientists have studied ice from very old glaciers. Air bubbles trapped within these glaciers help to describe the climate from years ago.



## Tree rings

A new ring grows inside a tree every year, so it is possible to tell how old a tree is simply by counting tree rings. The study of the relationships between annual tree growth and climate is called **dendrochronology**.



## Sediment Analysis

By analysing various layers of earth and rock, scientists can determine information about ocean currents from the past.



## Biological Imprints

Fossilized plant, pollen and insect remains can provide important information on the earth's climate.



## Written documentation and descriptive accounts

Information found in old ship and agricultural records gives insight on extreme weather phenomena that occurred in the past, as well as the seasons from years gone by.



## What is the earth's climate history?

The earth is over 5 billion years old and in its lifetime, it has experienced extreme climates.

In the past the oceans were higher than they are now.

At times, temperatures were extremely low, causing glacial ice sheets to cover large areas of land.

These changes took place gradually over many thousands of years.

Let's retrace some of the earth's climatic history.

## **The Ice Age**

The Ice Age is said to have started about 2 million years ago and ended only 11,000 years ago.

Global temperatures were 4 to 5 degrees below what they are today.

During this period much of North America, Europe and North Asia was covered in large ice sheets.

Mastodons, which were elephant like creatures, thrived during this period.

When the glacial sheet melted, mastodons became extinct, because they were unable to survive.

## **The Little Ice Age**

The Little Ice Age lasted from 1550 to 1850.

During this time the temperature in the Northern Hemisphere was about 1 degree less than it is today.

Europeans in particular had to battle through harsh winters and subsequent famines.

## **Recent Climate History**

The earth's temperature has increased 1 degree in the last 100 years.

The general trend shows that temperature is rising more rapidly in recent years.

This results in rising sea levels and melting glaciers.

Many scientists believe that this increase is a result of the Greenhouse Effect.