This is about the polar bear cover story from Nature.

The text of an article I submitted to Nature is below. It was my reaction to their polar bear cover story on December 16th. They will not touch it because it shows how wrong the premise behind this cover story is. They think that the greenhouse effect is warming the Arctic and if you cut greenhouse gas emissions you can save the polar bears. This is absolutely false. Arctic warming is not greenhouse warming as I have said before but is caused by warm currents that started to invade the Arctic at the turn of the twentieth century. I had to include the scientific argument for currents warming the Arctic into the article because they simply would not understand it otherwise. They had an opportunity to get some real climate science into their journal but they turned it down and missed the boat.

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On 16th December 2010 *Nature* had a hopeful cover story: "STAYING ALIVE: Cut greenhouse-gas emissions now and we can still save the polar bear." Unfortunately it is false hope based upon a misunderstanding of Arctic warming. This cover story relies upon a paper by Amstrup et al.[1] that is inside. They remind us in the beginning of their paper that "… based on projected losses of their essential sea-ice habitats, a United

States Geological Survey research team concluded in 2007 that two-thirds of the worlds's polar bears (Ursus maritimus) could disappear by mid-century ..." But then they tell us that all is not lost because the USGS study left out an important factor, namely the possible benefits of greenhouse gas mitigation. By extensive modeling work they then demonstrate that greenhouse gas mitigation could improve the survival of U. maritimus well into the next century. Actually, both USGS and Amstrup use modeling to predict Arctic temperature from the rising concentration of atmospheric carbon dioxide. Arctic temperature in turn is what determines ice conditions in the Arctic that are important to survival of U. maritimus. The model results from Amstrup et al. show that "… when greenhouse gas mitigation was combined with best on-the-ground management practices (for example, controlling hunting and other interactions with humans) extinction was not the most probable outcome in any ecoregion, and future population sizes … could be equivalent to or even larger than at present …" But all that is conditional upon the reality of what their models predict about arctic warming. Lets take a look at what we know about this reality. The arctic warming itself started more than a hundred years ago as Kaufman et al.[2] have shown. They published a two thousand year long history of arctic temperature that illuminates the pre-history of current warming, essential for understanding the Arctic of today. What they found was a slow, linear cooling trend, probably due to earth orbital variations, for most of this period. But at the turn of the twentieth century everything changed: the temperature curve suddenly turned up like a hockey stick and kept on going up. It paused for a while in mid-century, resumed its climb between 1960 and 1975, and is still going strong. This two-part warming has also been observed by others. Thus Ian Plimer[3] reports two noticeable periods of warming, the first from 1920 to 1930 and the second from 1975 to 2000. According to Plimer, many parts of the Arctic were closed to ships, even to icebreakers, prior to the 1930s. By contrast, in the thirties the North Sea route, around Spitsbergen, had opened up. The Arctic was then warmer than in recent years and ships that were not icebreakers could reach past Spitsbergen to the Russian arctic ports and circumnavigate Franz Joseph Land which is half way between Siberia and the pole. And this route stayed open through World War II when U.S. ships were able to deliver lend-lease supplies to Russian arctic ports. Bengtsson et al.[4] likewise report an early century warming trend that was followed by cooling from 1940 to 1960. According to them the present warming did not reach the level of the forties until 2003. We are past that today and in unknown territory. Let's now go back to Kaufman et al. who discovered the sudden start of arctic warming in the first place: "An Arctic summer temperature of -5 degrees Celsius … might have been expected by mid-twentieth century … instead our reconstruction indicates that temperatures increased to +0.2 degrees Celsius by 1950. This shift correlates with the rise in global average temperature which coincided with the onset of global anthropogenic changes in global atmospheric composition …" And again: "…warming in the Arctic was enhanced relative to global average, likely reflecting

