

## What is Going On?



## Introduction

The above photograph is an impression from my garden one late summer afternoon during the year 2020.

It shows a young ash tree on the western boundary of my on the background of a glowing sunset.

Global warming and climate change are much talked about, and the concepts are still viewed with scepticism by many. This year (2020) it has been pushed down the list of priorities by the Covid-19 pandemic, but is increasingly recognised as a problem to which responsible local, national and international leaders must find solutions.

“Global warming is the long-term rise in the average temperature of the Earth's climate system. It is a major aspect of climate change, and has been demonstrated by direct temperature measurements and by measurements of various effects of the warming. Global warming and climate change are often used interchangeably. But more accurately, global warming is the mainly human-caused increase in global surface temperatures and its projected continuation, while *climate change* includes both global warming and its effects, such as changes in precipitation.” (Copied from *Wikipedia*: ‘Global warming’.)

“The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report concluded, “It is *extremely likely* that human influence has been the dominant cause of the observed warming since the mid-20th century”.” (Ibid)

“These findings have been recognized by the national science academies of the major industrialized nations and are not disputed by any scientific body of national or international standing.” (Ibid)

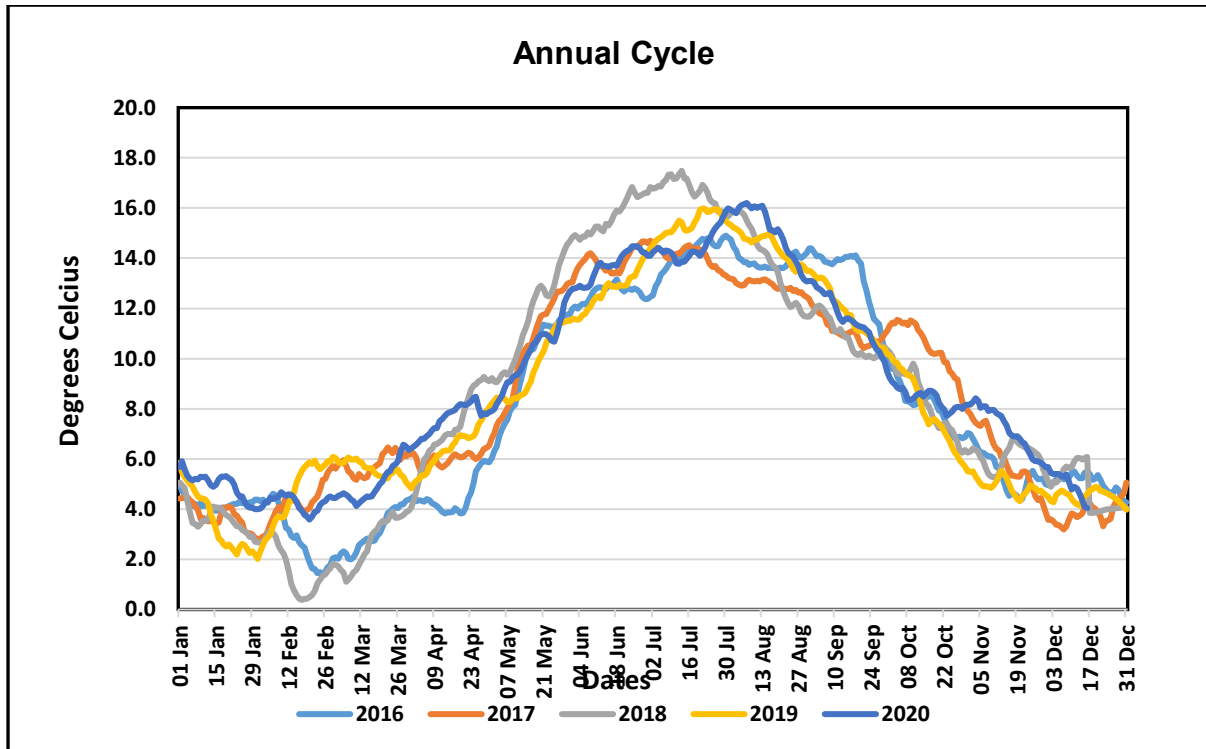
The following is an attempt to catch these changes in an amateurish way over a relative short period in my particular locality, Mow Cop, on the northern outskirts of the City of Stoke-on-Trent and inside Cheshire County, England.

