

The Ethics of Climatic Scepticism- Additional Web Resources

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The topic of climate change and climate scepticism is a contentious one in some quarters, and there is far more information available than can possibly be covered in one Grove Booklet. So we will use these pages to expand on some points and to give additional resources. In our booklet these will be indicated by **See Web Resources 1, 2, 3** etc.

Web Resources 1- Introduction

a) Publications on Climate Change

There have been many publications looking at aspects of climate change, and we will highlight a few for further reading. A relatively simple account is provided by Maslin¹, while Houghton² is a more detailed volume. Christian perspectives have been provided by: Houghton³; Hodson and Hodson⁴; Hayhoe and Farley⁵; Atkinson⁶; and Northcott.⁷

b) The Climate Change Debate

This Booklet is based on the premise that the basic idea of anthropogenic global warming (AGW), as proposed by the Intergovernmental Panel on Climate Change (IPCC), is now accepted as proven among the vast majority of scientists. This is because the evidence is so strong. The core assertions are:

- That global surface temperature has risen in the last century.
- That the increase in our emissions of greenhouse gases is almost entirely responsible for the temperature rise.
- That unless we drastically cut emissions further rises will occur.
- That further increases in global temperature will be highly damaging for our global civilization and particularly for the poor.

Outside of these four points there are still many areas of doubt and uncertainty. For example it is uncertain why sea ice is shrinking rapidly in the Arctic, but is slowly growing in the Antarctic.⁸ However, serious debate about the basics of AGW has more or less ceased among climate scientists.

There have been many previous scientific debates that had uncertainties initially, but came to a firm conclusion. Some recent examples include:

- The connection between smoking and cancer.
- That the HIV virus is the cause of AIDS.
- The connection between release of chlorofluorocarbons (CFCs) into the atmosphere and the development of the Ozone Hole.
- The link between sulphur dioxide pollution from power stations and the forest dieback observed in Western Europe and North America in the 1970s.

The present authors are firmly of the opinion that the debate around AGW has now come to a conclusion in a similar way to the above. So the AGW 'debate' is now largely decided and only a very few genuine climate scientists would disagree.

c) Resources to Investigate Debated Questions Concerning Climate Science

There are very many potential questions concerning climate science. Many of these have been answered years ago, but they still tend to come up in the popular media. We would point readers of our booklet to two good sources that answer all of the common questions and many more besides:

- i. The Royal Society has recently (27 February 2014) produced 'Climate Change: Evidence & Causes' in association with the US National Academy of Sciences. There is a booklet to download, and answers to 20 of the most common questions are available from links on the right hand side of the web page. Go to: <https://royalsociety.org/policy/projects/climate-evidence-causes/> (accessed 29 September 2014)
- ii. Possibly the best and most detailed blog site supporting the IPCC consensus position is Skeptical Science. Again they have a most commonly asked questions section to the left of the home page. Some of the material posted is highly technical, but there is usually an easier to digest summary. Go to: <http://www.skepticalscience.com/> (accessed 29 September 2014)

There are many web sites and blogs giving a sceptical view of climate science and AGW. The present authors do not endorse these sites, and we recommend that they are not read in isolation. Readers are advised to refer back to the above websites, where there are explanations of many of the issues raised.

- i. Perhaps the most well-known climate sceptic blog: Watts Up With That? <http://wattsupwiththat.com/> (accessed 16 August 2014).

- ii. From the UK perspective the most well-known climate sceptic web site is that the Global Warming Policy Foundation (GWPF) <http://www.thegwpf.org/> (accessed 11 August 2014). See **Web Resources 6** for more details of GWPF.

Web Resources 2- The Scientific Consensus

It is often stated that 97% of climate scientists are in favour of the IPCC consensus on AGW, but what is the evidence for this assertion?

The first person to attempt an assessment of the relative strength of scientists supporting and opposing the consensus was Naomi Oreskes in 2004.⁹ She analysed 928 papers from international journals, which mentioned the key phrase 'global climate change'. She divided them into six categories: explicit endorsement of the consensus position; evaluation of impacts; mitigation proposals; methods; palaeoclimate analysis; and rejection of the consensus position. Of all the papers, 75% fell into the first three categories, either explicitly or implicitly accepting the consensus view; 25% dealt with methods or palaeoclimate, taking no position on current AGW. Remarkably, none of the papers disagreed with the consensus position. Responding to the paper Pielke¹⁰ argued that "consensus" does not mean uniformity of perspective', and that there were some papers in the literature that did not hold to the IPCC consensus. Oreskes¹¹ reiterated that her analysis was a strong indicator that 'existing scientific dissent has been greatly exaggerated.'

