

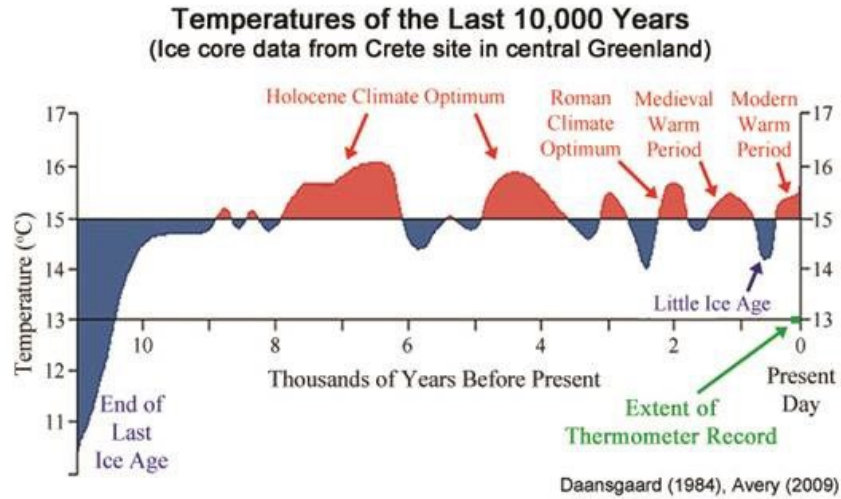
Enquiry question for this unit. How has climate changed over the last 10,000 years

Why did the woolly mammoth become extinct?

How is the climate changing today?

What is weather?

Key Words	Definitions
Climate	The weather in a location over a long period of time, usually 30 years.
Ice age	A glacial period during a past geological period.
Glacial period	A time when temperatures are low and glaciers are formed (water is stored as ice).
Interglacial period	A time when temperatures are higher and glaciers melt.
Glacier	A slow-moving mass or river of ice formed by the accumulation and compaction of snow on mountains and near the poles.
Climate change	A global or regional change in the climate. This process can occur naturally although humans have accelerated the recent rises in global temperatures.
Sunspot theory	Sunspots cause dark areas to appear on the surface of the sun. They show areas which are cooler than the surrounding surface. When they form more heat can be directed at Earth causing the temperatures to increase.
Volcanic eruption theory	When large volcanoes erupt, ash and gases are released into the atmosphere which can block out the sun's rays, causing the temperature on Earth to decrease.
Orbital theory	The Earth spins and wobbles on its axis as well as changing the shape of its orbit around the sun. This means sometimes it is closer to the sun and sometimes it is further away. This causes the temperatures to increase or decrease on Earth.
Woolly Mammoth	A large animal (similar to an elephant but bigger!) which lived in North America, Europe and Asia during the last ice age.
Extinct	No longer in existence
Climate zones	Different areas of the world have different climates.
Altitude	How high up the land is in relation to sea level.
Latitude	Distance from the equator.
Prevailing wind	The direction the wind blows from most of the time.
Weather	The temperature and precipitation within the atmosphere at a given time.
Extreme weather	Unexpected, unusual, severe, or unseasonal weather.



