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David Wratt
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(copies to NZAS Council Members)

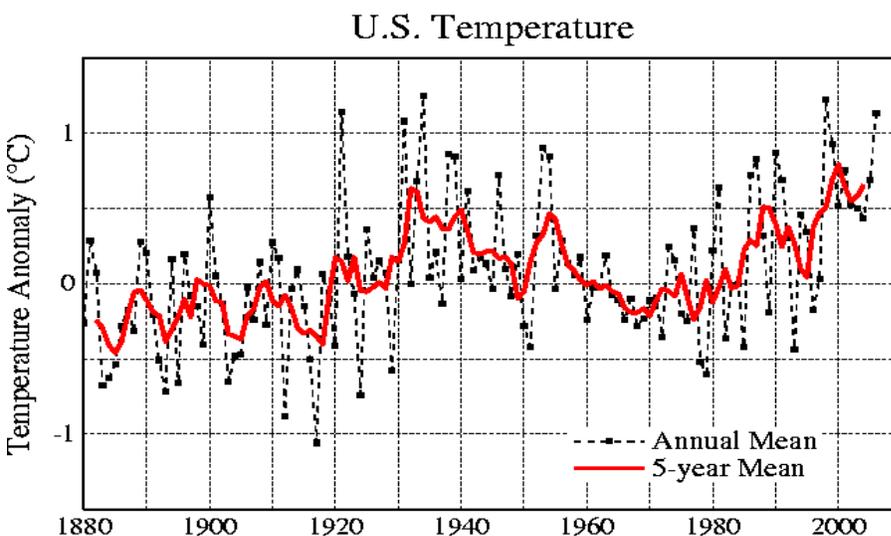
Dear David

Re: My Comments Regarding the RSNZ Climate Change Statement

Thank you for your letter, and for an opportunity to clarify the issues that have led to this correspondence.

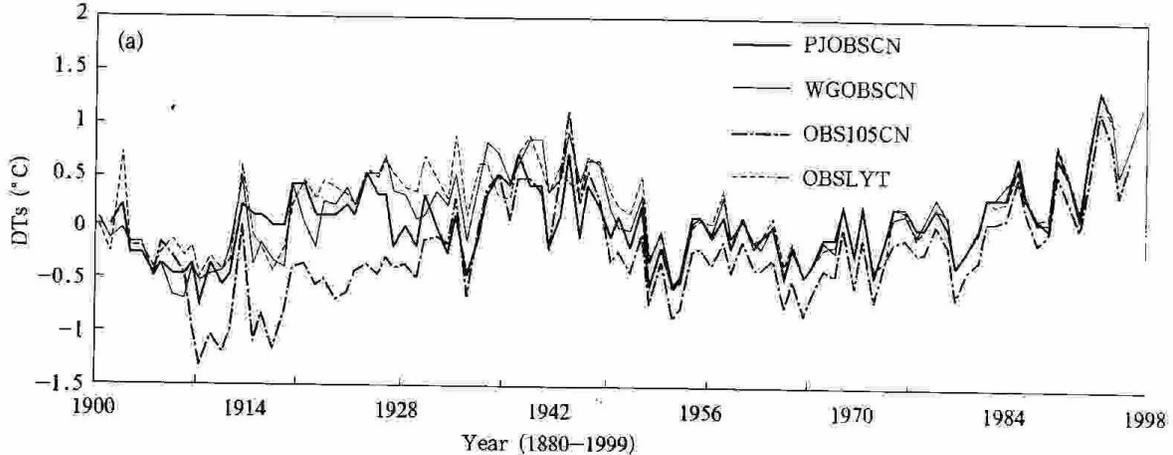
I strongly challenge your choice of only one of the many available temperature records of the climate to illustrate past temperature change. You exclude consideration of all other temperature records; global, national or local, as if they did not exist. The surface record you quote suffers from poor sampling, poor quality control and bias from urban development in the vicinity of the measurements. Several other records are less influenced by these problems. When all the records are considered together your conclusions become less plausible.

