



97% CONSENSUS? NO! GLOBAL WARMING MATH MYTHS & SOCIAL PROOFS.

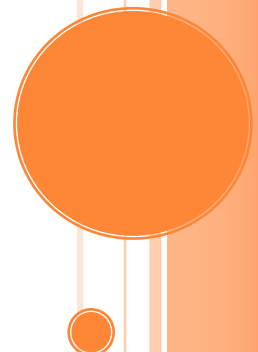
The “Science” of Statisticulation

To gain public acceptance for carbon taxes and renewable energy subsidies, several studies claim a 97% scientific consensus on global warming, implying that the human causes are all about carbon dioxide or greenhouse gases; but a closer look reveals a lot of mathematical manipulation goes into arriving at 97% - a psychological ploy that plays on our primal emotions, ‘herd mentality’ and fear of being the odd man out. Few people know that the Dutch government has called for the IPCC to be overhauled stating: **“..limiting the scope of the IPCC to human-induced climate change is undesirable, especially because natural climate change is a crucial part of the total understanding of the climate system..”** Not only is the 97% claim faulty, the climate predictions of the IPCC exclude an estimated 65% natural factor influence.

Friends of Science Society, Calgary

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EXECUTIVE SUMMARY

The 97% scientific consensus on human-caused global warming is frequently cited as the justification for the imposition of carbon taxes and extreme climate change or greenhouse gas reduction targets “...to stop dangerous climate change” (Pembina Institute, City of Calgary GHG Reduction Plan 2011)ⁱ.

At least 5 separate surveys since 2004 claim a 97% consensus, or in the case of Oreskes (2004) – a 75% consensus saying “Remarkably, none of the papers disagreed with the consensus position.”

This seemed to be a statistical coincidence that so many surveys could arrive at exactly the same result. Upon closer examination, this seemed an even more impressive claim since there are no common scientific constants in any of these studies. These 97% consensus studies also claim an enormous pool of 1,000 or 10,000+ scientists surveyed. It is important to understand of those numbers, how many responded, which were selected, what criteria, and where they lie on a spectrum of “consensus” about the percentage of human impact on climate...which could be anything from 5% to 100%. In fact, Friends of Science deconstruction of these surveys reveals there is no such consensus. [Figure 1 below]

Figure 1: Percentage agreement with IPCC AGW declaration and survey numbers

Surveys by Author Name	Actual % Explicitly Agreeing w. IPCC Declaration	From a Base Survey Number of Respondents or Papers Assessed
Oreskes/Peiser	1.2%	~1,000
Doran and Zimmerman	2.38%	3,146 respondents
Anderegg et al	66%	1,372 scientists
Cook et al	0.54%	11,944

Most people automatically assume that ‘consensus’ means “humans cause catastrophic global warming because of carbon dioxide (CO₂) emissions.” Three of the studies do not address this issue – none of the abstracts surveyed were written to address that declaration.

The Anderegg study is unique in that part of it is based on an IPCC author base – however, the 66% “Convinced by Evidence” figure cited does not detail

what form of human activity or ratio of impact they ascribe. Clearly 34% of scientists do not explicitly agree with the IPCC declaration.

Of itself, the various IPCC declarations do not state that warming is dangerous. It is in the many climate models that human activity is ascribed as being potentially catastrophic; to date climate models exaggerate and do not reflect reality.

The deconstruction of the surveys that follow shows the claim of a 97% consensus is pure spin and ‘statisticulation’ – mathematical manipulation.

There is a substantial difference in perspective between those scientists who think natural factors like the sun or ocean currents most affect climate – and those who think human land disturbance, and human caused greenhouse gas emissions; notably carbon dioxide (CO₂) – most affect climate.

Ironically, greenhouse gas emissions are not the major obsession of all climate scientists. Many climate scientists believe that natural forces dominate climate change and that greenhouse gas emissions have caused less than half of the 20th century warming. Even at that, the warming was nominal.

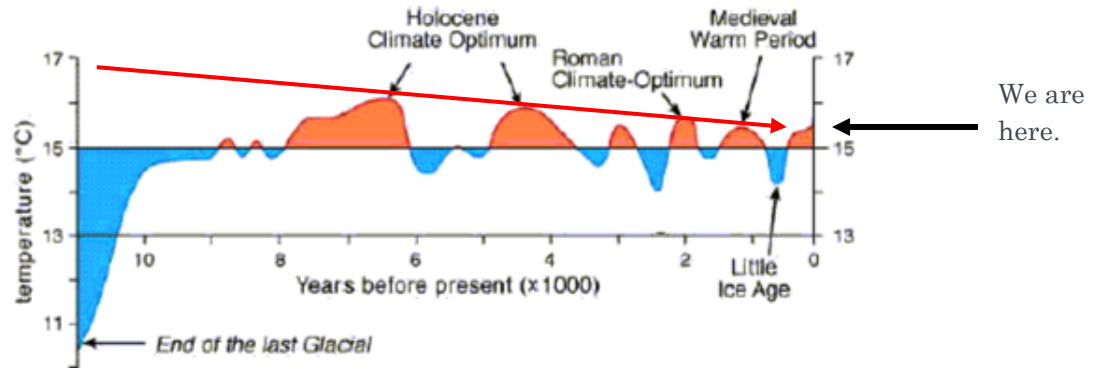
The purpose of the 97% claim lies in the psychological sciences, not in climate science. A 97% consensus claim is merely a ‘social proof’ - a powerful psychological motivator intended to make the public comply with the herd; to not be the ‘odd man out.’

Friends of Science deconstruction of these surveys show that there is no 97% consensus on human-caused global warming as claimed in these studies. None of these studies indicate any agreement with a catastrophic view of human-caused global warming.

Further, global warming stopped 16 years ago. The global average temperature rise during the 20th century of 0.75 °C was largely a natural recovery from the Little Ice Age, 1400 to 1900 AD, that corresponds to a period of low solar activity.¹ The rapid warming from 1910 to 1940 occurred when CO₂ emissions were low and could not have caused the warming. Few climate scientists see that as catastrophic, particularly since the current global temperature is similar to, or possibly cooler than previous warm periods like the Medieval Warm Period and the Roman Optimum, when Hannibal rode elephants over the Alps [Figure 2]. Likewise, there are also benefits to increased CO₂, which is rarely spoken about. Professor Richard Tol finds that warming of the last century has increased economic output by

1.4%, equivalent to \$1.2 Trillion per year. The CO₂ fertilization effect (CO₂ is plant food) adds \$0.2 Trillion per year of benefit from higher crop yields.ⁱⁱ

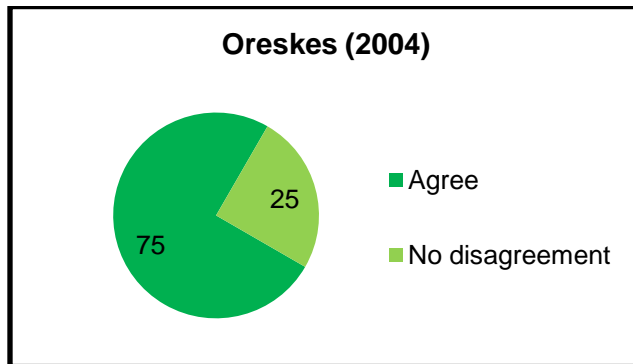
Figure 2: Holocene Era 11,000 year Northern Hemisphere Temperature History



1, HadCRUT 3, five year running average. (Note: HadCRUT is a product of the Hadley Centre of the UK Met Office and the Climate Research Unit of the University of East Anglia)

Overview of Comparison Charts of the Key Surveys

Figure 3: Oreskes (2004) claims



Naomi Oreskes (2004) claimed 75% agreement and 'no disagreement' [left Figure 3]. Peiser (2005) re-ran her survey in 2005 and found dramatically different results. As shown below [Figure 4], only 13 of 1,117 papers explicitly endorse the alleged "consensus" on anthropogenic global warming.

Figure 4: Peiser (2005) re-run of Oreskes (2004)

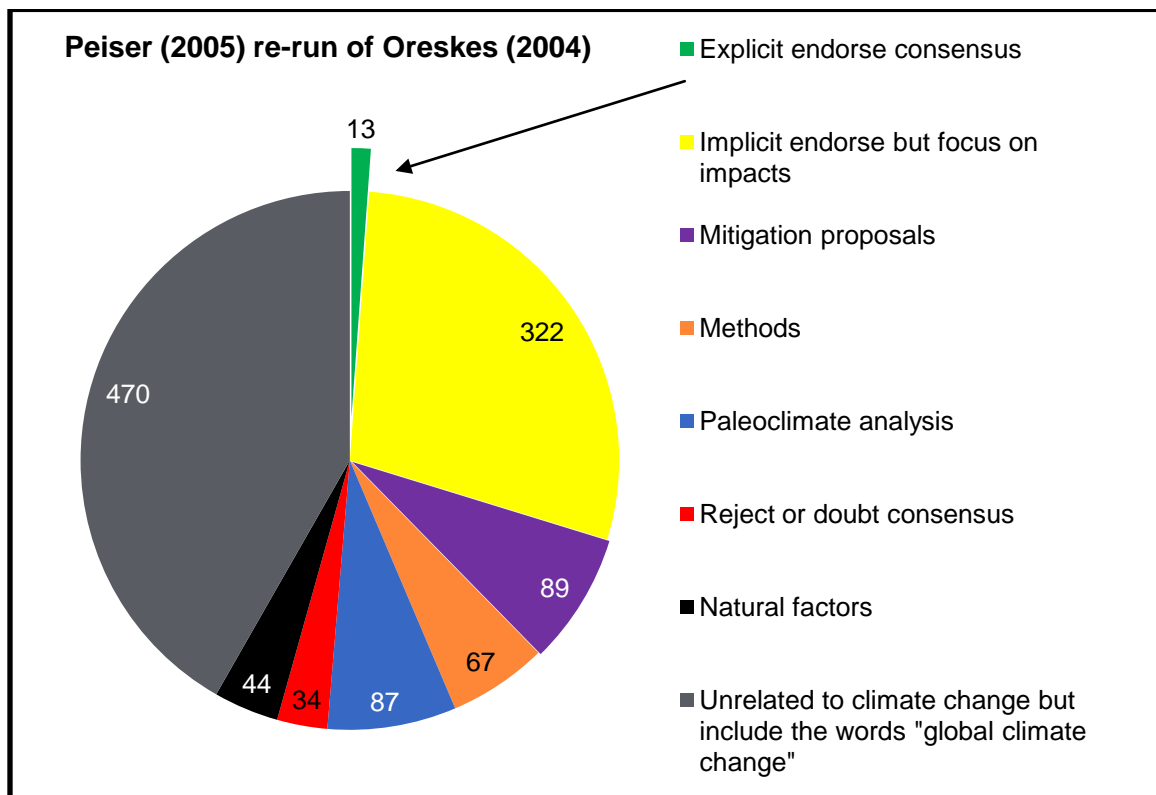
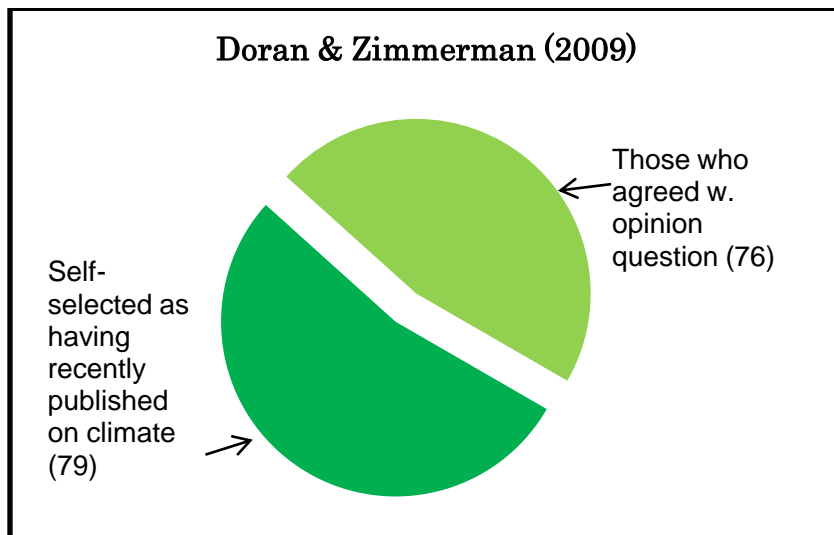


Figure 5: Doran & Zimmerman (2009) claim of 97%



Doran & Zimmerman (2009) relied upon 79 self-selected earth scientists (qualifications unstated) who claimed to have published something on climate change recently [Figure 5]. These were drawn from a field of 3,146 respondents, many of whom protested the style of questionnaire on grounds that it is inherently unscientific to ask an opinion question, with no scientific parameters, on an empirical topic. The actual survey numbers are broken down below. [Figure 6]

Figure 6: Doran & Zimmerman (2009) Breakdown of respondents versus self-selected group