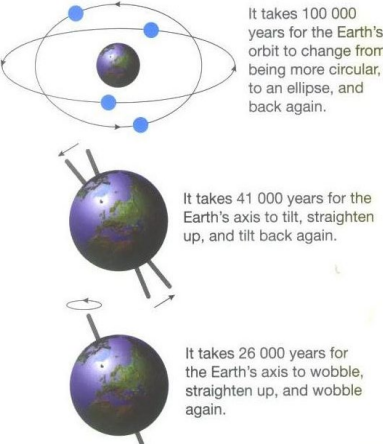
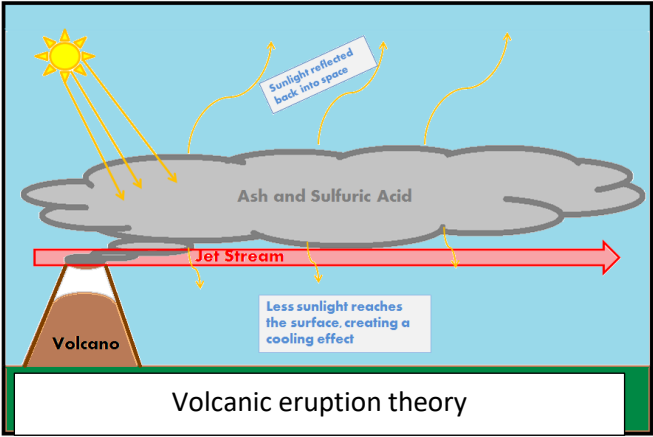
Interglacial period – red above the line

Glacial period – blue below the line

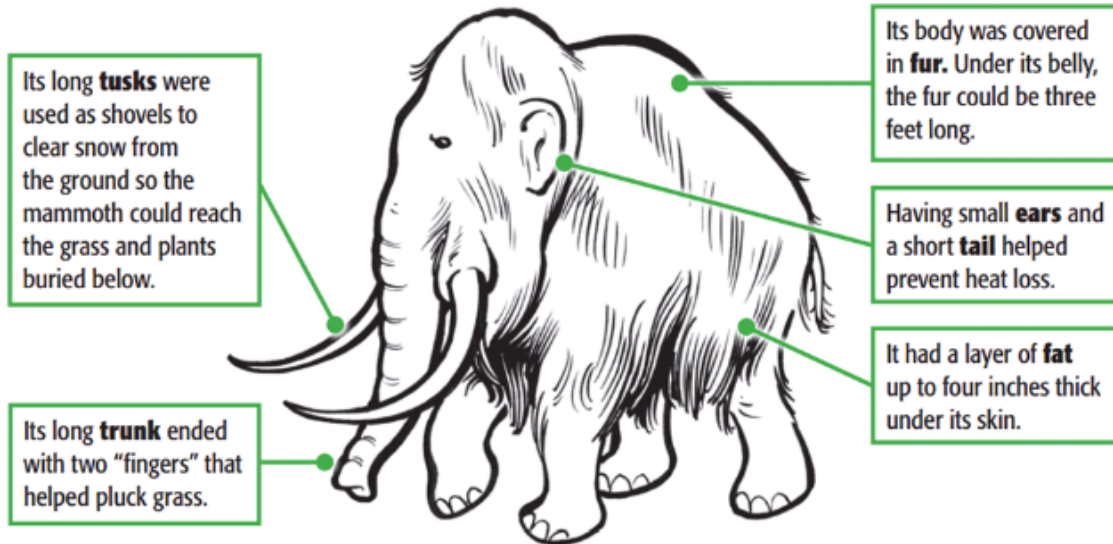
The climate over the last 10,000 years has varied with glacial and interglacial periods. The overall the temperature has increased.

Natural causes of climate change

When sunspots appear more solar radiation is released towards Earth causing temperatures to rise. This is seen in an 11 year cycle.



Orbital theory. The closer the Earth is to the sun the warmer the temperature. The further away the cooler it will be.



Why did the Woolly Mammoth become extinct?