In 2010 Anderegg et al.¹² adopted a somewhat different approach. They investigated 1372 researchers, and categorised them as 'convinced' and 'unconvinced'. These scientists were identified by taking the lists of those who had signed up to statements backing the IPCC and those who had signed statements opposing IPCC statements on AGW. They examined all those on the lists, and categorised someone as a 'climate researcher' if they had published 20 papers on climate science. The basic premise was that a strong scientist would get published. If one area of their work was unpopular or blocked, they would publish in a second area of research. They also investigated who were more heavily cited. This analysis was based on the number of citations for each person's best four papers on Google Scholar. Of the scientists identified, 97% were 'convinced' and only 3% were 'unconvinced'. The 'convinced' group had published more, on average 119 papers compared to 60 in the 'unconvinced' group. The mean number of citations for the best four papers of the

'convinced' group was 126 while the 'unconvinced' group was lower at 59. There were also a number of criticisms of this paper. Notably, O'Neill and Boykoff¹³ thought it was unwise to attempt to put all climate scientists into just two categories and were critical of the terminology (denier, skeptic, contrarian) used in the paper.

The most recent (2013) paper in this area is that by Cook et al.¹⁴ who followed a similar approach to Oreskes (above), but were able to include the latest research papers in their analysis. Their conclusion was that 97.1% of paper abstracts endorsed the consensus on AGW, and 'that the number of papers rejecting the consensus on AGW is a vanishingly small proportion of the published research.' This paper has come under intense scrutiny, particularly from economist, Richard Tol. Tol is an advisor to the Global Warming Policy Foundation, and an associate of Bjørn Lomborg. The arguments mostly concern the methodologies used and the statistical analysis of the data, and a detailed account was provided by Readfearn.¹⁵ Tol published his attack on Cook et al. in the journal *Energy Policy* in 2014.¹⁶ The details of his statistical arguments are well beyond our scope, but even after all his detailed criticism he concluded, 'There is no doubt in my mind that the literature on climate change overwhelmingly supports the hypothesis that climate change is caused by humans. I have very little reason to doubt that the consensus is indeed correct.' To conclude, even the sceptics tend to agree that the sceptical climate scientists are heavily outnumbered by those favouring the consensus. Analyses of the scientific literature concerning climate change and of positions taken by scientists on this issue are conclusive, and the consensus on AGW as expressed by the IPCC is very strong. Most of those holding sceptic views are not climate scientists, and often have no background in science. However, there are a very few strong climate scientists, and we will consider these below (See **Web Resources 5**).

Web Resources 3- Bias and false balance in the media

There has been considerable concern that 'false balance' in the media has not been helpful in persuading the general public about the reality of climate change. Often top climate scientists are pitted against climate sceptics with no scientific training to provide balance. Those in favour of the IPCC consensus point out that 97% of climate scientists support the IPCC view. In 2014 the BBC suggested that they will take measures to redress the balance so that minority views have less impact. This need not mean that sceptic voices will be totally banned from the BBC. A sensible

approach would be to take the same line as with political parties and their broadcasts at election time in the UK. There the broadcasts are in proportion to the strength of the party in the country. So if climate scientists and those in favour of the IPCC consensus were granted nine minutes out of ten on the topic that would more fairly represent the balance of scientific opinion.

Web Resources 4- Climategate: quotes from hacked emails

The Climategate episode is one of the most notorious in the history of climate science and climate scepticism. Although many documents and emails were stolen from the server at the University of East Anglia everything focussed on the word 'trick' and the phrase 'hide the decline'. As we say in our booklet 'trick' seems to be shorthand for a neat method. But what of 'hide the decline'? This refers to the famous 'hockey stick' paper by Michael Mann and his colleagues.¹⁷ The paper presented data back to 1400AD, and showed a rapid increase in temperature in the 20th century. Later Mann and his colleagues extended this back to 1000AD. Of course instrumental measurements with thermometers only cover the last century. So to take the record back a thousand years Mann et al. used a number of proxies for temperature. These are natural phenomena that give an indication of temperature such as the width of tree rings and isotopic data from ice cores. What Mann et al. were able to do was to statistically stitch together the proxies to give one graph. It was ground-breaking research at the time. Now to Jones' (in)famous email sentence: 'I've just completed Mike's Nature trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to hide the decline.' Mike refers to Michael Mann and Keith is Keith Briffa, who provided the data for one of the proxies. What Mann et al. did was to remove some of Briffa's data because it was known to be incorrect and to substitute the instrumental temperature data. It was clear in the original paper that Mann et al. had done this, and the instrumental data were plotted on a separate line from the proxy data. The erroneous tree ring data were well known at the time, and the original authors of the work, Briffa et al., had recommended not using the post 1960 part of their temperature reconstruction in a paper published in 1998.¹⁸ The whole Climategate affair did much damage to public confidence in climate science. Michael Mann's work has now been verified many times by other groups of scientists, but 'hide the decline' still rattles around the sceptic lobby. Mann himself faced all sorts of personal attacks, intense