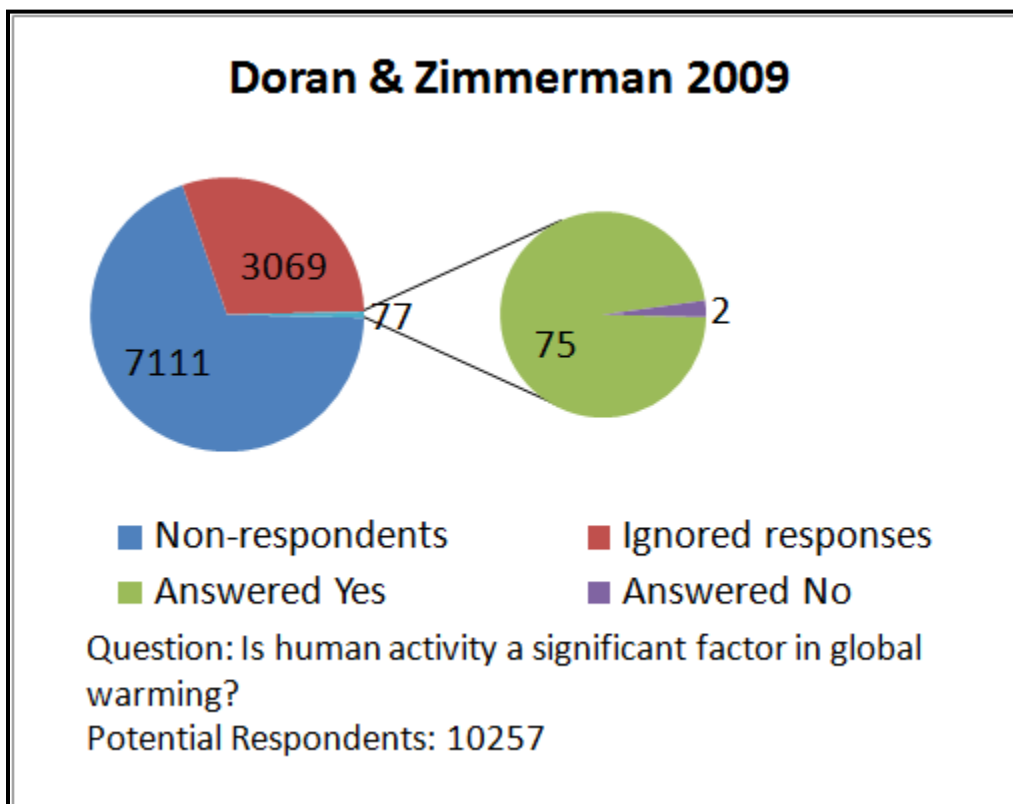
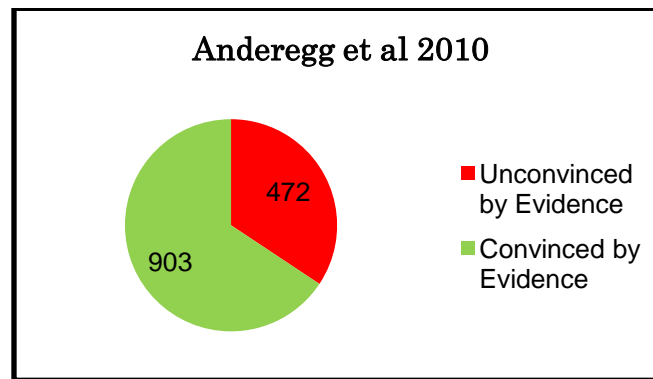


Figure 7: Anderegg et al (2010) found 66% "Convinced by Evidence" (CE)



Anderegg et al (2010) reviewed lists of various climate declarations and IPCC participants and created a division of those “Convinced” or “Unconvinced” by the evidence (IPCC AR4 2007 declaration) [above Figure 7]. They found 66% were “CE – Convinced by the Evidence” – but this does not describe to what extent or what cause convinced these scientists. In part two of their survey, Anderegg et al (2010) reviewed the top 100 most published/most cited researchers [below Figure 8]. They reported that 97% are “Convinced by the Evidence” in support of the IPCC AR4 2007 declaration. However, this is not surprising because papers that support the IPCC position appear to get preferential peer-review approval and research funding, according to scientists whose work challenges the IPCC mandate to explore human-causes of climate change. Dr. Roy Spence [writes](#), “I would guess today’s research funding lopsidedness is currently running at least 100 to 1, humans versus nature.”

The “Climategate”ⁱⁱⁱ emails revealed that climate journals are controlled by IPCC affiliated scientists who tend to reject papers skeptical of AGW despite having good technical quality but give only cursory review of papers supporting the IPCC position. This is known as ‘confirmation bias’^{iv} in science. Many scientists do not see warming as particularly dangerous; their views are rarely published or cited. In their study, Anderegg et al changed both the declaration (to “*tenets*” – **which is a belief or idea, not a definition or declaration**) and the term (Anthropogenic Climate Change - ACC): “(i) 97–98% of the climate researchers most actively publishing in the field support the *tenets* of ACC outlined by the Intergovernmental Panel on Climate Change, and (ii) the relative climate expertise and scientific prominence of the researchers unconvinced of ACC are substantially below that of the convinced researchers”

Figure 8: Anderegg et al (2010) Breakdown of CE/UE in 100 Most Published/Most Cited Papers

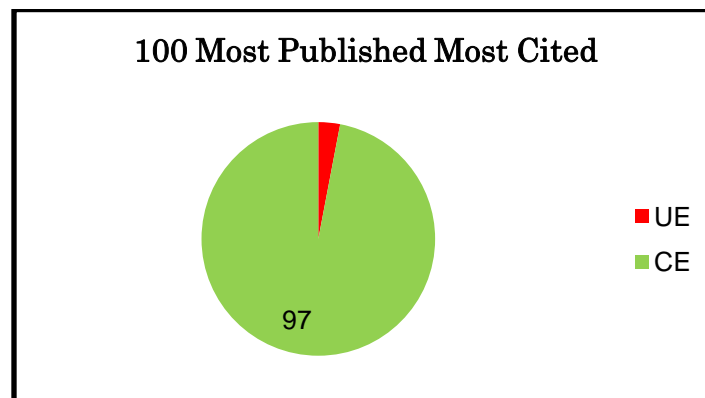
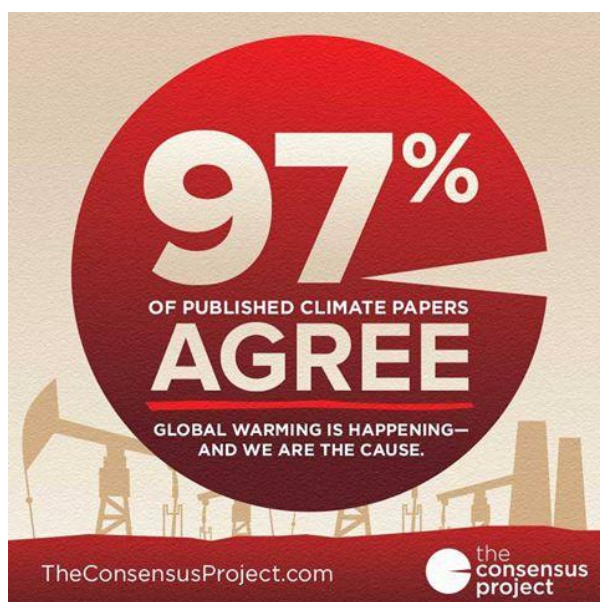


Figure 9: The Cook et al (2013) Dynamic Graphic from "The Consensus Project" web-site

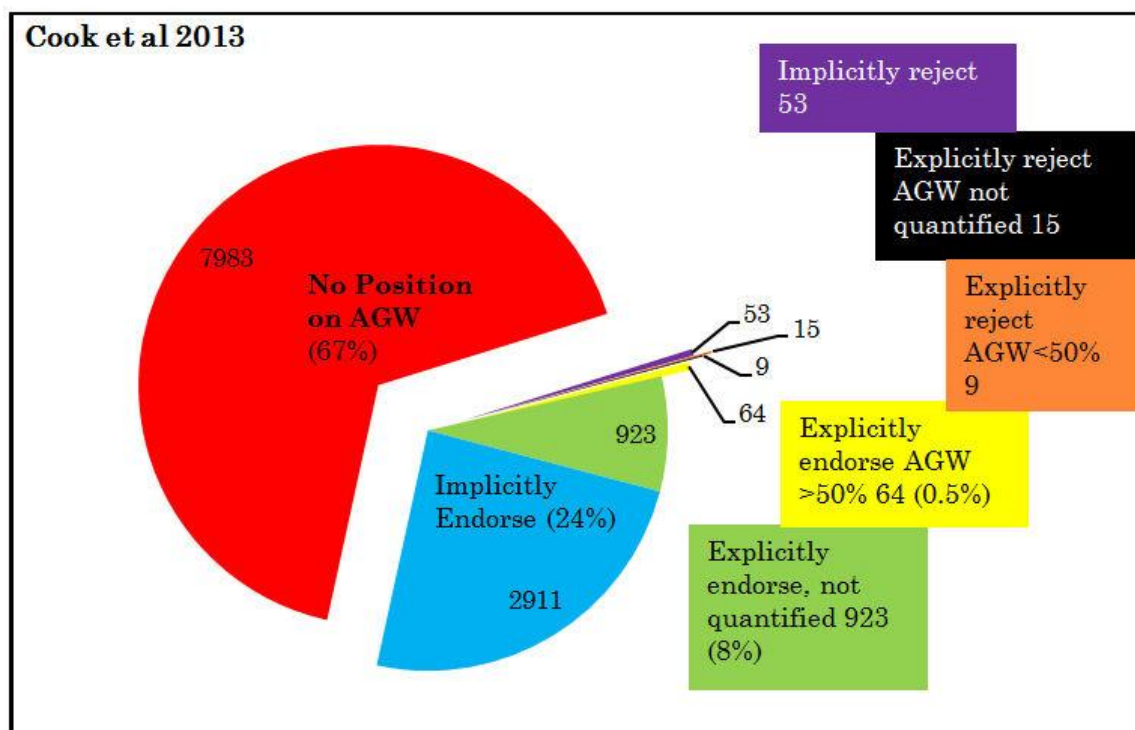


More recently Cook et al (2013) issued "Quantifying the consensus on anthropogenic global warming in the scientific literature" claiming 97% agreement and focusing on fossil fuel use as a cause.[left Figure 9]

However, a detailed review of Cook et al reveals that only 64 papers out of ~12,000 explicitly endorse the AGW declaration that human activity/emissions are more than 50% responsible for recent warming [below Figure 10]. Interesting to note that Cook et al used Houghton's 1996 definition which includes other activities... "human activities, mostly fossil-fuel use, land-use change and agriculture"

Most of the papers held no position on anthropogenic global warming.

Figure 10: A Deconstruction of the Cook et al (2013)



97% CONSENSUS? NO!

GLOBAL WARMING MATH MYTHS & SOCIAL PROOFS.

The “Science” of Statisticulation

INTRODUCTION

Where all think alike, no one thinks very much.
—WALTER LIPPMANN

“So the question is not whether we need to act. The overwhelming judgment of science -- of chemistry and physics and millions of measurements -- has put all that to rest. Ninety-seven percent of scientists, including, by the way, some who originally disputed the data, have now put that to rest. They've acknowledged the planet is warming and human activity is contributing to it.” “... Nobody has a monopoly on what is a very hard problem, but I don't have much patience for anyone who denies that this challenge is real. We don't have time for a meeting of the Flat Earth Society.” – President Obama, Georgetown, June 25, 2013

Since 2004, several surveys have been conducted that claim to establish a consistent “97% scientific consensus” about the reality of dangerous or Catastrophic Anthropogenic [human-caused] Global Warming (CAGW/AGW).¹

The essence of those who hold the AGW position lies in the declaration of the Intergovernmental Panel on Climate Change (IPCC) 2007 AR4 Summary for Policy Makers. The AR4 Synthesis Summary for Policy Makers (SPM) states on page 5, “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations” where “very likely” means > 90% certainty.

The more recent IPCC report states, “It is extremely likely that human influence has been the dominant cause of the observed warming since the

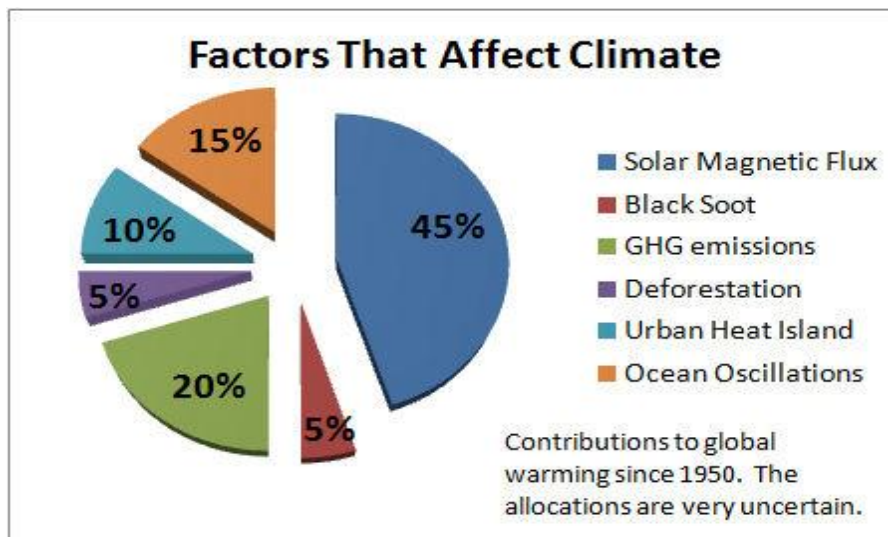
¹ Also referred to as Anthropogenic Climate Change (ACC-Anthropogenic Climate Change) or global climate change (Oreskes 2004), (Doran and Zimmerman 2009), (Anderegg et al 2010), (Cook et al 2013), (Powell 2014)

mid- 20th century.” And states: “Climate change will affect carbon cycle processes in a way that will exacerbate the increase of CO₂ in the atmosphere (high confidence). Further uptake of carbon by the ocean will increase ocean acidification.” vi vii

However, these statements do not describe *what* human influence.