The US climate scientists have worked hard to try and correct their weather station temperature results for the many errors, and they now provide a temperature anomaly record for the continental USA as follows.



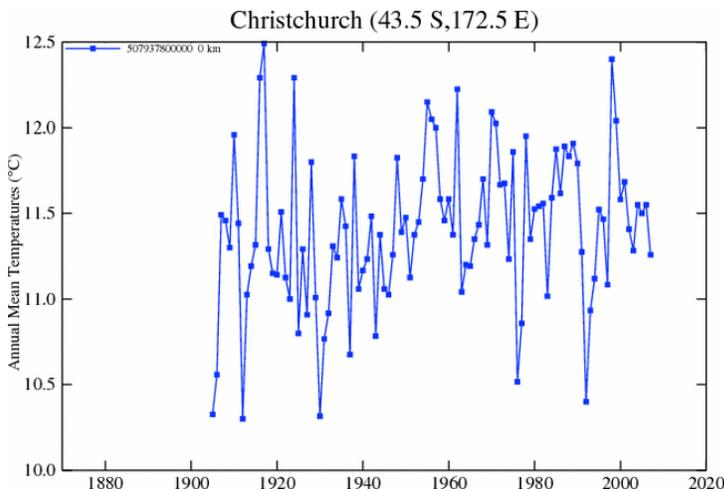
.You will note that the maximum temperature since 1880 was in 1934, and that the main feature of the record is not a steady rise in temperature, but an oscillation of about 65 years with peaks around 1940 and 2000 and troughs around 1900 and 1970. .

The kind of corrections made for this record are only possible where there are many weather stations and a consistent level of quality control over many years so they cannot be applied in most parts of the world. However, a similar correction process has been carried out for China. This is a graph I was given when I was in Beijing in 2006



The same oscillation is seen. .An interesting feature of this Chinese record is that one of the graphs, the one in bold, is actually a subset from the record you quoted, from P D Jones. It seems that the “warming trend” which is present in your graph is less marked when you examine the part for China, where the measurements are more reliable, as also for the USA. The addition of the many less reliable records seems to cause an exaggeration of the “warming trend”..

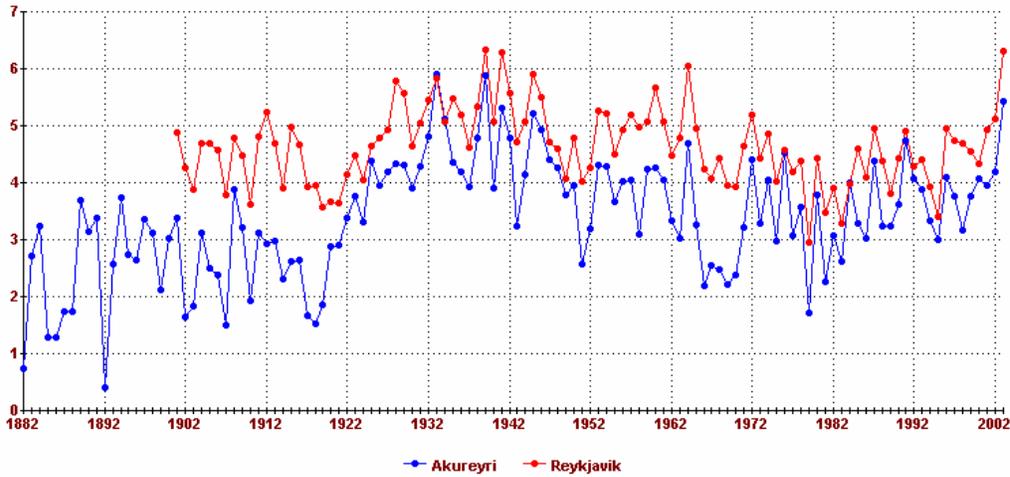
There are over 100 local records which were long-term, well kept, and little affected by urban bias,. that show similar behaviour to the above. .Here is Christchurch, New Zealand.



