**Past Climate Change**

**Teachers’ Notes**

**Learning Objectives:**

* The climate is always changing
* There have been colder and warmer periods in the last 1000 years in the UK
* The climate is currently warming and this is linked to the combustion of fossil fuels.

Industrial Revolution

Global Dimming

Maunder Minimum

*This graph shows the climate of Central England from 1200 – 2017. Climate is the 30 year mean temperature.*

1. When were the two coldest periods? \_\_\_\_About 1460 and 1600\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. When were the two warmest periods? \_\_About 2000 and 1410\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How did the climate change between 1550 and 1600? \_\_It got colder by about 1.8 °C\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How has the climate changed since 1900? It has been getting warmer (although this paused between about 1940-1965)\_\_\_
5. This data comes from tree rings. Thinking about when plants grow, how does this affect the data? \_Tree ring data can only tell us about summer temperatures.\_\_\_
6. Thinking about the source of the data, how might the quality of the data change from 1200 to 2017? We have far more data available to us for recent years than for earlier years. This means the more recent data is more reliable.
7. Research exercise: Find out about these possible causes of climate change and write them in the corresponding boxes on the graph: Maunder Minimum; Global Dimming; Industrial Revolution.
8. Write a sentence about how these three factors affected the climate:
9. Maunder Minimum

During the Maunder Minimum the sun was less active, less energy reached the Earth and temperatures were cooler, at least in the Northern Hemisphere.

1. Global Dimming

Some pollutants reflect the Sun’s light or make it cloudier. Less sunlight reaches the ground and it is cooler.

1. Industrial Revolution

Since the Industrial Revolution, land use changes and the combustion of fossil fuels have increased the quantity of greenhouse gas in the atmosphere, enhancing the greenhouse effect and warming the Earth.

1. What other factors can you think of which control England’s climate?

There are many things which could correctly be included here, including: the seasons, land use, greenhouse gases/ global warming/ climate change, prevailing wind direction, volcanoes (both explosive ones in the Tropics and more local ones such as in Iceland), ocean water temperature, the position of the continents, El Nino, Arctic temperatures/ sea ice.