Despite claiming certainty and high confidence, in fact a number of elements affect climate change. These are rarely discussed with the public; these are pivotal areas of broad *disagreement* amongst scientists. The impact of carbon dioxide (CO₂) per se from human industrial activity appears to be relatively small when set in context of the other factors.

Figure 11: Factors that affect climate



1. IPCC claims AGW causes 93% of last half 20th century warming, double CO₂ causes 3 deg. C. Data shows double CO₂ causes about 0.6 deg. C. Therefore, CO₂ cause 19%, GHG = 20%. UHI+Deforestation = 50% of 30% = 15%

In this paper, henceforth a reference to the IPCC AGW ‘consensus’ will refer to the IPCC’s 2007 AR4 declaration as this was in use at the time these surveys were done, excepting Oreskes (2004). One should be clear – most scientists do agree that human activity affects climate and leads to some warming – but those activities include land clearing, urban development, and GHG emissions from fossil fuel use. There is no consensus on these factors, their ratios,

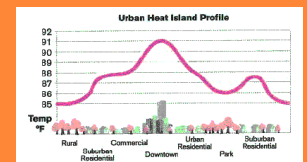
Solar Magnetic Flux – the sun’s rotation fans out a convoluted pinwheel of magnetic influence which is thought to variably affect earth and its climate as we pass through these spiral arms of magnetism.



Credit: Image developed by Prof. John Wilcox from an original painting by NASA artist Werner Heil

Urban Heat Island – As urban areas develop, changes occur in their landscape. Buildings, roads, and other infrastructure replace open land and vegetation. Surfaces that were once permeable and moist become impermeable and dry.¹ These changes cause urban regions to become warmer than their rural surroundings, forming an “island” of higher temperatures in the landscape.

<http://www.epa.gov/hiri/about/index.htm>



By National Oceanic and Atmospheric Administration [Public domain], via Wikimedia Commons

and whether or not humans can successfully mitigate their influence.

Scientists who agree that fossil fuel emissions do affect climate, may disagree with the IPCC percentages of influence, time frame or the >90% certainty ratio. Recent evidence even suggests the AGW theory of CO₂ causing warming may need to be revisited, as noted by Judith Curry Chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology, in her Jan. 16, 2014 testimony to the US Senate Committee on Environment and Public Works: *“The stagnation in greenhouse warming observed over the past 15+ years demonstrates that CO₂ is not a control knob that can fine tune climate variability on decadal and multi-decadal time scales.”*^{viii}

Consensus – What does it mean?

The on-line Miriam-Webster Dictionary defines consensus as: “a general agreement about something: an idea or opinion that is shared by all the people in a group.”^{ix}

According to Joyeeta Gupta in “On Behalf of My Delegation...A Survival Guide for Developing Country Climate Negotiators”^x ... “Consensus is not unanimity.”^{xi} Gupta states: “Unanimity calls for explicit agreement of all Parties. Consensus falls short of that.”

In connotative terms, ‘consensus’ may be confused in the minds of the public as being synonymous with ‘unanimity’^{xii} which Merriam-Webster on-line defines as “unanimous – agreed to by everyone,” or as “majority”^{xiii} - as if there had been some actual vote on the topic of Anthropogenic Global Warming by “all scientists” in the world. None of these are the case.

The range of opinion of most climate scientists on the fraction of warming caused by greenhouse gases since the mid-20th century extends from 20% to 95%. This large range does not constitute a consensus; a true ‘consensus’ can only be applied to a narrow range of opinions.

“Consensus” as applied to climate science, has its root in the IPCC. The IPCC mandate is stated as:^{xiv}

1. Scope and Approach of the Assessment 1.1. Mandate of the Assessment

The Intergovernmental Panel on Climate Change (IPCC) was established by World Meteorological Organization and United Nations Environmental Programme (UNEP) in 1988 to assess scientific, technical, and socioeconomic information that is relevant in understanding **human-induced climate change**, its potential impacts, and options for mitigation and adaptation. (Bold emphasis added)

In reviewing materials related to climate change, the public may wrongly assume that scientists are in agreement as well on fundamental climate processes.

Scientist Dr. Roger Pielke, Sr. addresses the fundamental lack of clarity in his statement challenging the American Geophysical Union's recent 'consensus' statement, released August 5, 2013.^{xv}

Dr. Pielke, Sr. asks the following:

1. What is the definition of climate and climate change? [*Note: the IPCC has good definitions of these; he is asking the AGU for their definition.*]
2. What are the societal and environmentally important climate metrics (e.g. a global average surface temperature trend; changes in ocean and atmospheric circulation patterns over multi-year time periods; sea level rise, trends in extreme weather etc)?
3. What are the main human and natural climate forcings?
4. What is the observational evidence for climate change?
5. What is the skill of the global and regional climate model projections (predictions) of changes in these metrics on multi-decadal time scales?
6. What are recommended pathways forward to reduce the risk from climate, including changes in climate over time?

It may come as a shock to average citizens, that a group of scientists dedicated to climate science review that guides public policy, apparently do not agree on what changes in climate parameters are important for setting public policy. Likewise, without clear definitions of a range of opinions on the effects of human activities, no 'consensus' can be said to exist.

Figure 12: Human Impact on Climate - Range of Possible Influence

Human Impact on Climate – Range of Possible Influence

None	5%	10%	25%	50%	60%	70%	80%	90%	100%
Humans are an integral part of earth; their impact is a natural consequence of their existence and cannot be separately evaluated									
	<p>← “97% Consensus from 5% to 100%” →</p> <p>This ‘consensus’ has no reasonable parameters: “Humans have some kind of undefined impact on climate, ranging from 5% to 100%. This impact may be due to either, some of, or all human impacts and may or not be able to be mitigated.”</p>								

Consensus means *agreement* on a *narrow range* of views about something. A “97%” consensus that relies on a range from 5% impact to 100% is virtually meaningless for scientific or public policy purposes. The scope is too broad. However, such statements have a powerful psychological impact on the public, who misinterpret these ‘consensus’ statements as meaning scientists are agreed that human impact on climate is catastrophic in nature. As this paper will show, only a very small percent of scientists, in very narrow fields of study, hold that view. Many scientists hold the view that human industrial emissions of carbon dioxide have beneficial impacts on earth, and little impact on climate.

Human versus Natural Forcings

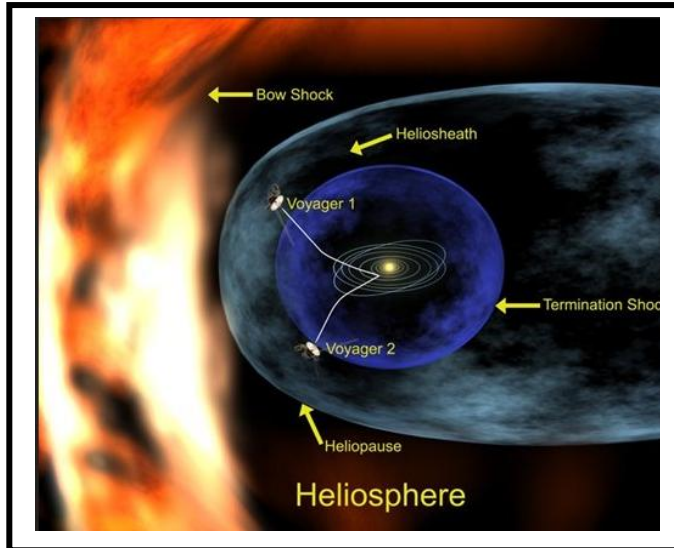
Climate “Forcings”^{xvi} are defined by the US National Academies Press as: “A climate forcing can be defined as an imposed perturbation of Earth's energy balance.”

There is no original scientific baseline of climate conditions, prior to man’s substantial use of fossil fuels and the development of an industrial society. This is one of the key challenges in assessing human impacts on climate change.

Natural forcings are many and their power often immeasurable – both in terms of scope and longevity. These include changes in solar cycles, solar irradiance, heliomagnetic and solar wind influences on earth's atmosphere,

volcanoes, ocean current oscillations, tectonic plate movements, natural changes in cloud cover, influence of cosmic rays, natural changes in carbon dioxide and naturally occurring forest fires.

Figure 13: Heliosphere visualized



Some of these forcings can be measured or accounted for as existing – but due to the tremendous scope of influences and their interconnected effects, the long-term impact of any one or any confluence is presently quite impossible to determine.

By contrast to these, human influence is measurable in some aspects, but inseparable as a fixed or clearly measurable impact.

97% Consensus? No. Not Even Close.

The four selected consensus studies have been widely publicized in the media. They are accepted as ‘social proof’ (Cialdini 2006)^{xvii} by many people. The ‘97% consensus’ is widely cited by on-line commentators as a reason for ‘believing’ in climate change or global warming (terms frequently used interchangeably by citizens). The National Aeronautics and Space Administration (NASA)

The heliosphere is a bubble of magnetism springing from the sun and inflated to colossal proportions by the solar wind. Every planet from Mercury to Pluto and beyond is inside it. The heliosphere is our solar system's first line of defense against galactic cosmic rays. High-energy particles from black holes and supernovas try to enter the solar system, but most are deflected by the heliosphere's magnetic fields.

"The solar wind isn't inflating the heliosphere as much as it used to," says McComas. "That means less shielding against cosmic rays."

In addition to weakened solar wind, "Ulysses also finds that the sun's underlying magnetic field has weakened by more than 30% since the mid-1990s," says Posner. "This reduces natural shielding even more."

http://science1.nasa.gov/science-news/science-at-nasa/2008/23sep_solarwind/

Unpublished Ulysses cosmic ray data show that, indeed, high energy (GeV) electrons, a minor but telltale component of cosmic rays around Earth, have jumped in number by about 20%.

These extra particles pose no threat to people on Earth's surface. Our thick atmosphere and planetary magnetic field provide additional layers of protection that keep us safe.

But any extra cosmic rays can have consequences. If the trend continues, astronauts on the Moon or en route to Mars would get a higher dose of space radiation. Robotic space probes and satellites in high Earth orbit face an increased risk of instrument malfunctions and reboots due to cosmic ray strikes. **Also, there are controversial studies linking cosmic ray fluxes to cloudiness and climate change on Earth.** That link may be tested in the years ahead.

NASA Climate Change^{xviii} web-site references these consensus studies, clearly conferring them a high level of credibility as they are posted on the same page as some 13 other reports by various scientific bodies. Even President Obama cited the 97% figure in his June 25, 2013 Georgetown address.

Ironically, a detailed review of the most recent ‘consensus’ study by Cook et al (2013) found only 64 papers out of 11,958 that explicitly state that AGW caused more than 50% of recent warming. This represents only a 0.54% ‘consensus.’ Furthermore, the 50% of warming referenced by Cook is far short of the IPCC AGW estimate that AGW caused at least 90% of the warming.

Scientists have mixed views on this issue, contrary to the claimed consensus. The previously quoted declaration was that AGW caused 50% of warming at 90% certainty, but they also say best estimate that AGW caused at least 90% of warming, which is similar but different. Scientists’ opinions are their best estimate, 50% chance could be more; 50% chance could be less.

A study by the Pew Foundation (Pew 2012) found that some 55% of Americans think the science (on global warming) is not settled or don’t know. Consequently, as noted by Ding et al (2011), ^{xix} it is important to gain public agreement on climate change in order to enact climate policies, so the public must feel that there is scientific consensus on the issue. Lewandowsky et al (2012) concurs^{xx}.

Clearly these 97% consensus surveys constitute important social proof as a means of influencing the public (Cialdini 2006). However, this insistence on a 97% consensus claim amounts to deceiving the public, since it seriously misrepresents the broad and robust scope of scientific opinion.

Further, the fact is that **consensus does not prove anything scientifically**. We are reminded by Huff (1954) that it is easy to ‘lie with statistics.’ Huff cautioned us, even then that:

- Misinforming people by the use of statistical material might be called statistical manipulation; in a word (though not a very good one), “statisticulation.”
- Percentages offer a fertile field for confusion.... they can lend an aura of precision to the inexact.
- Any percentage figure based on a small number of cases is likely to be misleading.

Likewise, that three of four studies specifically report a 97% consensus finding (with Oreskes (2004) reporting no disagreement - i.e. effectively 100% consensus) would seem to be a statistical impossibility.

To assess the validity of these consensus studies, we conducted a detailed review of these studies and some associated commentaries to evaluate the claims of a 97% consensus individually, and whether or not there is statistically robust evidence that the studies hold this consensus percentage in common.

Further, we reviewed research on the psychological factors inherent in ostracizing, public humiliation or shaming (Williams 2007) as related to the link drawn by Lewandowsky (2012) between those who dissent about the claimed 97% consensus. We explore research on how pejorative assessments like that of Lewandowsky or President Obama's reference to "I don't have time for a meeting of the Flat-Earth Society" affect public and scientific endorsement of an alleged consensus.

METHOD

Four consensus papers were chosen for review – Oreskes (2004), Doran and Zimmerman (2009), Anderegg et al (2010), and Cook et al (2013). The Lewandowsky (2010) study was included in discussion of the review as its premise relies upon the validity of three of these consensus studies.

A table of the following 14 common comparative factors was established and data was deconstructed and recorded accordingly, per paper.