scrutiny and lawsuits. He wrote of his experiences in *The Hockey Stick and the Climate Wars*.¹⁹

Web Resources 5- Can scientists publish sceptical work?

It is often stated that scientists who are sceptical on AGW cannot publish their work because the peer review system acts as a kind of 'medieval guild' in blocking publication. This has been given as a potential reason why literature surveys like those outlined in **Web Resources 2** above find so few sceptical papers. However, there are certainly a number of scientists who are (or were) sceptical of at least some aspects of AGW, and we will outline four:

John Christy- is a climate scientist at the University of Alabama in Huntsville. He is a committed Christian and a former Baptist missionary in Kenya. He is on record as being highly sceptical of AGW,²⁰ but has a very strong publication record including papers in *Nature* and *Science*.²¹

Judith Curry- is former chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology. In the past she was generally supportive of the IPCC view on climate change, but has become increasingly sceptical. She has argued that climate scientists could be more open to discussing matters with sceptics. Curry is also highly critical of climate models, and believes the IPCC have not taken enough account of the uncertainties involved.²² She has an exceptional publication record.²³

Richard Muller- is professor of physics at the University of California, Berkeley, USA. He has been highly critical of Michael Mann's hockey stick graph and the work behind it. Muller set up the Berkeley Earth Surface Temperature project, as he was concerned that there were errors in the instrumental temperature record over the last century.²⁴ After three years work Muller wrote, 'following an intensive research effort involving a dozen scientists, I concluded that global warming was real and that the prior estimates of the rate of warming were correct. I'm now going a step further: Humans are almost entirely the cause.'²⁵ Muller has published many papers and books in a wide variety of fields.

Roy Spencer- is Principal Research Scientist in climatology at the University of Alabama, Huntsville, USA. He has worked with John Christy, and is also a Christian. Spencer is a Cornwall Alliance Senior Fellow, and has published extensively in top science journals.²⁶

Of these four scientists, Christy and Spencer definitely fall well into the sceptic group. Curry is more difficult to categorise, but seems to be getting more sceptical, and Muller seems to have been converted from his former scepticism. All four have very good publication records and their sceptical views do not seem to have prevented them publishing. One must conclude from this and **Web Resources 2** that there are a very small number of top scientists who hold sceptical views, but that the peer review system has not worked against them.

Yet there are cases where climate scientists claim that their work is blocked by the peer review system. What of these? One of the present authors (Martin Hodson) has many years of experience on both sides of the system. He frequently reviews papers in both plant science and environmental science, and rejects a fair number. The reasons for rejection tend to be poor quality work, lack of originality, and occasionally plagiarism. The papers rejected are often then published in lower ranking journals. Nowadays there are so many journals that are desperate for papers that it is possible to publish almost any quality of paper somewhere. Conversely the top journals reject almost all the papers that are submitted and only the most original work is published. Even very good work is often rejected from *Nature* and *Science*. So we should not be surprised if some climate science papers get rejected, whether the authors hold to the IPCC consensus or not.

Web Resources 6- Owen Paterson and the 2014 GWPF lecture

Owen Paterson, was secretary of state for environment, food and rural affairs in the UK government from September 2012 to July 2014, when he was removed from this office in a cabinet reshuffle. Paterson was highly unpopular with the environmental lobby on a number of counts and was suspected of being a climate sceptic. When Paterson left office in July 2014 he launched a stinging attack on what he called the 'Green Blob', which he defined as a 'mutually supportive network of environmental pressure groups, renewable energy companies and some public officials.'²⁷ He was invited to give the 2014 Annual Global Warming Policy Foundation (GWPF) Lecture on 15th October 2014.²⁸ In the lecture Paterson called for repealing the 2008 Climate Change Act and for the abandonment of emissions targets. He had relatively little to say on climate science, but repeated the story about the 'pause' in warming that we discussed in our booklet. The Committee on Climate Change, which advises the UK

government on the issue very rapidly produced a point by point rebuttal of Paterson's speech, rejecting most of his ideas.²⁹