The maximum temperature here was in 1917

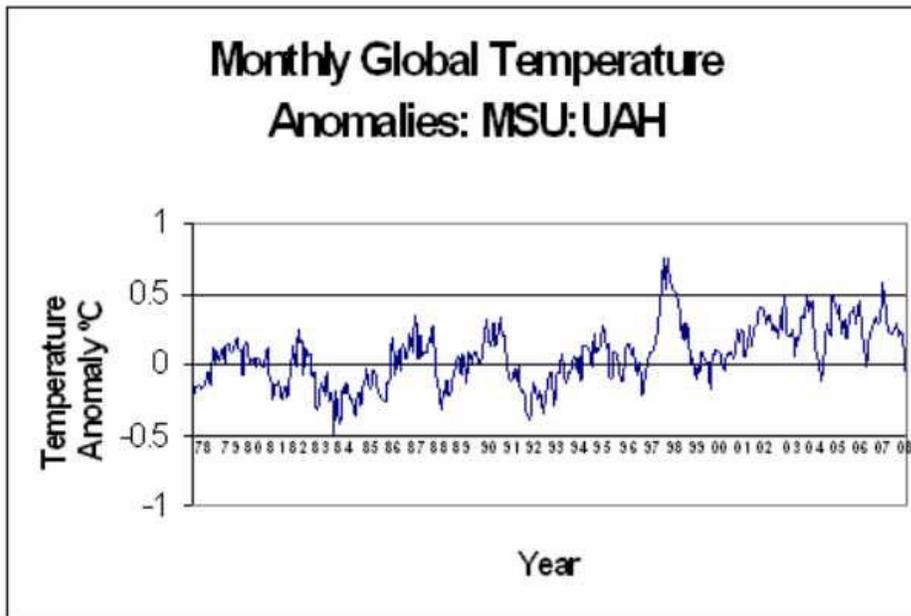
The temperature oscillation was particularly marked in the Arctic, as shown by these charts from Iceland

Reykjavik & Akureyri, Iceland
Annual Mean Temperature [°C]



It should be noted that the recently well-publicised warmer period in the Arctic was seen previously in the 1940s.

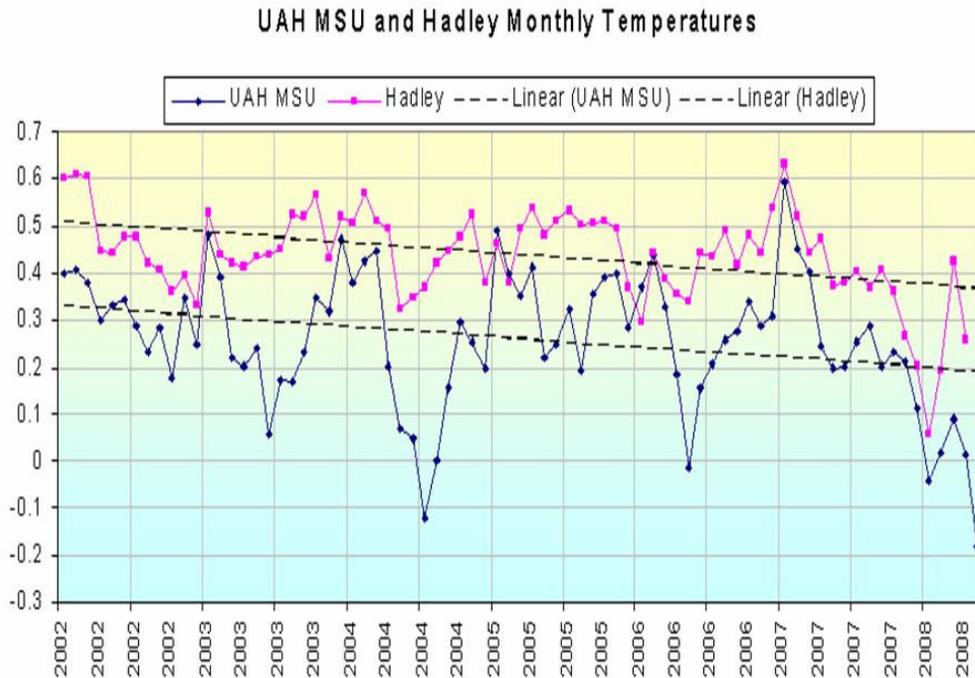
There are two global temperature measurement series in the upper atmosphere which overcome some of the limitations of the surface series. These are the radiosonde series, from 1960, and those from Microwave Sounding Units (MSUs) on NASA satellites, from 1976. Both are free from urban influence and the satellite information is close to a genuine global average. One of the MSU records is here:



It shows that there was no significant global temperature change between 1978 and 1997. After the large peak of 1998, attributed to the El Niño event that year, there was a slight jump in 2002 to

another period of unchanged temperature. This period has now come to and end with a sudden recent drop.

The efforts that have been made to improve the reliability of the surface measurements means that there is now a better agreement between all the methods, thus greatly improving the plausibility of all of them. Here they are compared since 2002



While there are still small differences between the surface and satellite systems, they both agree that since 2002 there is a temperature trend downwards, if you want to put it that way. They also agree that there has been a recent sharp drop,

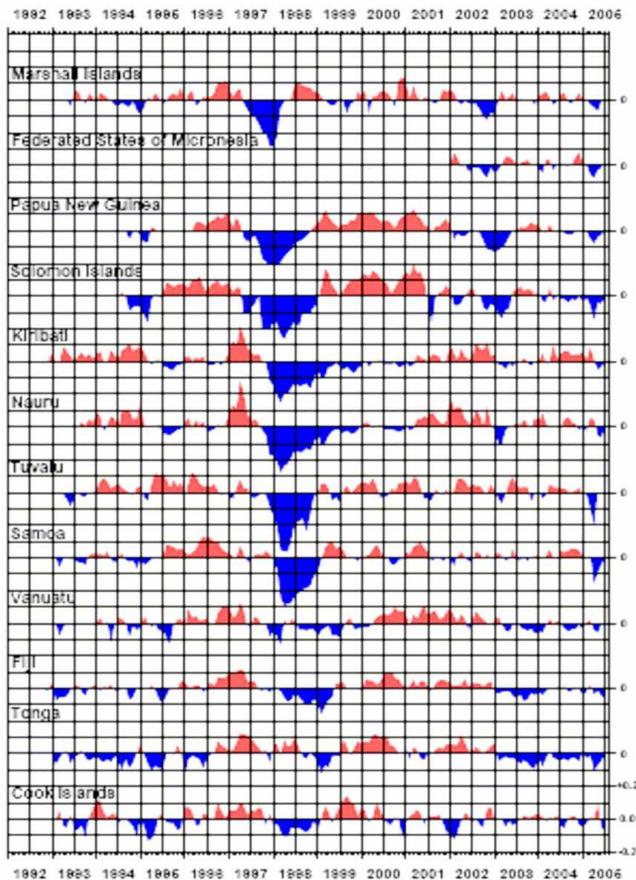
In many of the records it is possible to distinguish temperature drops caused by volcanic eruptions, (Krakatau 1883, Tarawera 1885, Agung 1964, El Chichon, 1982, Pinatubo 1991). Prominent El Niño events are related to an upward temperature change (particularly prominent with 1998) and the various ocean oscillations all seem to influence the record, particularly the Pacific Decadal Oscillation which has the 65 year oscillation also found in many long-term temperature records. The North Atlantic Oscillation shows an influence on the temperature oscillation in the Arctic. There are less fully characterised influences of sunspot numbers, cosmic rays, solar wind and perturbations in the Sun's orbit from the major planets.

There is no reason why a combination of all these factors could not ultimately explain the behaviour of all these temperature records without any additional postulates such as changes in greenhouse gases in the atmosphere.