Evaluation of Factors

1. Objective
2. "Climate scientist" defined?
3. Consistent or inconsistent use of terminology or definitions about global warming/climate change
4. Search terms
5. Source data-base
6. Depth of assessment
7. Reliance on prior authority known to be faulty
8. Bias or conflicts of interest unstated or not in full disclosure
9. Stated bias or conflicts of interest
10. Disingenuous or pejorative references to those who disagree with the 'consensus' view
11. Public objections by experts to reports

12. Initial numbers reviewed
13. Actual numbers making up the 97% ‘consensus’
14. Expertise or qualifications of researcher(s)

Where possible, original source material was reviewed such as Zimmerman’s original MA thesis and commentaries in the appendices, Prall’s (Anderegg) on-line log of scientists, Cook et al supplementary materials (linked through IOP – Environmental Research Letters site on-line.)

RESULTS

Surveys are Inconsistent with Academic and Scientific Standards

None of the studies can be considered to be qualitative, without bias, or appropriately conducted according to commonly accepted academic, scientific or statistically relevant standards.

There was no consistency of search terms or definitions. Within the same report, terms were frequently interchanged. “Climate scientist” or the research subject’s relevant qualifications or specific area of expertise were never defined in any study.

Review of Abstracts Inadequate to Assess the Position of Scientist on AGW

Two of the consensus studies reviewed on-line abstracts (Oreskes 2004) (Cook et al 2013) and attempted to make a classification accordingly as to whether or not the author(s) agreed with the “consensus” on climate change. But what range of views is assumed to be the “consensus?” Oreskes referred to the IPCC Third Assessment as described on page 21 of J.J. McCarthy’s “Change 2001: Impacts, Adaptation, and Vulnerability” (Cambridge Univ. Press, Cambridge, 2001. Cook et al (2013) curiously referred to Houghton’s 1996 declaration; Cook assumes any paper that implied that humans had **some** effect on climate is included in the consensus, even if the GHGs referenced in the study are said to have little effect. This is nothing like the IPCC’s declaration. Cook’s team also made follow-up calls to a large number of scientists and claimed assent. Nonetheless many leading scientists rejected the Cook study upon release, claiming that their work had been misrepresented and incorrectly categorized as supporting the IPCC declaration of AGW when their work does not.

It is notable that three of 4 titles of surveys reference “the consensus” or “scientific consensus” without ever defining what that is within the papers, implicitly suggesting from the outset that such consensus exists.

Likewise, there was inconsistency in the search terms (Oreskes originally claimed in her published paper in Science Magazine that her search term was ‘climate change’ – subsequently she reported it was ‘global climate change.’ This small difference may significantly alter the number and type of papers found in the search.)

Pielke (2005)^{xxi} rebutted Oreskes (2004) decrying the claim of consensus as inappropriate ‘bandwagoning’ of a subject so complex and for not being representative of the many diverse and robust perspectives on climate science.

Oreskes wrote a chapter called “The Scientific Consensus on Climate Change: How Do We Know We’re Not Wrong?”^{xxii} and also a power point^{xxiii} on the same theme.

In the chapter, Oreskes refers to the IPCC, the National Academy of Sciences, the American Meteorological Society, the American Geophysical Union, and the American Association for the Advancement of Sciences, all of which have issued statements that they accept that humans impact climate.

“By 2007, the IPCC’s Fourth Assessment Report noted it is “extremely unlikely that the global climate changes of the past fifty years can be explained without invoking human activities” (Alley et al. 2007).”

Can it be explained without also invoking the effects of the sun? These effects are not considered in the viewpoints of the ‘consensus’ discussion. And, are the various robust individual perspectives of scientists fairly represented by such ‘consensus’ claims – the challenge of Roger Pielke Jr. to Naomi Oreskes in 2005?

Evidence of the problems associated with this kind of ‘carte blanche’ survey is clear in the more recent Cook et al (2013) study that was conducted by an anonymous group of ‘citizen scientists’ lead by John Cook who originated the website Skeptical Science, a website that advocates for the CAGW position.

Alan Carlin, Ph.D. Economics, MIT, Senior Operations Research Analyst, U.S. Environmental Protection Agency (Retired) rejected Cook’s classification of his work^{xxiv} and suggested the Cook survey may have been reverse engineered to arrive at the 97% consensus result.

Dr. Carlin said, “The economic benefits of reducing CO₂ emissions may be about two orders of magnitude less than those estimated by most economists because the climate sensitivity factor (CSF) is much lower than assumed by the United Nations”

This is a powerful statement that shows one example of how badly Cook et al (2013) did the classifications. Dr. Carlin says the IPCC is wrong by a factor of 100, but Cook wrongly claims Alan Carlin endorses the IPCC. It is hard to be more wrong than 100 times wrong.

Dr. Carlin is not the only high profile scientist rejecting the Cook et al study for wrongly categorizing work as supporting AGW when it does not.

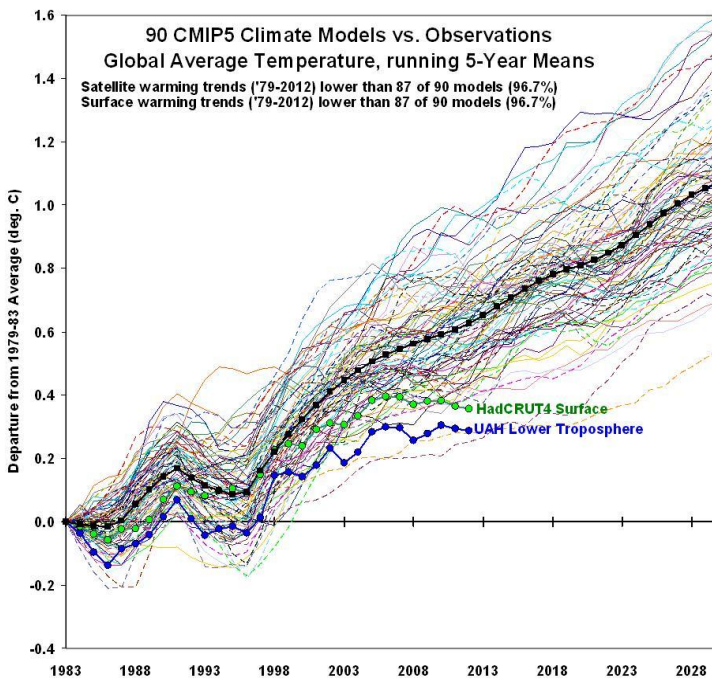
Dr. Nicola Scafetta rejected Cook’s work: “My paper says that the IPCC view is erroneous because about 40-70% of the global warming observed from 1900 to 2000 was induced by the sun.”

Cook et al (2013) did a follow-up contact with a number of members of the survey to confirm their position on AGW, but as noted by Klein (1991) in the “Humiliation Dynamic,” in light of the polarized debate on climate change and intense public hazing of those who challenge or dissent with the alleged consensus view (which has resulted in ‘climate rebels’ losing of funding and employment) it is not clear whether those who told Cook et al that they agreed they support AGW did so freely.

Return to Oreskes’ claim, “How do we know we’re not wrong?” Recent evidence compiled by Dr. Roy Spencer, climate scientist at the University of Alabama in Huntsville in 2013, compared 90 climate model runs prepared for the IPCC 5th assessment report to the surface and satellite measurements.

Both the satellite and surface warming trends from 1979 are lower than 97% of the climate model runs.

Figure 14: 90 CMIP5 Climate Models vs Observations



The only true consensus is that 97% of the model runs are too hot, leaving us to question, what is the value of computer models that do not reflect reality? While there may be a general agreement amongst scientists that human activity and greenhouse gases affect climate, there is no consensus about the degree, ratio or human ability to mitigate climate change.

The evidence, years after Oreskes' assertion, shows the models to be very wrong.

These 97% consensus surveys appear to be serving another purpose.

On-line Opinion Poll Inadequate and Inappropriate to Assess a Subject Based on Scientific Evidence

The Doran and Zimmerman (2010) study was based on a 2 minute on-line survey founded on two nebulous questions of opinion, not scientific evidence, supported by 7 additional questions including one that asked respondents to 'guess what percentage of their colleagues supported AGW.'^{xxv}

Vast Number of Survey Participants Stated Does not Reflect Small, Selective Groups Redacted to Create the '97%'

Oreskes (2004) claimed her survey base to be 928 papers and of that 75% of abstracts reviewed explicitly agreed with the AGW 'consensus'^{xxvi} and that the remaining 25% did not object – assuming “*Remarkably, none of the papers disagreed with the consensus position.*” Oreskes' statement about 'consensus' is that scientists in general agree with the IPCC third assessment

report that: “In its most recent assessment, IPCC states unequivocally that the consensus of scientific opinion is that Earth’s climate is being affected by human activities...”

Roger Pielke, Jr. (2005) challenged Oreskes (2004) in a letter published in the May 17, 2005 edition of Science Magazine wherein he noted: “...we should not be surprised if a broader review were to find conclusions at odds with the IPCC consensus, as “consensus” does not mean uniformity of perspective. ...” He further stated “The actions that we take on climate change should be robust to (i) the diversity of scientific perspectives, and thus also to (ii) the diversity of perspectives of the nature of the consensus.”

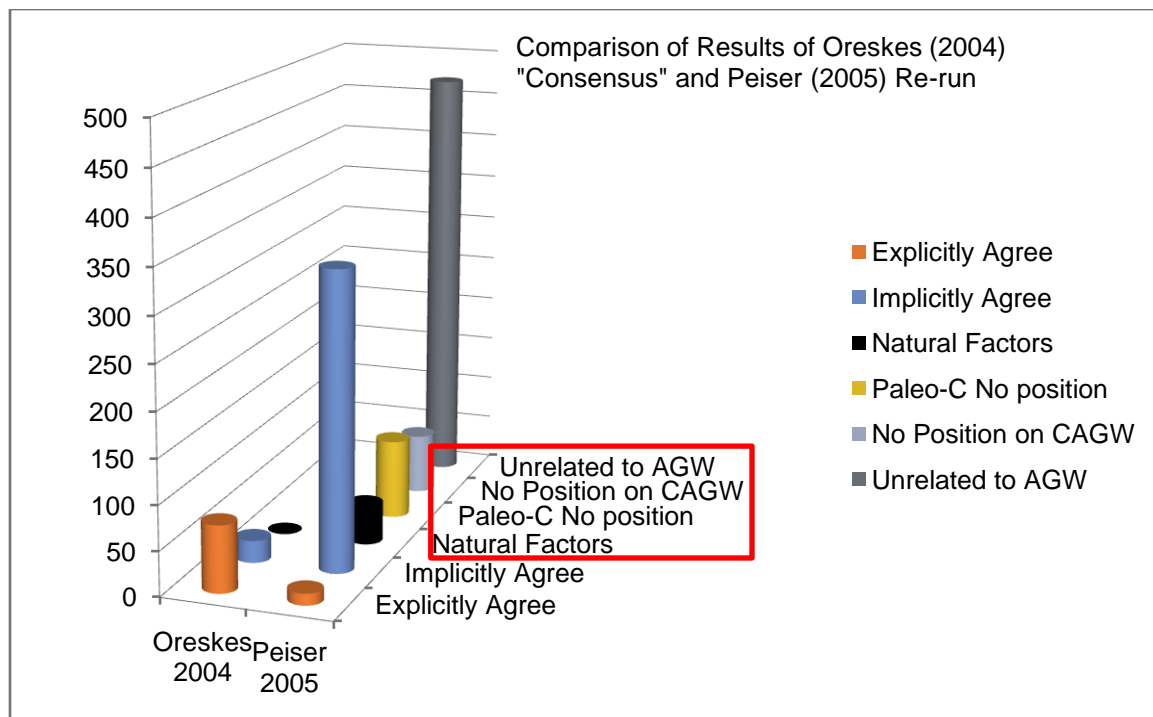
Ironically, in Oreskes’ response to Pielke, published in the same edition, she states “A full debate on the moral, social, political, ethical, and economic ramifications of possible response to climate change – as well as the ramifications of inaction – would be a very good thing. *But such a debate is impeded by climate change deniers.*”

Oreskes^{xxvii} chart breaks down with no direct refutations of AGW. However, the lack of subjects refuting AGW does not mean there is consensus on what the impact, ratio, or cause of global warming/climate change may be. Further, the IPCC declaration is widely cited as the reference point for ‘consensus’ on AGW – but many scientists reject that declaration as will be shown in the following deconstructionist breakdowns of these surveys.

Pielke’s (2005) rebuttal disputed Oreskes unsupported claim of consensus, as we will show herein.

Peiser (2005) subsequently reran Oreskes’ experiment beginning with a base of some 1,117 abstracts and found only 13 abstracts that explicitly agreed with the IPCC AGW declaration. As highlighted by the red box in the chart shown below, most of the papers were unrelated to Anthropogenic Global Warming, and only referred to the term ‘climate change.’ The next highest category of “implicitly agree” does not detail the broad range of scientific perspective; the papers stating natural factors were more influential in climate far outweighed those who explicitly agree with the IPCC declaration used in that survey. Two other categories of papers had no position stated on AGW or the IPCC declaration.