a combination of natural variability and positive feedbacks that amplified the radiative forcing." A wonderful concatenation of global warming mantras, all wrong. What this tells us is that they were too lazy to think it through and substituted dogma for analysis. First, temperature curves from NOAA and the Hadley Centre (HadCRUT3) both show that the start of the twentieth century was followed by a ten year cooling trend, not by any rise of global average temperature which came later. Bengtsson et al. also note that anthropogenic forcing in the early part of the century was unlikely since the greenhouse gas forcings at the time amounted to only twenty percent of those in the present day. And Trenberth et al.[5] show that carbon dioxide took no notice of the arrival of a new century. This fact alone tells us that it is quite impossible for carbon dioxide to have had anything to do with that warming: the laws of physics simply don't allow it. The absorptivity of carbon dioxide in the infrared is a physical property of that gas and it cannot be changed. If you want more absorption so as to create a warming you must

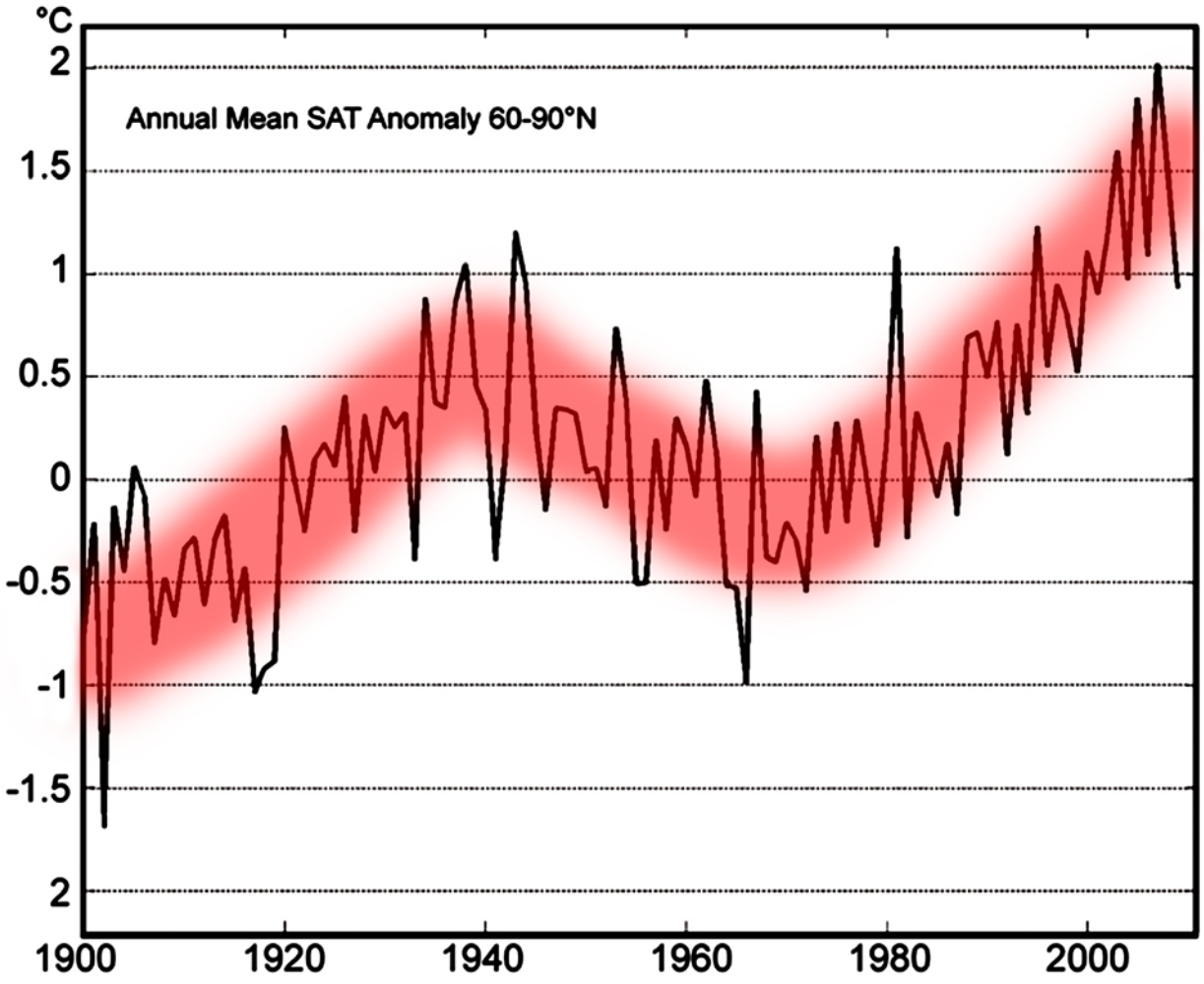

Figure 1. SAT Anomalies from 1900 – 2008, 60-90 degrees North latitude[6].

put more gas into the atmosphere and we know this did not happen. Which leaves ocean currents as the only possible source of delivering warmth to the Arctic. This hypothesis requires that a rearrangement of the North Atlantic current system at the turn of the twentieth century and not some greenhouse effect is the true cause of arctic warming. And behavior of ocean currents is not anything the models used by both USGS and by Amstrup can handle which makes both of these modeling efforts useless. History of arctic warming is also recorded by SAT anomaly data from 60-90 degrees north latitude (Figure 1). These data are available from CRU, and have a better time resolution than Kaufman et al. original observations do. They show that the twentieth century arctic temperature history breaks down into three linear segments: the original warming from start of the century to approximately 1940; a cooling from 1940 to 1970; and a warming again up to the present. What next? These segments are each about thirty to forty years long and if this is an oscillation we should expect cooling because the last warm stretch is already quite long. Many so-called “oscillations” in the ocean are identified on much less observational data than this. If we do get a cooling