With all this complexity, the use of linear trends to describe any change in the climate is unfair and confusing. With such irregular behaviour, different trends result from a different choice of start and end points and the statistical significance of any trend cannot be properly determined because of the uncertainty of the original data. Your recommended use of a “decade-to-century” trend is even less helpful as it conceals the reality of the changes that are obviously taking place. You claim that departure from this unwieldy portmanteau provision involves only “individual years”, but the various temperature records have many longer sequences of cooling. The one that you quote has cooling periods from 1880 to 1910 and from 1940 to 1980. The recent cooling sequence from 2002 has already lasted six years. These are hardly just “individual years”.

You mention the evidence that the IPCC has assembled for sea level, diminishing snow cover, melting of glaciers, and diminishing arctic sea ice cover and claim that this evidence makes it clear that the world is warming. I find it difficult to follow this argument, since we have just shown, from a consideration of all the available evidence from temperature measurements, that since about the year 1998 the world is not warming at all.

Furthermore, much of the evidence presented by the IPCC seems to have been incomplete. Take, for example, sea level. Flinders University in Adelaide recently completed a programme of study of sea level change in 12 Pacific islands where the latest modern equipment was installed in 1991. The results show no perceptible overall change in any of the islands since then, a period of 16 years, although there was a dip from the 1998 hurricane and a smaller one in 2002. The study includes the much disputed island of Tuvalu which actually rose in 2006. Here is their graph:



If you examine, as I have, the published sea level records, you will; find that many of them, including those in New Zealand, seem to be levelling off to a steady value rather than rising. This even includes the satellite measurements for the open ocean, which seemed to be increasing until recently.

Tide gauge equipment is difficult to keep level because of constant battering from the sea local subsidence on the land from buildings and removal of ground water and minerals. It seems likely that the recent reduction of sea level change may be associated with the installation of Global Positioning equipment on the tide gauges do that they stay level.

The temperature records which show an oscillation, such as those for the Arctic, display a rise in temperature from the upwards part of the oscillation from 1976 to 2000, which would be expected to reduce ice cover, as happened the last time before 1940. It might take time to adjust to the recent recorded absence of warming but there are already accounts that the ice cover is beginning to increase again. Snow cover should behave in the same way.

Glaciers do seem to be melting, but some are not, such as the Fox and Franz Josef glaciers in New Zealand, Glacier melting is influenced by a number of factors including local precipitation and land use changes, and even recovery from the “Little Ice Age” or even the big ice age. Nobody seems to measure temperature anywhere near glaciers so its influence is unknown.

Even if there is evidence that the globe is warming, the evidence you mention shows only that climate is changing. Climate is always changing. What is so surprising?

The IPCC, by stating “warming of the climate system is unequivocal” seem to have chosen the term “climate system” in order to avoid mention of global temperature, which, they have to admit, is not warming. They seem to argue that the “climate system” can warm when the temperature measurements show it is not warming. Even if this strange proposition is accepted it is simply not supported by evidence. .

The quoted statement is, in any case, denied in another part of the IPCC Report (Chapter 9 page 668)

“As noted in the SAR (IPCC, 1996) and the TAR (IPCC, 2001), unequivocal attribution would require controlled experimentation with the climate system. Since that is not possible, in practice attribution of anthropogenic climate change is understood to mean demonstration that a detected change is ‘consistent with the estimated responses to the given combination of anthropogenic and natural forcing’ and ‘not consistent with alternative, physically plausible explanations of recent climate change that exclude important elements of the given combination of forcings’ (IPCC, 2001).”

This quoted statement, incidentally, tries to argue that “attribution” which is the IPCC synonym for “correlation” is evidence for cause and effect. This is contrary to the firmly established logical principle, accepted by the IPCC in “Climate Change 2001”, which asserts that correlation, however convincing is not evidence of causation, .

You have not suggested that there is evidence that the changes in climate, which are mostly explicable by natural influences, can also be shown to be influenced by changes in greenhouse gases in the atmosphere.

Yours Sincerely

Vincent Gray