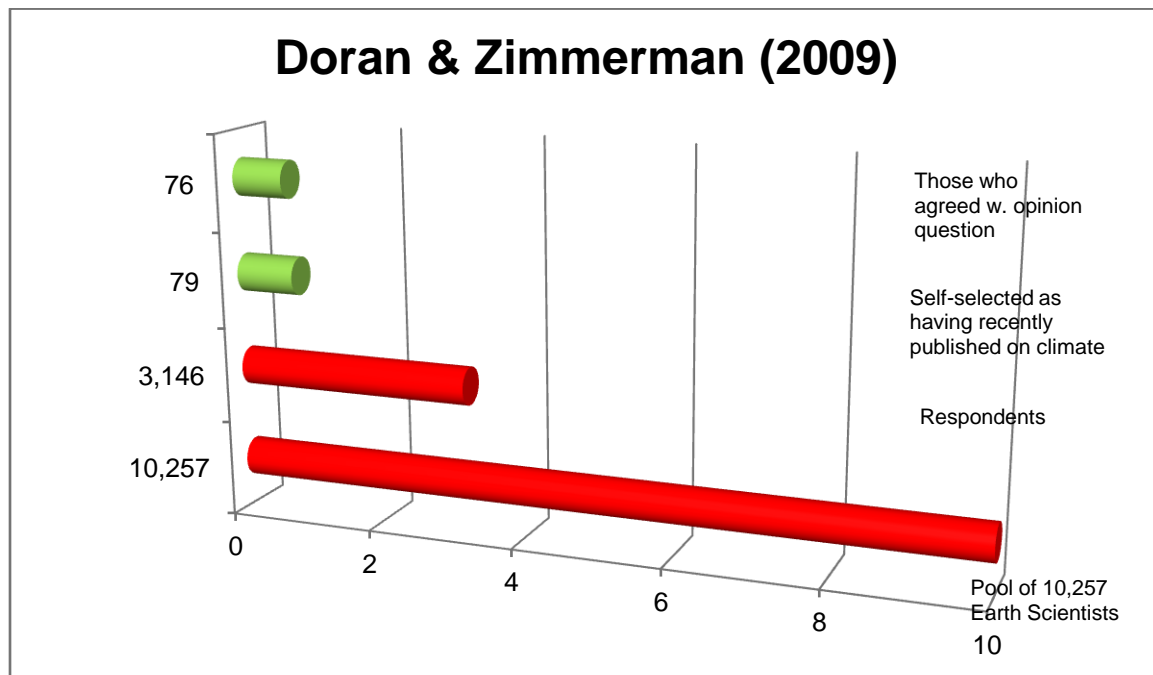
Figure 15: Comparison of Results of Oreskes (2004) "Consensus" and Peiser (2005) Re-run



Doran and Zimmerman (2009) claimed a survey base of some 10,257 earth scientists of which 3,146 responded. They claimed 97% agreement on AGW but worded their questionnaire in a very tricky way.

Upon review it appears that of the 3,146 respondents, only 79 were identified as 'climate scientists' (though no definition of 'climate scientist' or qualifications were ever provided). Of those, some 76 agreed with the opinion ('risen') in the first question: Q1: *"When compared with pre-1800's levels, do you think that mean global temperatures have generally risen, fallen, or remained relatively constant?"*

Figure 16: Breakdown of Doran & Zimmerman (2009)



The question does not mention any human-caused reason for a rise in temperature, therefore it cannot rightly be said to show any consensus of the IPCC AGW declaration. Most geologists would agree temperatures have risen because since 1880 the earth has been warming out of the cold period known as the Little Ice Age. The *cause* is the subject of debate, but the warming to 1940 could not have been caused by CO₂ emissions because these emissions were too low.

As noted in emails to Zimmerman from respondents, her question asks for an **opinion**, not a statement of evidence, and has no parameters of time. Doran and Zimmerman were assessing a group of earth scientists (primarily geologists) whose view of time may stretch back eons. The main focus of AGW is from 1880 forward; geologists reviewing the Holocene period dating back 11,700 years Before Present would likely see an overall cooling temperature in earth's climate.^{xxviii} Consequently many respondents to the survey declined to participate because the questionnaire was improperly phrased by not including time parameters, and the survey relied on opinion, not empirical evidence.

Likewise, the second question by Doran and Zimmerman (2009): Q2: *"Do you think human activity is a significant contributing factor in changing mean global temperatures?"*

The word "significant" cannot be quantified. The IPCC AGW statement is that GHGs cause more than 90% of the warming. The IPCC declaration singles out GHGs from human activity, but does not ascribe all human activity (which includes land disturbance, urban warming and black soot on snow, etc). Neither of the two questions mentions human-caused GHG emissions, so neither can evaluate the agreement with the IPCC AGW statement.

Nonetheless Doran and Zimmerman claimed a 97.4% consensus to this question – based on a “yes” response by 75 out of 77 self-identified ‘climatologists’ (the credentials of whom were never detailed). This would mean only 2.38% of 3,146 scientists agree with an undefined expression of AGW.^{xxix}

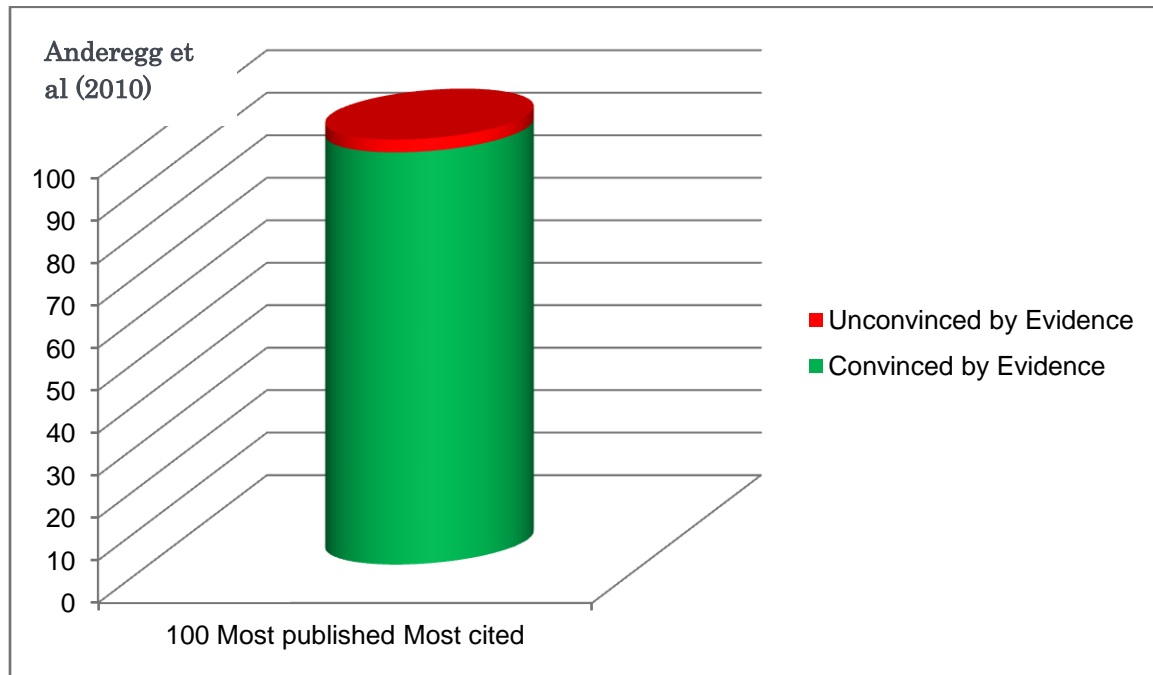
Excluded from the Doran and Zimmerman (2009) survey of earth scientists would be scientists in other relevant climate disciplines such as solar scientists, space scientists, cosmologists, physicists, astronomers and meteorologists.^{xxx}

Anderegg et al (2010) approached the subject in a different manner by assessing authors as to whether they were “Convinced by Evidence” (CE) or “Unconvinced by Evidence” (UE) of the *tenets* of Anthropogenic Climate Change (ACC) as defined by the IPCC.^{xxxi} This was evaluated by a review of what type of public statements scientists may have signed. A contributor to the IPCC report was automatically assumed to support the IPCC declaration. This is an unjustified assumption. Anderegg et al further attempted to establish the credibility of the various scholars according to the number of publications on climate change issues in select journals and by counting the number of times their work was cited.

As the “Climategate” emails revealed, the influence of ‘confirmation bias’ on these publication results is certainly a factor for consideration. This is supported by many complaints from scientists who support a review of natural forces, and who challenge the IPCC mandate to examine only human-induced influences on climate change. Their challenges are supported by the Dutch government which has recently called for a restructuring of the IPCC to include a review of natural influences.^{xxxii}

“The IPCC needs to adjust its principles. We believe that limiting the scope of the IPCC to human-induced climate change is undesirable, especially because natural climate change is a crucial part of the total understanding of the climate system, including human-induced climate change.”

Figure 17: Anderegg et al (2010) assessment of 100 most published/most cited authors

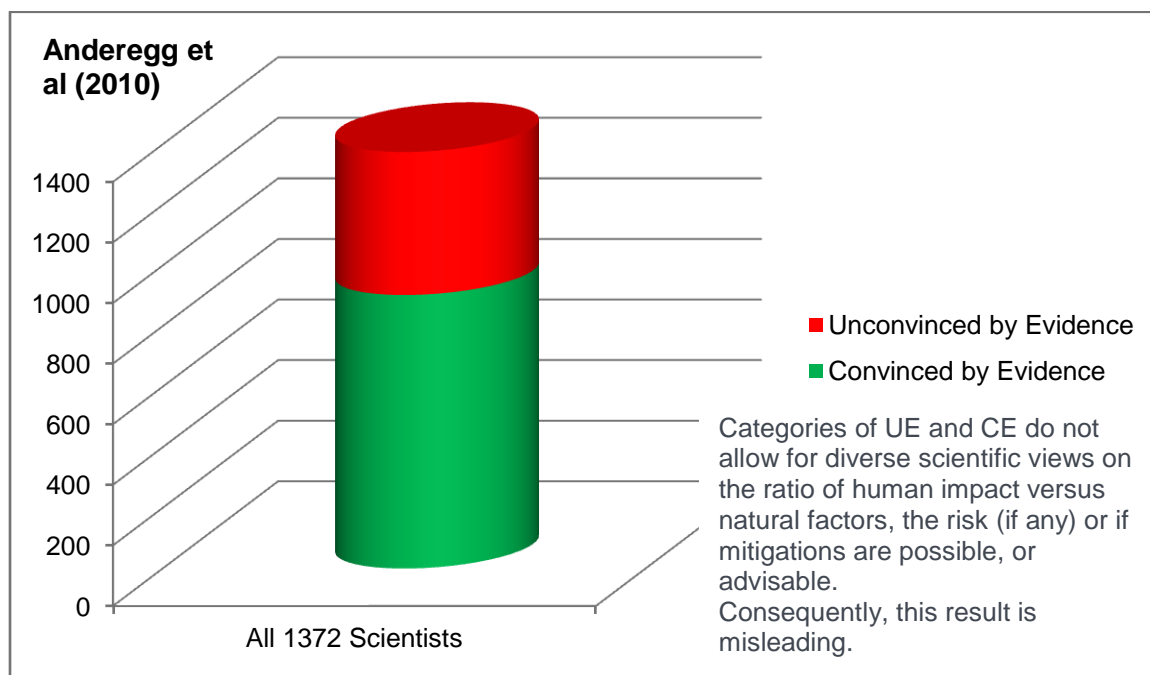


The Anderegg et al (2010) study was published in the prestigious Proceedings of the National Academy of Sciences (PNAS), despite the fact that the authors were not members of the National Academy of Sciences (NAS). Anderegg, the lead author, was an MA student at the time. PNAS accepted this study as a ‘contributed’ article from NAS member, the late Stephen Schneider. Any member of the NAS had, at that time, the right to submit 4 ‘contributed’ articles per year of which they had to be part of the design, but did not have to have done the research themselves. These submissions were reviewed by two qualified reviewers of the contributor’s choice.

By contrast, the PNAS has a very stringent “Direct Submission”^{xxxiii} peer-review process that a ‘contributed’ article does not go through. However, by the very fact of its publication in the PNAS, a ‘contributed’ article garners the same high profile and assumed level of scientific diligence for the uninformed reader, as a stringently, blind peer-reviewed Direct Submission paper.

Anderegg et al (2010) study also published a list of scientists as to who the authors claimed were Convinced or Unconvinced by Evidence. A number of scientists who challenged the alleged ‘consensus’ study objected saying that this was equivalent to creating a ‘blacklist’ of scientists.

Figure 18: Anderegg et al (2010) review of scientists by lists or statements of position on AGW



Unstated Bias of Authors

Oreskes (2004) - At the time Naomi Oreskes published her first work, she was a Member of the National Academy of Sciences / National Research Council Committee on the Use of Models in Regulatory Decisions-making 2004-2007. This was not stated in her Science Magazine article.

Doran and Zimmerman (2009) - Margaret K. Zimmerman was a student of Peter Doran. She took a short questionnaire of Doran's offered in a geology class and expanded the questions to form her MA thesis. The conclusions published by Doran and Zimmerman in *Eos*, Transactions, American Geophysical Union's weekly magazine which includes peer-reviewed items^{xxxiv} do not appear to reflect the diverse results she herself reflected upon in her original thesis.^{xxxv}

Anderegg et al (2010) - This paper was 'contributed' to the PNAS by NAS member Stephen Schneider. He was an early proponent in the 1980's of reduction of greenhouse gas emissions as a means of stopping global warming. He was founder and editor of *Climatic Change* journal. He was a Coordinating Lead Author in Working Group II IPCC [TAR](#) and co-anchor of the Key Vulnerabilities Cross-Cutting Theme for the Fourth Assessment Report (AR4).

