



If Evans is right, we couldn't have had ice ages or interglacials. Similarly, the warming observed from the 40 per cent increase in CO<sub>2</sub> over the span of the instrumental record should have been smaller than what has been observed, all other factors being equal.

The problem with the temperature records for 'climate skeptics' is that they all show much the same trend, no matter how they are obtained. Overall it's getting warmer by about 0.15 degrees per decade<sup>11</sup>.

On Greenland ice, Chen's paper shows that the rate of melt can change quickly, within a few years. But the trend overall is downward: figures 5, 7, and 9 are consistent with the rest of the literature and Ian's diagram<sup>12</sup>.

Question the claims. Seek the evidence.

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# Climate for change

In which is discussed ice caps, websites, abuse, feedback and clathrates

Nearly two years ago I tackled the issue of climate change in this magazine. Were humans affecting the world climate? After some reading, I rapidly concluded that it would take me many years to fully grasp the issues. Instead, I found three important considerations which suggested that we are affecting world climate. First, an overwhelming

majority of the top climate scientists accept that we are affecting the climate. Second, major scientific bodies endorse this conclusion. Third, two independent researchers, Morgan and McCrystal, had analysed the issues and agreed with the scientific consensus. To me, that seemed sufficient to conclude that humans probably were affecting world climate.

When I wrote my paper, I was quite worried. I really thought that someone might find huge flaws with my approach and tear it to pieces. But that didn't happen. Some people understood and accepted my approach. The ones who didn't accept it, didn't seem to fully grasp what I was doing.

In the last issue of the *Skeptic*, James Young comments that I had difficulty making a decision

about global warming. That isn't quite true. I concluded that a complete mastery of the topic would take too long, and devised an intellectual short-cut. If the short-cut is not valid, I need to be shown why. If it is valid, it should figure in arguments pro and con among non-experts on the topic.

James is concerned with the dispute between Ian Bryce and John Happs about global warming. Bryce is pro-AGW, Happs opposed. James chides Ian Bryce for being "overly assertive", and clearly favours a courteous style of debate. Then he quotes a series of sources to contest Ian Bryce's arguments.

James draws on a journal article by Chen, Tapley and Wilson to claim that "it is shown that, for the whole of Greenland there is virtually no ice lost. ... Their study shows that Greenland's north-western glaciers' ice loss increased by 100Gt/yr; Greenland's south-eastern glaciers' ice loss decreased by 109 Gt/yr." (Young 2012: 58)

I did a double-take when I read this. If one side of Greenland is losing about 100 gigatonnes more ice per year and the other is losing about the same amount less per year, then surely that tells us nothing about the overall rate of loss of ice. It could be zero or it could be enormous. The figures simply say that an increase in the rate of loss on one side is roughly balanced by a decrease in the rate of loss on the other. Where is the reasoning which shows that "there is virtually no ice lost"?

I was puzzled, so I dug out the original paper. I read the whole paper three times. Essentially, the authors are using a satellite gravitational method of estimating variations in ice loss in Greenland, the world's second largest ice cap. Their method has many potential errors and distortions, and so the scientists go in for a good deal of fancy mathematics before concluding: "While the Greenland as a whole continues to lost a significant amount of ice ( $219 \pm 38$  Gt/yr) during the period considered here ... during the last two years (ie 2008 and 2009) the ice loss in the southeast is basically stalled, with no evidence ice loss trend at all." (Chen et al 2011: 8. Grammatical errors in the original)

The authors point out (on page 9) that their findings broadly agree with other researchers' results from other methods. So, far from Greenland losing no ice, the authors conclude that it is actually losing over 200 gigatonnes (ie 200 times 109 tonnes) per year. To me, that's a terrifying amount!

I have no way of judging how valid the methods of Chen and his colleagues are. However, it seems clear that their paper does not constitute evidence against the view that the ice-cap is melting and, if the methods are valid, it actually supports that conclusion. This is the only properly refereed source

which James cites. All the rest are websites. Now the internet has much good material on it, and a great deal of lunacy and rubbish. We must therefore treat website material with a great deal of caution.

This led me to look carefully at James's major source on climate change or its absence, the work of Dr David Evans. James reports that he finds Evans's arguments "very persuasive". Well, upon what basis? I can't evaluate the Chen et al paper because I don't know enough to critique either the data collection or the mathematics. Unless James has specialist knowledge, I don't see how he can do much better in evaluating the claims of David Evans.