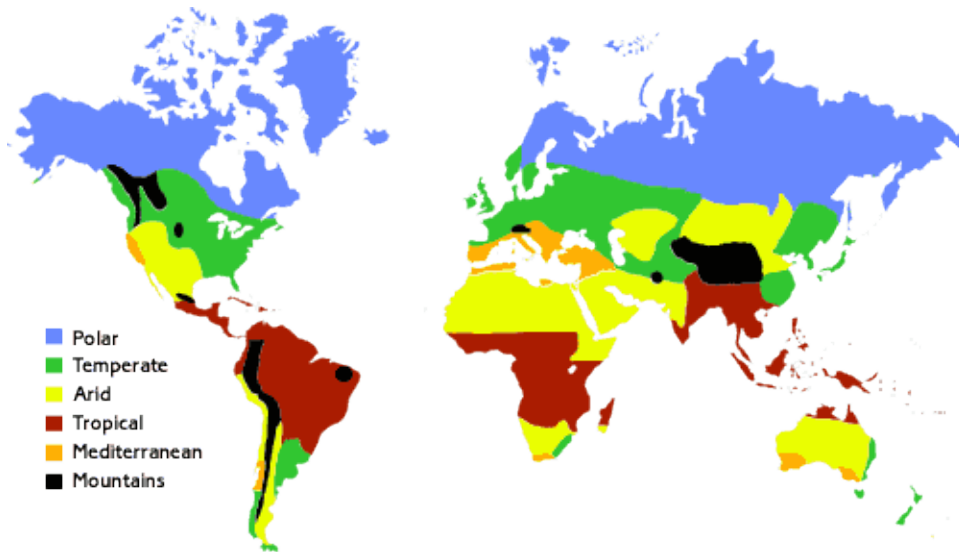
No one really knows!

Some people think it was because the climate became warmer which changed the vegetation in the areas where the woolly mammoths lived. It changed from grasslands to forests and the woolly mammoths were not adapted to eat the different vegetation.

Some people think it was because the area they lived in became smaller because sea level rise flooded the land bridges they used.

Others believe they were hunted to extinction by sabre tooth tigers and humans.

It could be a combination of all the above.



Climate zones in the world today

These are affected by the following factors;

Altitude, distance from the sea, latitude, ocean currents and prevailing winds.

Humans are also having an impact on the climate by producing 'greenhouse gases' such as carbon dioxide and methane. These trap solar rays in the atmosphere and heat up the Earth.

Is the climate of the UK changing? Based on facts in this documentary <https://www.youtube.com/watch?v=Cq1oFhTINXE> first broadcast on the BBC in 2006

Temperature increases are from 1970 levels.

2020 predictions – were they right?	2050 predictions	2080 predictions
Summer temperatures increase to around 29-30°C making heatwaves more likely and drought more frequent.	Temperatures overall will increase by 2.5°C. 30°C and above will be the “normal” summer temperature.	Overall temperatures will have increased by 4°C. Summer temperatures could reach 40°C.
Winter temperatures will be higher and rarely get below 0°C. The north and west of the UK will be wettest.	Winters will be milder and there will be less snow and more rain.	Winters are increasingly mild with temperatures only as low as 7-8°C. Snow is limited to a very small area of northern Scotland.

Is the UK weather getting worse?

Many people argue that weather in the UK is becoming more extreme - but what is the evidence for this?

The **State of the UK Climate report** (published annually by the Met Office) highlights the following points...

- The UK's climate is continuing to change, recent decades have been warmer, wetter and sunnier than the 20th century.
- All of the UK's top 10 warmest years, in the time series from 1884, have occurred this century.
- While the year 2021 would be considered near normal compared to the last three decades, before 1990, a year like this would be the second warmest in the series.
- In 2021 specifically, UK temperatures and sunshine were near to the 1991 – 2020 average with rainfall slightly below*.

** This report was published in July 2022 and summarises the climate in 2021, therefore does not include the record breaking temperatures experienced in July 2022.*

Key statistics:

Temperature - on average, it was 0.2°C warmer between 2012-2021 than it was between 1991-2000, and 1°C warmer than it was between 1961-1990.

Sunshine - on average, it was 2% sunnier between 2012-2021 than it was between 1991-2000, and 8% sunnier than it was between 1961-1990.

Rainfall - on average, it was 2% wetter between 2012-2021 than it was between 1991-2000, and 10% wetter than it was between 1961-1990.

Air and ground frosts - on average, there were 5% fewer frosts between 2012-2021 than there were between 1991-2000, and 19.5% fewer than between 1961-1990.