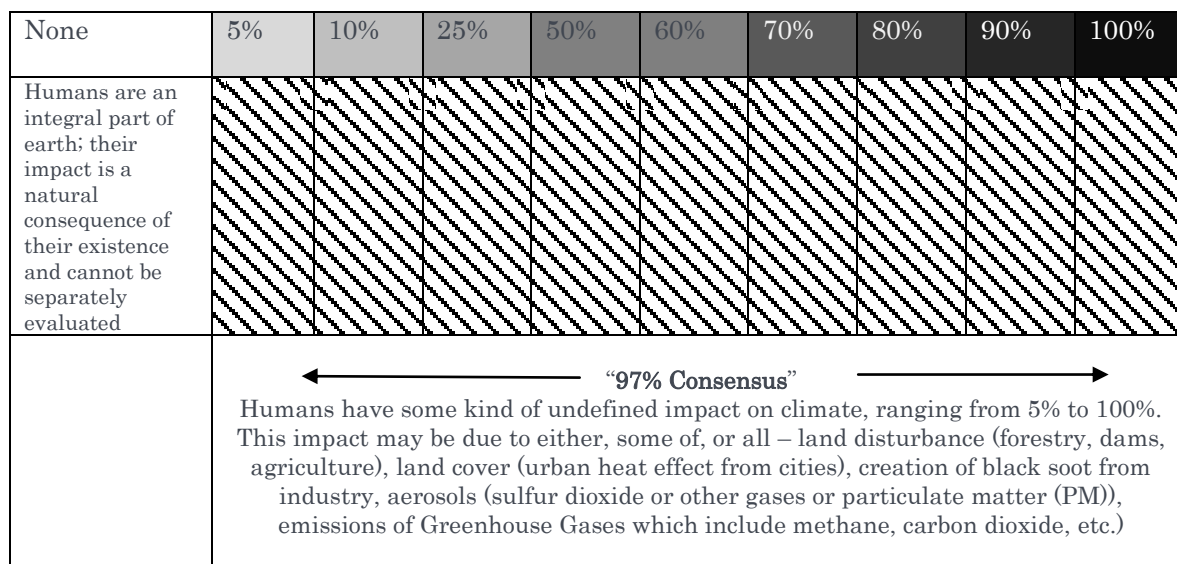
Cook et al (2013) - This survey was done by a group of “citizen researchers” but was largely driven or begun through an on-line forum of members of Skeptical Science. According to Andrew Montford’s research, published by the Global Warming Policy Foundation, using deceptive parameters was an integral part of the planning of the research.

Montford cited the following statement taken from a Skeptical Science on-line forum during the planning of the Cook study. It shows that even the planners knew that using this broadest definition of AGW would be a virtually ‘pornographic’ method of garish sensationalism, luridly misleading the public with its shock value:

“We’re basically going with Ari’s porno approach I probably should stop calling it that) which is AGW = ‘humans are causing global warming’. e.g. – no specific quantification which is the only way we can do it considering the breadth of papers we’re surveying.”^{xxxvi}

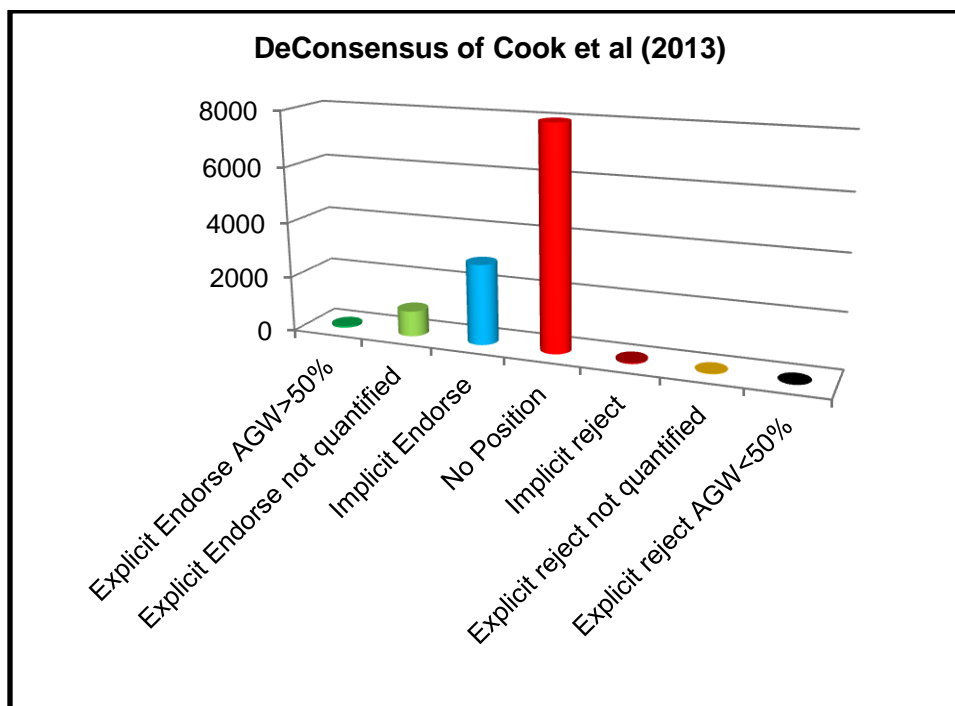
Figure 19: This is Not Consensus

This is Not Consensus



A deconstruction of the Cook et al (2013) results reveal a broad range of views within the scope of his survey and not the 97% consensus claimed...unless it is that lurid definition described above by Cook’s helper – “AGW = *humans are causing warming*.” Dr. Legates deconstructed the Cook study.^{xxxvii} He also revealed that most scientific perspectives on climate change do not include the view that warming is ‘dangerous’.^{xxxviii}

Figure 20: Cook et al (2013) breakdown



Explicit Endorse AGW>50%	64
Explicit Endorse not quantified	923
Implicit Endorse	2911
No Position	7983
Implicit reject	53
Explicit reject not quantified	15
Explicit reject AGW<50%	9

The Legates et al (2013)^{xxxix} review of the paper reveals that only 41 out of the 11,944 published climate papers Cook examined explicitly stated that Man caused most of the warming since 1950. Cook himself had flagged just 64 papers as explicitly supporting that consensus, but 23 of the 64 had not in fact supported it. The 41 papers that supported the consensus as defined by the IPCC declaration represents only 0.34% of the papers examined, not 97%.^{xl}

The Legates review found that 23 of the papers that Cook claimed support the IPCC declaration that - “Man caused most of the warming since 1950” - in fact these papers did not support the theory.

Dr. Legates said: “It is astonishing that any journal could have published a paper claiming a 97% climate consensus when on the authors’ own analysis the true consensus was well below 1%.”

Statistical Probability

Three of four studies cite a 97% consensus with the Oreskes study citing 75% consensus and no disagreement by the remaining 25% (theoretically 100% consensus assumed).

NASA has conferred scientific credibility upon these ‘consensus’ studies by linking to them as their first reference on their climate change “Consensus” webpage.^{xli} However, when we examine the numerical variables involved, it seems that even for NASA’s mathematical computational expertise, it would be a statistical improbability that all studies could arrive at a 97% consensus, unless there was significant manipulation of data.

None of the parameters are consistent within the surveys, in particular neither the term ‘climate scientist’ nor ‘consensus’ is ever defined, so the claim of a 97% consensus in one, let alone 3 surveys, is highly illogical.

The fact that the term “consensus” is not defined in any survey is more important than the fact that the term “climate scientist” is not defined.

The Undefined “Consensus”

Description of Variables [Figure 21 below]

In the table below entitled “Variables”, the variable “Consistent or inconsistent use of terminology or definitions about global warming/climate change” lists four consensus definitions identified as T1 to T4 - meaning “Term” 1 through 4. Each paper uses different terms. There is no scientific constant of definition, therefore, how can there be “consensus”?

T1 – Oreskes (2004) The Oreskes definition refers to her paper in which she refers to the IPCC 2001 TAR – Third Assessment Report. “... Most of the observed warming....” This declaration does not state a figure regarding human influence. Oreskes also referred to various organizations that had issued a “consensus” statement – again without specific a ratio or cause. It is unlikely the abstracts she reviewed actually stated a number regarding any ratio of human-causation of warming.

T2 - The Doran & Zimmerman (2009) definition says, “Human activity is the *major* cause of warming” which is noted in their abstract and preamble, but

neither of the two relevant questions they asked of their respondents said that.

The first question asked of respondents did not mention human activity, and the second question asked if human activity was a “significant” factor, not a “major” factor. “Significant” is much less than “major”. Further, “human activity” as a factor does not specify GHG warming from human-made emissions so the Doran & Zimmerman does not correspond to the IPCC AGW statement.

T3 -The Anderegg (2010) definition says, “...humans cause most of unequivocal warming” but does not define a time period. “Most” is a subjective term that is not defined. It is also not clear that Anderegg actually used this definition to determine his consensus results; he referred to ‘tenets.’

T4 - The Cook (2013) definition refers to, 1996 Houghton – “These [warming] trends can be attributed largely to human activities, mostly fossil-fuel use, land-use change and agriculture” which is found in an IPCC report.^{xlii} [Note: *The Houghton definition includes human factors other than GHGs.*]

This definition is not related to the Cook ‘consensus’ classifications at all. Cook’s 97% is based on the erroneous classification of abstracts where the abstracts implicitly or explicitly suggest that AGW causes some warming, no matter how small.

In the row for the variable entitled “Actual numbers making up the 97% ‘consensus’”, the Doran & Zimmerman column shows 79, which is the 100% number of respondents to their question 1. Question 1 numbers of affirmative responses are 76 out of 79, which represents 96.2%. Yet, the question is invalid, as it doesn't mention human-caused warming. Question 2 asks if AGW is significant. The numbers are 75 out of 77, which equals 97.4%. However, the term ‘significant’ is not quantified.

Cook’s 97% number came from 3898 out of 3975 climate related, peer-reviewed abstracts. (This gives 98 %.) He apparently reduced the number to maintain a consistent report of 97% ‘undefined’ consensus.

Dr. William Briggs, Adjunct Professor of Statistics at Cornell University, where he acquired both an M.S. in Atmospheric Science and a Ph.D. in Statistics, said: “In any survey such as Cook’s, it is essential to define the survey question very clearly. Yet Cook used three distinct definitions of climate consensus interchangeably. Also, he arbitrarily excluded about 8000 of the 12,000 papers in his sample on the unacceptable ground that they had expressed no opinion on the climate consensus. These artifices let him reach

the unjustifiable conclusion that there was a 97.1% consensus when there was not.”^{xliii}

Figure 21: Table comparing variables in the four main studies

Variables

	Oreskes	Doran & Zimmerman	Anderegg et al	Cook et al
Objective	a	b	C	d
“Climate scientist” defined?	No	No	No	No
Consensus defined?	No	No	No	No
Consistent or inconsistent use of terminology or definitions about global warming/climate change	T1 IPCC Third Assessment Report TAR 2001	T2 ‘Human activity major cause of warming’	T3 “humans cause most of unequivocal warming”	T4 “1996 Houghton” These trends can be attributed largely to human activities, mostly fossil-fuel use, land-use change and agriculture.
Search terms	Global climate change	[Earth scientists – 2 main opinion questions; self- selected ‘climatologists’]	Climate researchers (undefined)	Global climate change + global warming
Source data-base	W	X	Y	Z
Initial numbers reviewed	928	10,257 asked 3,146 responded	1,372	12,000
Actual numbers making up the 97% ‘consensus’	75% explicit None disagree (±100%)	Q1: 76 out of 79 which is 96.2% Q2: 75 out of 77 which is 97.4%	1,372 reduced to 908 focused on 4 most cited papers	3898 out of 3975 abstracts* 97-98% *Many scientists publicly protested their work being wrongly categorized by Cook et al
Research period covered	10 years	N/A	N/A	21 years
Numbers of researchers involved	1	2	4	12+12 Raters & 3 rd party ^{xliv}

The 3898 papers that are part of the alleged consensus include 2911 papers that only imply human caused some warming, for example, by stating that CO₂ is a greenhouse gas. However, that fact does not imply that CO₂ emissions caused most of the warming since 1950. Cook's ratio incorrectly ignores the fact that 7983 papers took no position on AGW.

