This is the print version of the Skeptical Science article 'Arctic was warmer in 1940', which can be found at http://sks.to/arctic1940.

Comparing 1940s Arctic to today

What The Science Says:
Monckton appears to have cherry-picked temperature data from a few stations. The full data for latitudes 64-90°N reveal the Arctic is warmer today than in 1940.

Climate Myth: Arctic was warmer in 1940
"Temperatures in the Arctic and in Greenland were warmer by up to 3 Fahrenheit degrees in the late 1930s and early 1940s than they are at present" (Christopher Monckton)

A common misconception that is found to exist within the blogosphere is that the Arctic (hereby defined at 64 to 90 °N) was warmer than present during the early-to-mid 20th century. In particular this claim has been supported by anecdotal evidence of reduced sea ice cover and pronounced warming at *some* Arctic stations at that time. Monckton provides no evidence that he conducted an Arctic-wide analysis of air temperatures but rather seems to suggest that he selected a few stations which supported his narrative rather than examining all of the evidence. As real scientists tend to be very skeptical beasts, it is important that we assess his claim for quality to ensure that it is not based solely on a cherry-pick.

In order to do so I ran clear climate code's Gistemp reimplementation using Python and also their scripts for adding in more data from Environment Canada that was otherwise not included in the Gistemp analysis. This implementation is likely the best representation of the trends in the Arctic as it assumes that stations in the high Arctic follow similar trends to stations in the low Arctic whereas other methods (HadCrut) exclude these regions thereby assuming they have similar trends to the global trend. The accuracy of the reconstruction can be validated through comparison with the various reanalysis datasets which are reassessments of temperature changes combining meteorological stations, satellite measurements, weather balloon data and meteorological models. I have included the National Centers for Environmental Prediction (NCEP) reanalysis dataset for comparison.

So what do the results show?

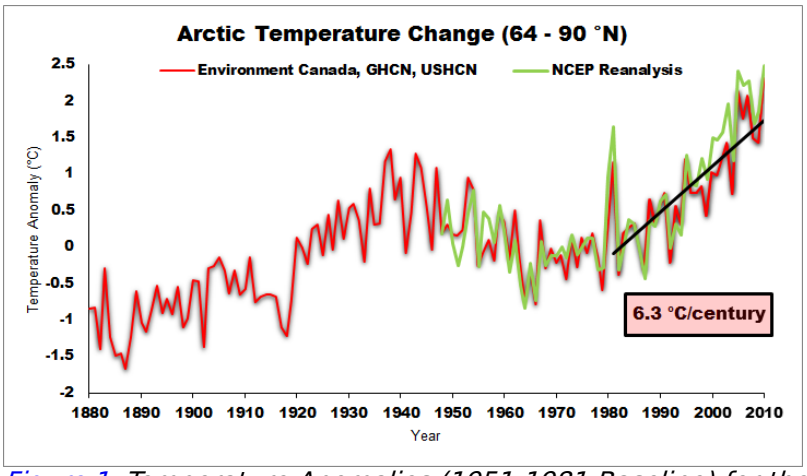

Figure 1: Temperature Anomalies (1951-1981 Baseline) for the Arctic region (64-90°N) over the past 130 years according to ccc-gistemp analysis and NCEP reanalysis.

It is evident based upon Figure 1 that the late 20th to early 21st century warming in the Arctic

far exceeds the warming experienced during the 1930s and 1940s. This is supported by calculating a 10-year running means which shows that the 10-year period from 2001 to 2010 was 0.79°C warmer than the warmest 10-year period during the early-to-mid 20th century. Monckton's claim of that period being 1°C greater than the current warming is therefore proven to be incorrect. It should also be noted that the warming over the last 30 years (1981-2010) shows an extraordinarily fast rate of warming (6.3°C/century) using ccc-gistemp.

Another way of looking at the data

What about when we order the anomalies by year?

Top 10 Warmest Years	Temperature Anomaly (°C)
2010	2.32
2005	2.15
2007	2.08
2006	1.77
2008	1.5
2003	1.43
2009	1.43
1938	1.34
1943	1.28
2002	1.23

Table 1: Top 10 Warmest Years in the Arctic according to ccc-gistemp analysis.

As is readily apparent, the Arctic was NOT warmer than it is currently and in fact 2010 was the warmest year the Arctic has experienced since instrumental records began. Out of the top 10 warmest years only 2 years predate the 2000s. This post should provide a definitive answer as to whether the warming of the early century was greater in the Arctic than currently. The answer is a resounding no.

As a side note, temperature reconstructions for the Arctic are now for the most part widely accessible and I was able to run this one in 20 minutes. There is no practical reason why Monckton selects but a few stations for his analysis and ignores the overwhelming majority of evidence presented here and elsewhere. There are just no excuses.

The Skeptical Science website by Skeptical Science is licensed under a Creative Commons Attribution 3.0 Unported License.

Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a college textbook on climate change and the book Climate Change Denial: Heads in the Sand. Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.

The Skeptical Science website by Skeptical Science is licensed under a Creative CommonsAttribution 3.0 Unported License.