Web resources 7- Climate change and religious faith

It is important to distinguish between scientific evidence and religious belief. In popular thinking there has been a linkage between 'belief' in AGW and belief when describing adherence to a religious faith. In 2009, an employment tribunal in the UK ruled in favour of a sacked employee, Tim Nicholson, on the basis that his views on climate change were akin to a religious belief. Nicholson himself stated that he was delighted that his moral and ethical principles were given the same standing as religious ones, but climate change was not a new religion because 'it is based on scientific evidence, not religious faith'.³⁰ In commenting on the case, Oxford physicist, Myles Allen, considered that there is 'confusion over the status of science'. He explained: 'The scientific case for human influence on climate is not a political opinion made stronger simply by lots of people signing up. Nor is it a religious conviction, made stronger...if it is genuinely held. It is based on evidence and understanding that has withstood some of the most intense scrutiny in the history of science.'³¹

Web resource 8- Further reading on Environment and the Christian faith

There are a large number of books in this area. At a more popular level Bookless³² provides a good introduction to environmental theology, while Hodson and Hodson³³ cover both science and theology. Bauckham³⁴ is probably the best book on environmental theology available, while White³⁵ is a multi-author volume looking at a range of environmental issues from a Christian perspective. Northcott³⁶ is a detailed account of the theology of climate change. There are also a set of reflections on 12 key biblical passages by Hodson³⁷ available free online.

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² J. Houghton, *Global Warming: The Complete Briefing* (Cambridge, Cambridge University Press, 2009, 5th edn.).

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- ³ J. Houghton, 'Global warming, climate change and sustainability: Challenge to scientists, policy makers and Christians' *JRI Briefing Paper 14, 2011, 4th edn.*
http://www.jri.org.uk/brief/BriefingNo14_4thEdition_July.pdf (accessed 4 August 2014).
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- ⁵ K. Hayhoe and A. Farley, *A Climate for Change, Global Warming facts for Faith-based Decisions*, (New York, FaithWords, 2009).
- ⁶ D. Atkinson, *Climate Change and the Gospel. Why we in the churches need to treat climate change more urgently* (Operation Noah, 2015) <http://operationnoah.org/resources/climate-change-gospel/> (accessed 9 February 2015)
- ⁷ M.S. Northcott, *A Moral Climate: the Ethics of Climate Change* (London, Darton, Longman and Todd, 2007).
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<http://www.bbc.com/news/science-environment-29312320> (accessed 29 September 2014)
- ⁹ N. Oreskes, 'The Scientific Consensus on Climate Change'. *Science* 306 (2004), 1686.
- ¹⁰ R.A. Pielke Jr. 'Consensus about Climate Change?' *Science* 308 (2005), 952-953.
- ¹¹ N. Oreskes 'Response to Consensus about Climate Change?' *Science* (2005), 953-954.
- ¹² W.R.L. Anderegg, J.W. Prall, J. Harold, and S.H. Schneider, 'Expert credibility in climate change', *Proceedings of the National Academy of Science, USA*, 107, (2010), 12107-12109.
- ¹³ S.J. O'Neill and M. Boykoff, 'Climate denier, skeptic, or contrarian?' *Proceedings of the National Academy of Science, USA*, 107 (2010), E151-E151.
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- ¹⁶ R.S.J. Tol 'Quantifying the consensus on anthropogenic global warming in the literature: A re-analysis.' *Energy Policy* 73, (2014), 701-705.
- ¹⁷ M.E. Mann, R.S. Bradley and M.K. Hughes. 'Global-scale temperature patterns and climate forcing over the past six centuries.' *Nature* 392, (1998), 779-787.
- ¹⁸ RealClimate, 'The CRU hack' 20 November 2009
http://www.realclimate.org/index.php/archives/2009/11/the-cru-hack?wpmp_tp=1 (accessed 18 August 2014)
- ¹⁹ M.E. Mann, *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines* (New York, Columbia University Press, 2012).
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- ²⁶ Roy Spencer. Research Articles. <http://www.drroyspencer.com/research-articles/> (accessed 29 September 2014)
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<http://www.telegraph.co.uk/news/politics/10978678/Owen-Paterson-Im-proud-of-standing-up-to-the-green-lobby.html> (accessed 18 October 2014).
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- ³⁴ R. Bauckham, *Bible and Ecology*, (London, Darton, Longman and Todd, 2010).
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- ³⁶ M.S. Northcott, *A political theology of climate change*, (London, SPCK, 2014).
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