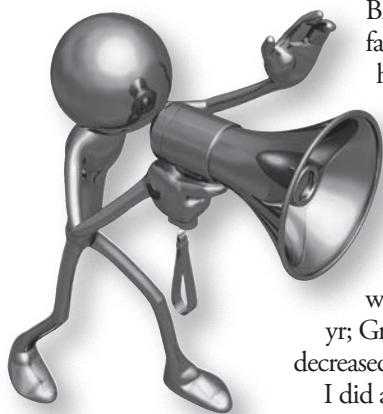
It is certainly true that Dr Evans, on his website, produces what look like powerful arguments against human-induced global warming. Indeed, he argues that the Earth is actually cooling despite increasing carbon dioxide in the atmosphere. He produces lots of charts and graphs and arguments, but his essential argument is that the climate change models don't fit the evidence.

If this is so, we would expect that Dr Evans would have made strenuous efforts to convince the scientific community of this. We would expect him to have given papers at scientific conferences detailing his claims, and to have published papers in scientific journals. That is how scientific revolutions start. The problem is that when I use scientific databases like *Web of Science*, I can find nothing at all by Evans on climate change matters. He doesn't seem to have contributed to scientific forums on the issue.

I looked closely at the evidence about Dr Evans. He seems to be a very good engineer and mathematician who did some work on a carbon accounting system for the government (and published the results). However, there is no record of his having expertise on climate matters. And, for what it is worth, there is a website which strongly critiques Dr Evans' claims: according to this site, his claims have been debunked again and again.

Now, logically, if we accept the evidence found on websites as James does, then we must accept this other internet evidence which says that Evans' arguments consist of "long-debunked myths and gross misunderstandings of basic climate science". If we don't accept evidence from websites, then Evans's original claims cannot be "persuasive". Or we can be very wary of accepting internet 'evidence'.

Another aspect of Evans' claims worries me, and it should worry James too. We both favour courteous debate, but Evans has publicly referred to a previous Prime Minister as "Gullible Kevin" and "you patsy". He seems to believe that the whole concern with climate change is because the "regulating class" is trying to control the world. He refers to whole categories of people



– including academics like me – as “Parasitic/ Political Regulating Anti-Marketeer”, and says of us that “honesty is not their highest value”. I agree with James that abuse is inappropriate in serious discussion, so why does James not denounce Evans as well?

All this matters because, nowadays, it is relatively easy to create the impression of powerful scientific evidence without actually having any. The creation scientists did exactly that in the 1980s, and fooled millions of people. I hesitate to say that climate change deniers are like creation scientists, but the most convincing demonstration to the contrary would be if they produced some real, peer-reviewed science.

I am suggesting that we skeptics must be very careful when we comment on scientific matters about which we are not expert. It is very hard to read and understand cutting-edge science (try reading the Chen et al paper!), and it is dangerously easy to accept ‘scientific’ arguments which are wrong. If we accept glib tirades as the last word on scientific matters, my view is that we have lost the right to be called skeptics.

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## and a little bit more...

I am not a climate scientist. However I have learned the underlying physics and included it in my university teaching, and have had some experience in reporting and evaluating the work of experts.

To clarify this complex topic of climate change, we can start by identifying several distinct positions as follows.

## POSITIONS

- A. Global warming is either not happening, or it’s not manmade. This classic *strong denier* position requires that both the theory and the measurements are faulty. This is the stance of Ian Plimer, non-Lord Monckton, Marc Morano and Nick Minchin.
- B. Global warming is happening and is largely manmade, but is much smaller than the IPCC claims. This position (which could be called *weak deniers*) allows the basic theory to be right, but claims the measurement data has been misused. This is the position of Dr David Evans (and perhaps James Young), who claims an amplification factor of 0.5. If true, climate change is not yet a serious problem.
- C. The IPCC is generally right (this could be called the *warmist* position). Their models include a gain of around 3, which is based on measured temperature rise. If true, climate change is on its way to becoming a serious problem, threatening perhaps 40 per cent of species through habitat loss, and (together with overpopulation, famine and warfare) perhaps threatening civilisation.

## MANMADE WARMING VERY LIKELY...

Firstly, what does theory tell us? By 1861, Tyndall showed that CO<sub>2</sub> strongly absorbs infrared, and by 1894 Arrhenius described how extra CO<sub>2</sub> in the atmosphere would trap some of the outgoing infrared radiation and reflect half of it back to earth, thus warming the surface. This was sufficient to allow theory to predict that manmade CO<sub>2</sub> and other greenhouse gases (GHG) would warm the planet (if other things remain unchanged), casting doubt on Position A.

Later researchers, including Callendar, were by 1938 able to quantify this effect, to model it correctly, and to allow for different latitudes. This showed that CO<sub>2</sub> is at least a major factor in the observed warming, and showing the denier position A to be untenable.

## ...BUT HOW MUCH?

Supposing CO<sub>2</sub> increased from its pre-industrial