Global warming and climate change are not abstract constructs, but part of everyday realities that affect us all. I will not claim that this in any way is a scientific study, and I am not a meteorologist and only know about weather patterns what I hear and see on radio and TV.

However, for the last just over 5 years or so one of my first activities every morning has been to take a reading of the thermometer placed in my backyard. As I am afflicted with Parkinson's disease the intension is to correlate these readings with 'UPDRS' (Unified Parkinson's Disease Rating Scale) observations to see if the strength of symptoms vary with weather conditions. This note is therefore a by-product of this other investigation.

The thermometer, I use, is a simple plastic plate with a glass tube in the middle. The scale is the simple Celcius scale with 0° at the freezing point and 100° at the boiling point, and as indicated above I take the reading soon after getting out of bed. I started the exercise in August 2015.

## Annual Cycle



The above diagram shows the annual cycle for each of the last five years, and it will not come as a surprise that it shows the summer months – June, July, August - to be warmer than the winter months – December, January, February. But what is also noticeable is that for the year 2018 (grey) the early months were somewhat colder than in other years due to the so-called 'Beast from the East'.

These observations are shown in a tabular form below. It is noted that the annual average temperature fluctuates, but 2020 has been the warmest year so far recorded, and the 1st quarter of 2020 was the warmest 3 months.

**Table 1: Temperature changes by regular 3 months quarters.**

	2015	2016	2017	2018	2019	2020
	<----- Degrees Celcius ----->					
<b>Quarter 1</b>		3.22	4.41	2.49	4.50	4.65
<b>Quarter 2</b>		8.91	8.70	11.31	9.49	10.59
<b>Quarter 3</b>	10.33	13.95	13.27	14	14.08	13.69
<b>Quarter 4</b>	7.46	6.17	7.88	6.79	5.77	6.65
<b>Annual</b>	8.58	8.02	8.64	8.66	8.37	8.91

Table 2 show the same changes arranged differently by 3 monthly seasons rather than quarters defined by calendar months.

**Table 2: Temperature changes by seasons.**

	2015	2016	2017	2018	2019	2020
	<----- Degrees Celcius ----->					
<b>Spring</b>		5.48	7.43	7.12	6.94	7.54
<b>Summer</b>		13.60	13.68	15.59	14.36	14.35
<b>Autumn</b>	8.12	8.71	9.07	8.37	7.89	9.23
<b>Winter*)</b>	4.51	4.44	2.92	4.66	4.64	3.97
<b>Annual</b>	8.58	8.02	8.64	8.66	8.37	8.91

Note: Spring ~ March-May; Summer ~ June-August; Autumn ~ September –November; Winter~ December-February.

\*) 2015/16, 2016/17, 2017/18 etc.

## Extremes

Another way of looking at the changes is by comparing the extremes year by year.

Table 3 shows the warmest and the coldest days for each of the four years 2016-2019 and the relevant temperature measurement. However no particular pattern seems to emerge.

**Table 3: Warmest and coldest days.**

	Warmest		Coldest		Average
	Date	Temperature	Date	Temperature	
<b>2016</b>	18-Jul	22	07-Mar	-2.5	8.02
<b>2017</b>	17-Jun	20	27-Jan	-1.5	8.64
<b>2018</b>	02-Jul	24	28-Feb	-7.0	8.66
<b>2019</b>	29-Jun	22	02-Feb	-4.0	8.37
<b>2020</b>	26-Jun; 13-Aug	21	25-Dec	-2	8.91

In table 4 below we have counted the number of days temperatures within three intervals were recorded.

It is noted that the number of days when temperatures of below 5° C were recorded have 'shrunk' from more than 100 days to less than 80. Conversely the number of days when temperatures of more than 5° C were recorded have increased from 236 to 287 with part of this increase being days when more than 15°C were recorded.