There are 4 studies (3 of which claim a 97% consensus rate). However, with 10 distinct variables, none of which are in common, what can be the chance of reaching a 97% consensus in all four surveys even *if* all variables were consistent. None of them are consistent. [Figure 22 below]

Based on the lack of academic and scientific constants in all of these studies, it is an anomaly that NASA confers credibility to this unscientific 'social proof' by posting links and references to these alleged consensus studies on its official climate change site.^{xlvi}

Figure 22: Cross-referenced table comparing elements of key studies

Cross-Referenced Table Comparing Elements Of Key Studies

	Oreskes (2004)	Peiser(2005) (reran Oreskes & disputes her findings)	Doran & Zimmerman (2009) MK Zimmerman (2009) MA thesis	Anderegg et al (2010)	Cook et al (2013)
Number of papers & time-frame of publication	928(804) 1993-2003 10 years	1117 1993-2003 10 years	Database of Earth Scientists	By publication & citations; partially based on existing lists drawn up by Prall	11,944 1991-2011 21 years Data
Search Term	'climate change' (subsequently corrected to 'global climate change')	'global climate change'	2 key opinion questions asked w. 7 related parameters	By publication in climate science journals	"global climate change" or 'global warming'
Comparison of categories and survey findings	1. explicit endorsement of the consensus position 2. evaluation of impacts 3. mitigation proposals 4. methods 5. paleoclimate analysis 6. rejection of the consensus position. Oreskes: "Of all the papers, 75% fell into the first three categories, either explicitly or implicitly accepting the consensus view: 25% dealt with methods or paleoclimate, taking no position on current anthropogenic climate change."	1. 13 (1.2%) explicit endorsement of the consensus position 2. 322 (29%) implicitly endorse but focus on evaluation of impacts 3. 89 (<10%) mitigation proposals 4. 67 focus on methods 5. 87 deal with paleoclimate analysis 6. 34 reject or doubt the consensus position. 7. 44 focus on natural factors of global climate change 8. 470 (44%) include the words "global climate change" but are unrelated to the question of recent global climate change	Categories & findings: 12,000 database of Earth scientists sent a 2 minute on-line survey 10,257 potential respondents 3,146 responded 79 climate scientists (self-selected) formed the 100% Question 1: Has the earth warmed since pre-1800's?† Question 2: Is human activity a significant factor in global warming?† Link	1,372 reduced to 908 Credibility: focussed on 4 most cited papers "Convinced" (CE) or "Unconvinced by evidence" (UE): based on multi-signatory papers signed by researchers 903 scientists are CE (66%) 472 scientists are UE 'Credibility' was established by number of publications & citations. Of the 100 scientists with the most cited publications, 3% are UE. Link	Categories and findings. 1. 64 explicit endorse, >50% warming caused by man 2. 934 explicit endorse 3. 2911 implicit endorse 4. 7983 no position 5. 53 implicit reject 6. 15 explicit reject 7. 9 explicit reject, <50% warming caused by man 64 explicit endorsements out of 11,958 is 0.54% Data For Cook et al, "endorse" means man has caused 'some' warming. This is not consistent with the IPCC declaration. The IPCC claims >90% of warming since mid-20 th century was caused by man.
Claims	75% consensus and "Remarkably, none of the papers disagreed with the consensus position." Challenged by: Pielke (2005) Monckton (2007)	Only 1% consensus, contradicting Oreskes' claim of 75% and no other disagreement	Claims 97% consensus based on: 76 of 79 answered 'yes' to Question 1 (96.2%) 75 Of 77 answered 'yes' to Question 2 (97.4%) Challenged by: Ambler (2010)	97-99% of the climate researchers most actively publishing in the field support the IPCC AGW theory. But only 66% of climate scientists support the IPCC position.	97% consensus claimed in the press releases and on "The Consensus Project" website is based on adding categories 1, 2, 3 to reach 3,932 of 4,010 (all remaining categories except #4) – to claim 97%. However, many scientists publicly rejected Cook's categorizing of their work as supporting CAGW when they do not. Challenged by: Legates et al (2013)

†The full questions in the Doran & Zimmerman survey:

1. When compared with pre-1800s levels, do you think that mean global temperatures have generally risen, fallen or remained relatively constant?
2. Do you think human activity is a significant contributing factor in changing mean global temperatures.

RELATED CONSENSUS STUDIES – A BRIEF OVERVIEW

Powell and Lewandowsky – Consensus or Mockery

The most recent survey is that of James Powell (2014). Here we have a contrasting complexity of science presented with the simplistic claim of the broadest scope of ‘consensus.’^{xlv}

Science writer James Powell reviewed the abstracts of 2,258 climate science peer-reviewed articles published from 2012 to 2013 with the number of authors at 9,136. He states in his paper that only one scientist rejected man-made global warming. He claims that of 13,950 peer-reviewed climate science articles from 1991-2012 only 24 rejected man-made global warming. He asks if climate change is man-made and states of the 33,700 peer-reviewed climate change articles, only 34 reject that modern day warming is caused by humans. Again, as with other surveys, Powell’s black and white bandwaggoning summation avoids the “many diverse and robust perspectives on climate science” as Pielke critiqued Oreskes in 2005.

The Powell 97% consensus claim relies on similar content of previous surveys, which we have deconstructed above. The deconstruction of survey content demonstrates that the 97% consensus claim is a math myth; a statistical manipulation designed to provide social proof to the public to sway their opinion.

A sweepingly broad ‘consensus’ is meaningless for scientific assessment or public policy. Humans affect climate. So do beavers.^{xlvii}

Mockery as a Tool to Delegitimize those who Challenge the Consensus

Stephan Lewandowsky is a cognitive scientist with a passion for climate change issues. He published a survey in 2010 claiming respondents who challenged anthropogenic global warming were mentally unstable. This psychological science study, while making brief allowance for ‘true scepticism,’^{xlviii} claimed to demonstrate that those who reject ‘climate science’

are social outcasts whose world-view is based in conspiracy theories or hoaxes such as that NASA faked the moon landing.

However, he was wrong – both in claims and in his statistical review.

The Lewandowsky survey, entitled “NASA faked the moon landing | Therefore (Climate) Science is a Hoax: An Anatomy of the Motivated Rejection of Science” implies that any objections or rejection of AGW cannot be considered to be credible and should be subject to ridicule. It is interesting to note that this is the only such pejorative title among his many scientific publications. As a psychological sciences professor, he would undoubtedly be aware of the impact of this pejorative labeling.^{xlix}

Steve McIntyre^l pursued the matter of the qualitative research by Lewandowsky and found Lewandowsky's conclusions do not follow from his own data. Both his methods and math are lacking and contrived.^{li} Information obtained through FOI by Simon Turnill^{lii} has shown that responses by both Lewandowsky and Cook to questions from Chambers and Woods were untrue. Chambers^{liii} minced no words in one post.

Lewandowsky's samples were questioned, as were his conclusions.^{liv} Sadly, his pejorative title and sweeping statements were very effective in painting anyone who questioned AGW as a kook.

Lefsrud and Meyer 2013 - As noted in a less publicized survey of 1,077 engineers and geoscientists entitled “Science or Science Fiction? Professionals Discursive Construction of Climate Change” the authors state that: “In framing contests, delegitimizing the claims of opponents is often more effective than arguing one's own position.” (Lefsrud & Meyer 2012)^{lv} In that study, 99.4% of the respondents agreed that climate is changing, but only 36% believe human activity/GHGs are the main cause.

DISCUSSION

Summary of Results

Americans too often teach their children to despise those who hold unpopular opinions. We teach them to regard as traitors, and hold in aversion and contempt, such as do not shout with the crowd, and so here in our democracy we are cheering a thing which of all things is most foreign to it and out of place - the delivery of our political conscience into somebody else's keeping. This is patriotism on the Russian plan. –

Mark Twain, in A. Ayres (Editor)
The Wit & Wisdom of Mark Twain^{lvi}

The idea that 97% of scientists hold a consensus view on human-caused global warming/climate change has become part of the climate change mythology, reaching the highest echelons of science such as NASA, and the highest political office – that of President Barack Obama.

This 97% alleged consensus is also frequently assumed to mean there is consensus that human industrial carbon dioxide or greenhouse gas emissions are the main cause of climate change/global warming. If this were true, then it would make sense to perform a cost-benefit analysis to determine if stringent GHG reduction targets are economically beneficial. However, this notion is false. Even if the IPCC long-term projections turn out to be correct, it is not clear that GHG reduction targets are beneficial.

Therefore, the persistent effort to make the public believe 97% of all scientists agree can only be understood as an intentional manipulation of data and public opinion for commercial gain.

In fact, a substantial number of scientists dispute the impact of carbon dioxide on the environment; many think CO₂ and substantial research shows that CO₂ has a beneficial effect; many think it has a nominal impact.

The scientists whose area of study is not aligned with human impacts, are not part of the IPCC assessment, even though their research demonstrates that the atmosphere is far more dynamic and resilient to human impacts, and that greater concern should be applied to cyclical warm and cold periods caused by solar cycles (i.e. Medieval Warm Period, - which featured mega-epoch droughts in some regions; Little Ice Age – a time of cold, wet seasons, crop failure, revolution and famine.)

As this deconstruction of the data has shown, the 97% figure is arrived at through significant manipulations and redactions of source data. So one must ask why this particular figure is so important in creating social proof (Cialdini 2006).

It is our contention that there are significant psychological and visual reasons for the selection of the 97% figure.

The Kiss of Social Death

Williams (2007) expresses the outcome of being ostracized (i.e. the excluded 3%) - as “the kiss of social death.” Throughout the consensus papers, there are persistent pejorative references to those who challenge or dissent with the alleged consensus – the familiar terms of ‘contrarian,’ ‘denier,’ ‘conspiracy

theorist,' 'manufacturers of doubt,' etc. are dotted throughout these research papers. Indeed the Lewandowsky (2010) paper, despite a single reference to 'legitimate' skepticism within the document, in some quarters he has successfully and publicly tarred all potential climate change consensus challengers with the brush of conspiracy theorists simply through his much cited inflammatory title^{lvii}.

In reviewing all of Lewandowsky's published titles, this one is the only pejorative title: "NASA faked the moon landing | Therefore (Climate) Science is a Hoax: An Anatomy of the Motivated Rejection of Science" - clearly intended to humiliate those holding opposing views.

Humiliation is intended to exclude people from the group and make others avoid them, resulting in social isolation and public mockery.

This effort at public humiliation has risen to the highest levels of politics with President Obama's declaration that 'I don't have time for a meeting of the Flat-Earth Society' – yet the evidence herein clearly shows that his entire Georgetown speech's premise that there is a 97% scientific consensus on climate change is false.

Schacter (1959) experimented with social isolation, finding it had immediate, devastating impacts on individuals; his work was followed up on by Sarnoff and Zimbardo (1961) who largely replicated Schachter's results with a twist.

Their findings showed that when *anxiety* is aroused in a person, theoretically that person would *seek isolation from others*. However, when *fear* is aroused and if the person is unable to run away from the threat, that person then welcomes a chance to join with other people.

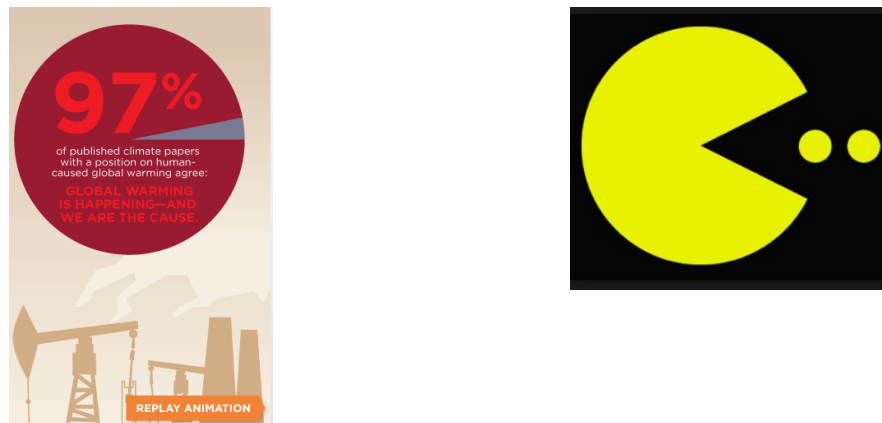
In contemplating these findings, clearly the threat of global warming, as presented by charismatic figures like Al Gore, makes ordinary people *both* anxious and fearful. "Climate" is something no one can escape – but one is able to join many groups that are engaged in the 'fight against global warming.' Consequently, these dual primal emotions are powerful motivators – both of which can supersede rational thought.

The language and visuals used by most of these groups in their materials and on-line websites invoke fear and anxiety and encourage individuals to join and take action.

The stubborn 'consensus' resisters are thus confronted by an army of angry climate change activists, fearful of human extinction caused by those who won't join the herd.

On a more subtle level, the 97% has tapped into the cultural sub-conscience of the world. Upon the recent release of the Cook et al study, a website was set up entitled “The Consensus Project.”^{lviii} This highly visual site features bold colors, powerful graphics, and most important, the 97% figure as a pie-graph that neatly represents an image similar to Pac-Man, icon of the 1980’s video-game movement and international social phenomenon. Pac-man is credited with being one of the most popular video games of all time.

Figure 23: A visual comparison of the Cook et al (2013) Consensus graphic and Pac-Man



It may be coincidence or a designer’s subconscious recollection, or a clever marketing gimmick, but it appears that now on “The Consensus Project” site the 97% Pac-Man is set to gobble up the ‘ghosts of doubt’ about global warming – to eat up those resistant 3% - and prevent ‘lives being lost’ (the original end of a Pac-Man game, and the oft-cited threat of global warming – extinction of the human race). [Figure 23 above]

An important part of “The Consensus Project” website is the page that explains why ‘peer-review’ is important.

“What is peer-review, and why is it important? When a paper has been peer-reviewed, that means it has been evaluated by a number of qualified scientists and found to have followed legitimate scientific methods. Most of the claims that are made by global warming skeptics on TV, in print, and online are not based on legitimate science.”^{lix}

Patrick Michaels, an expert climate scientist who was run out of his job for challenging the ‘consensus’ describes how peer-review is supposed to work, and how in climate science it does not meet conventional standards.^{lx}

“In order to limit any bias caused by personal or philosophical animosity, the editor should remove your name from the paper and send it to other experts who have no apparent conflict of interest in reviewing your work. You and the reviewers should not know who each other are. This is called a “double blind” peer review.

Well, this is “the way it is supposed to be.” But in the intellectually inbred, filthy-rich world of climate science, where billions of dollars of government research money support trillions of dollars of government policy, peer review has become anything but that.

There is simply no “double blindness.” For reasons that remain mysterious, all the major climate journals leave the authors’ names on the manuscripts sent out for review.”

Likewise, as demonstrated by this deconstruction, the peer-reviewers of the several consensus papers failed to ensure that the papers followed legitimate scientific methods.

A recent article in *The Economist* discusses the challenges of peer-review and statistical evaluations, noting that “...Other data-heavy disciplines face similar challenges. Models which can be “tuned” in many different ways give researchers more scope to perceive a pattern where none exists. ...”^{ix}

As noted by (Huff 1954) “Many a statistic is false on its face. It gets by only because the magic of numbers brings about a suspension of common sense.”