sometime soon then it is possible that there exists an oscillation involving or related to ocean currents. And if that is really the case it has to involve the thermohaline circulation in some way because of the long cycle length involved. But the fact that there was a definite beginning to warming speaks against the oscillation idea which must remain a speculation for now. We really don’t know what made the currents change originally and we don’t know why there was a pause and reversal in midcentury. And another thing we don’t know is whether the Meridional Overturning Circulation belongs into this picture in some way or not. This is where much more climate study is needed. That midcentury cooling may have been just a hiccup but should another cooling come along I might welcome it as relief for polar bears. Mitigation by gas reduction will not help them. All we can do for them now is to make sure that “hunting and other human interactions” that Amstrup et al. speak of don’t make their situation worse.

References

1. Steven C. Amstrup, Eric T. DeWeaver, David C. Douglas, Bruce G. Marcot, Gerge M. Durner, Cecilia M. Bitz, & David A. Bailey, "Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence" Nature **468**:955-958 (16 December 2010)

2. Darrell S. Kaufman, David P. Schneider, Nicholas P. McKay, Caspar M. Ammann, Raymond S. Bradley, Keith R. Briffa, Gifford H. Miller, Bette L. Otto-Bliesner, Jonathan T. Overpeck, Bo M. Vinther, Arctic Lakes 2K Project Members, "Recent Warming Reverses Long-Term Arctic Cooling" *Science*, **325**:1236-1239 (4 September 2009)

3. Ian Plimer, *Heaven and Earth: global warming the missing science* (Taylor Trade Publishing, 2009), pp. 259-262; 287-291

4. Lennart Bengtsson, Vladimir A. Semenov & Ola Johannessen "The early century warming in the Arctic – A possible mechanism" Max-Planck-Institut für Meteorologie, Report No. 345 (February 2003) pp. 2-3

5. Kevin E. Trenberth, Kathleen Miller, Linda Mearns & Steven Rhodes *Effects of Changing Climate on Weather and Human Activities* (University Science 2000) p. 15, Figure 11

6. These data are Arctic-wide annual average surface air temperature anomalies relative to 1961-90 mean. Adopted by addition of color from Figure A.1. from the Atmosphere section in NOAA's *Arctic Report Card: Update for 2010*, dated October 14th, 2010. Data shown in the figure are based on land stations north of 60^{0}N taken from the CRUTEM 3v dataset and available online at www.cru.uea.ac.uk/cru/ data/temperature/