**Table 4: Number of days by recorded temperature.**

	< 5° C	5° C-15° C	> 15° C	Other	Total
	←----- No of days ----->				
<b>2016</b>	106	214	22	24	366
<b>2017</b>	81	251	19	14	365
<b>2018</b>	97	201	51	16	365
<b>2019</b>	81	239	35	10	365
<b>2020</b>	78	253	34	1	366

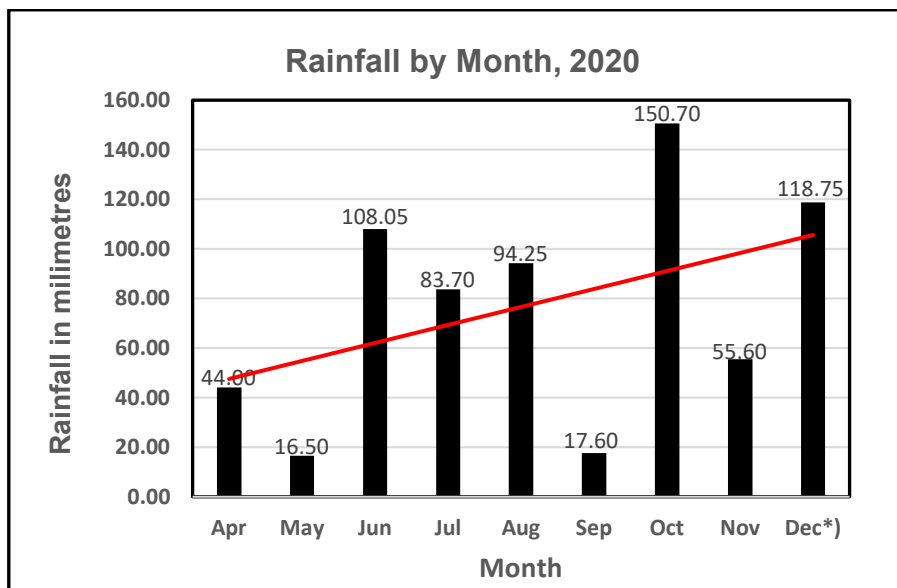
### Longitudinal evidence

We can now aggregate the readings for all five years into one graph to provide a longitudinal view of the temperatures. The diagram is shown in the appendix.

As I have referred to above the readings are taken first thing in the morning, in winter months even before sunrise. They are therefore likely to be lower than temperatures discussed in scientific literature and referred to in radio and TV broadcasts.

### Rain

For the first time I started to record daily rainfall at the same time in the morning as I record temperature and barometer readings. For this I use a . . . . . bought from a local garden centre. The result so far is shown in the diagram below.



\*) Does not include the snowfall in the last days of December 2020.

## **Conclusion**

As already indicated the above study is not scientific, even less a proof of anything. However, despite its shortcomings it is at least evidence. As such it is clear that 2020 was the warmest of the six years included in the study, nearly 1° C warmer than 2016 which was the coldest. Likewise there were 287 days with temperatures exceeding 5° C, but only 236 such days in 2016.

It is not conclusive, but perhaps it will make you the reader stop and think. If Global Warming and/or Climate Change mapped in this way may be caused by man, and we cannot afford to ignore that possibility. Perhaps it is time we cut out our bad habits? If the observed phenomenon is part of a long term cyclical pattern, just maybe cutting out our bad habits will help to alleviate the consequences of global warming. If it is caused by man then we need to stop, think and find alternatives to the way, we live at present.

The above information has been researched and compiled by Knud Møller at **KVM Research**. Care and attention has been employed to ensure accuracy, but KVM Research cannot accept responsibility for any financial or other type of loss incurred as a result of using or applying factual information or concepts extracted from this essay for the reader's own purposes. If you want to know more please look at my website [www.kvmresearch.co.uk](http://www.kvmresearch.co.uk), give me a ring on 01782 499384 or send me an email on [knudvmoller@gmail.com](mailto:knudvmoller@gmail.com) © 2021

**Appendix**