Indeed we find that each of these ‘consensus’ studies has built its case on the preceding study, yet each of those has been shown in this deconstruction to be statistically or procedurally inadequate (or both), lacking in statistical significance, rife with situational bias, or offering semi-attached figures that leads to drawing irrelevant conclusions.

The most irrelevant conclusion is that consensus proves anything scientifically about human-caused global warming/climate change, or the impact of human carbon dioxide/greenhouse gas emissions.

Adventures in Peer Review

“John Bohannon, a biologist at Harvard, recently submitted a pseudonymous paper on the effects of a chemical derived from lichen on cancer cells to 304 journals describing themselves as using peer review. An unusual move; but it was an unusual paper, concocted wholesale and stuffed with clangers in study design, analysis and interpretation of results. Receiving this dog’s dinner from a fictitious researcher at a made up university, 157 of the journals accepted it for publication”

<http://www.utstat.utoronto.ca/reid/sta2201s/2>

IMPLICATIONS

“...Most frightening at all, our complacent acceptance of this approach shows that mathematics has become a substitute of science....When used improperly, mathematics becomes a reason to accept absurdity.”

James O'Malley quoted in: “Useless Arithmetic: Why Environmental Scientists Can't Predict the Future” by O.H. Pilkey & L. Pilkey-Jarvis.

The implications are that trillions of dollars are being spent, millions of jobs and thousands of industries affected, by policy decisions that are based on faulty ‘consensus’ studies.

As noted by Cialdini (2006), the author of “Influence:”

“We need only make a conscious decision to be alert to counterfeit social evidence. We can relax until the exploiters' evident fakery is spotted, at which time we can pounce.”

“And we should pounce with a vengeance. I am speaking of more than simply ignoring the misinformation, although this defensive tactic is certainly called for. I am speaking of aggressive counterattack. Whenever possible we ought to sting those responsible for the rigging of social evidence. “

We also must not allow ourselves to be stampeded into wrongful decision-making by ‘pluralistic ignorance’ which, as Cialdini puts it:

“In addition to the times when social evidence is deliberately faked, there is another time when the principle of social proof will regularly steer us wrong. In such an instance, an innocent, natural error will produce snowballing social proof that pushes us to an incorrect decision....”

This is one of those instances when the principle of social proof – the alleged 97% consensus on human-caused climate change – will steer us wrong. Rational, scientific debate must continue, particularly in Western democracies where the scientific method of inquiry, curiosity and innovation has led us to the pinnacle of technological development.

Most of all, our children must be taught that consensus is no replacement for critical thinking.

However, this notion that a 97% consensus on climate change is relevant to any discussion about carbon taxes or greenhouse gas reduction targets is irrelevant and should be vigorously challenged – as shown in this

deconstruction there are only miniscule numbers of scientists who explicitly support these extreme declarations and demands for extreme measures.

Surveys by Author Name	Actual % Explicitly Agreeing w. IPCC Declaration	From a Base Survey Number of Respondents or Papers Assessed
Oreskes/Peiser	1.2%	~1,000
Doran and Zimmerman	2.38%	3,146 respondents
Anderegg et al	66%	1,372 scientists
Cook et al	0.54%	11,944

These surveys do not represent a 97% consensus as claimed.

Points to Consider

- Do humans affect climate in some way? Yes.
- Do most scientists agree on this very broad statement? Yes, most of them.
- Does rising human-made carbon dioxide and greenhouse gas cause Catastrophic Global Warming? Very few scientists agree with this. Human greenhouse gas emissions affect climate; ratio unknown.
- Will carbon taxes and extreme climate change/GHG reduction targets “save us from global warming” or ‘dangerous’ climate change? Very unlikely.
- Should we take action to reduce toxic pollutants like NO_x & SO_x (oxides of nitrogen and sulfur), mercury and particulate matter? Of course, but that is a separate discussion from carbon dioxide as an agent of ‘global warming’ or a reason to impose carbon taxes.

Friends of Science have reviewed climate science literature for over a decade. We agree with the Dutch government’s position on the inadequacy of climate change analysis conducted by the IPCC : **“We believe that limiting the scope of the IPCC to human-induced climate change is undesirable, especially because natural climate change is a crucial part of the total understanding of the climate system, including human-induced climate change.”**

Friends of Science hold the position, based on the scientific evidence, that the sun is the main driver of climate change. Not you. Not CO₂.

As this report shows, there’s no 97% consensus on global warming in these surveys. Not even close. They’re fooling you.

§§

Notes

ⁱ <http://www.pembina.org/pub/2284> Retrieved Jan. 20, 2014

ⁱⁱ http://www.econ.yale.edu/~nordhaus/homepage/documents/Tol_impacts_JEP_2009.pdf Retrieved Feb. 01, 2014

ⁱⁱⁱ <http://www.drroyspencer.com/2011/11/climategate-2-0-bias-in-scientific-research/> Retrieved Feb. 01, 2014

^{iv} <http://www.thegwpf.org/content/uploads/2012/10/Ridley-ConfirmationBias1.pdf> Retrieved Feb. 01, 2013

^v President Obama falsely assumed that the Flat-Earth Society is skeptical of the IPCC position. Society president Daniel Shenton said, "there seems to be a definite correlation between the recent increase in world-wide temperatures and man's entry into the industrial age," he said. "If it's a coincidence, it's quite a remarkable one. We may have experienced a temperature increase even without our use of fossil fuels since the Industrial Revolution, but I doubt it would be as dramatic as what we're seeing now."

http://www.salon.com/2013/06/25/flat_earth_society_believes_in_climate_change/ Retrieved Oct. 21, 2013

^{vi} http://www.ipcc.ch/news_and_events/docs/ar5/ar5_wg1_headlines.pdf Retrieved Jan. 19, 2014

^{vii} **Factors that Affect Confidence Intervals**

There are three factors that determine the size of the confidence interval for a given confidence level. These are: sample size, percentage and population size. The larger your sample, the more sure you can be that the answer truly reflect the population. The accuracy also depends on the percentage of your sample that picks a particular answer. Population size is only likely to be a factor when you work with a relatively small and known group of people. The confidence interval calculations assume you have a genuine random sample of the relevant population.

<http://www.gifted.uconn.edu/siegle/research/samples/confidenceinterval.htm> Retrieved Dec. 28, 2013

^{viii} <http://judithcurry.com/2014/01/16/senate-epw-hearing-on-the-presidents-climate-action-plan/> Retrieved Jan. 22, 2014

^{ix} <http://www.merriam-webster.com/dictionary/consensus> Retrieved Jan 12, 2014

^x <http://www.iisd.org/cckn/www/index.html> Retrieved Jan. 12, 2014

^{xi} 4.5 Consensus is not unanimity - Decisions in a negotiation process can traditionally be taken by unanimity, voting or consensus. Unanimity calls for explicit agreement of all Parties. Consensus falls short of that. It is a process that aims at securing agreement from all, or at least most countries. If there is no explicit objection, a decision can be adopted by consensus. Majority voting consists of simple majority, qualified majority (the adoption of formulae such as 3/4th, 7/8th, etc.), weighted majority (4) and double majority (5) rules.

^{xii} <http://www.merriam-webster.com/dictionary/unanimous?show=0&t=1389535535> Retrieved Jan 12, 2014

^{xiii} <http://www.merriam-webster.com/dictionary/majority> Retrieved Jan. 12, 2014

^{xiv} <http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=22> Retrieved Jan. 12, 2014

^{xv} <http://news.agu.org/press-release/american-geophysical-union-releases-revised-position-statement-on-climate-change/> Retrieved Jan. 12, 2014

^{xvi} http://www.nap.edu/openbook.php?record_id=10139&page=6 Retrieved Jan. 12, 2014

^{xvii} Cialdini, Robert (2006) Influence Harper Business

^{xviii} <http://climate.nasa.gov/scientific-consensus>

<http://climate.nasa.gov/blog>

^{xix} “...people who believe that scientists disagree on global warming tend to feel less certain that global warming is occurring, and show less support for climate policy. This suggests the potential importance of correcting the widely held public misperception about lack of scientific agreement on global warming.”

^{xx} “Communicating the scientific consensus also increases people's acceptance that climate change (CC) is happening (Lewandowsky *et al* [2012](#)).”

^{xxi} the May 17, 2005 edition of Science Magazine wherein he noted: “...we should not be surprised if a broader review were to find conclusions at odds with the IPCC consensus, as “consensus” does not mean uniformity of perspective. ...” He further stated “The actions that we take on climate change should be robust to (i) the diversity of scientific perspectives, and thus also to (ii) the diversity of perspectives of the nature of the consensus.”

Ironically, in Oreskes' response to Pielke, published in the same edition, she states “A full debate on the moral, social, political, ethical, and economic ramifications of possible response to climate change – as well as the ramifications of inaction – would be a very good thing. *But such a debate is impeded by climate change deniers.*”

^{xxii} <http://www.lpl.arizona.edu/sites/default/files/resources/globalwarming/oreskes-chapter-4.pdf>

^{xxiii} <https://www.ametsoc.org/atmospolicy/Presentations/Oreskes%20Presentation%20for%20Web.pdf>

^{xxiv} saying: “if Cook et al's paper classifies my paper, ‘A Multidisciplinary, Science-Based Approach to the Economics of Climate Change’ as “explicitly endorses AGW but does not quantify or minimize,” nothing could be further from either my intent or the contents of my paper.” He goes on to suggest: One possible explanation for this apparent pattern of misclassification into “more favorable” classifications in terms of supporting the AGW hypothesis is that Cook et al. may have reverse engineered their paper. That is, perhaps the authors started by deciding the “answer” they wanted (97 percent) based on previous alarmist studies on the subject.

^{xxv} “Please estimate the percentage of your fellow geoscientists who think human activity is a contributing factor to global climate change.”

^{xxvi} The scientific consensus is clearly expressed in the reports of the Intergovernmental Panel on Climate Change (IPCC). Created in 1988 by the World Meteorological Organization and the United Nations Environmental Programme, IPCC's purpose is to evaluate the state of climate science as a basis for informed policy action, primarily on the basis of peer-reviewed and published scientific literature (3). In its most recent assessment, IPCC states unequivocally that the consensus of scientific opinion is that Earth's climate is being affected by human activities: “Human activities ... are modifying the concentration of atmospheric constituents ... that absorb or scatter radiant energy. □□[M]ost of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations” [p. 21 in (4)].

^{xxvii} <http://www.lpl.arizona.edu/sites/default/files/resources/globalwarming/oreskes-chapter-4.pdf>
pg. 71 Retrieved Jan. 20, 2014

^{xxviii} **Holocene** See Fig. 2

^{xxix} http://scienceandpublicpolicy.org/images/stories/papers/originals/consensus_opiate.pdf

^{xxx} <http://opinion.financialpost.com/2011/01/03/lawrence-solomon-97-cooked-stats/>

^{xxxi} “Here, we use an extensive dataset of 1,372 climate researchers and their publication and citation data to show that (i) 97–98% of the climate researchers most actively publishing in the field support the tenets of

ACC outlined by the Intergovernmental Panel on Climate Change, and (ii) the relative climate expertise and scientific prominence of the researchers unconvinced of ACC are substantially below that of the convinced researchers." <http://www.pnas.org/content/early/2010/06/04/1003187107.full.pdf+html> Retrieved Dec. 20, 2013

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http://www.knmi.nl/research/ipcc/FUTURE/Submission_by_The_Netherlands_on_the_future_of_the_IPCC_1_aatste.pdf Retrieved Feb 01, 2014

xxxiii

<http://www.pnas.org/site/authors/editorialpolicies.xhtml> Retrieved Feb. 02, 2013

xxxiv

It seems that the debate on the authenticity of global warming and the role played by human activity **is largely nonexistent among those who understand the nuances and scientific basis of long-term climate processes.** – in fact no nuances were included nor were any short or long-term frameworks defined in the Zimmerman MA survey and lack of specific time frame was a chief criticism of the key question.

xxxv

Zimmerman email response: "It is challenging to keep our own biases in check when conducting a survey like this. When I said "we have such a clear idea of what we are asking" I meant that we have been over and over many versions of the same questions, looking for the most neutral wording, so it becomes difficult to look at each question though fresh eyes and see where the issues might be. This entire process has been an exercise in re-educating myself about the climate debate and, in the process, I can honestly say that I have heard very convincing arguments from all the different sides, and I think I'm actually more neutral on the issue now than I was before I started this project. There is so much gray area when you begin to mix science and politics, environmental issues and social issues, calculated rational thinking with emotions, etc..."

xxxvi

<http://www.thegwpf.org/content/uploads/2013/09/Montford-Consensus.pdf> Retrieved Dec. 20, 2013

xxxvii

<http://link.springer.com/article/10.1007/s11191-013-9647-9> Retrieved Jan 21, 2014

xxxviii

<http://wattsupwiththat.com/2013/09/03/cooks-97-consensus-disproven-by-a-new-paper-showing-major-math-errors/> Retrieved Jan. 21, 2014

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<http://link.springer.com/article/10.1007/s11191-013-9647-9> Retrieved Jan. 21, 2014

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<http://wattsupwiththat.com/2013/09/03/cooks-97-consensus-disproven-by-a-new-paper-showing-major-math-errors/> Retrieved Jan. 26, 2014

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<http://climate.nasa.gov/scientific-consensus> Retrieved Jan. 26, 2014

xlii

http://www.ipcc.ch/ipccreports/sar/wg_1/ipcc_sar_wg_1_full_report.pdf Retrieved Jan. 27, 2014

xliii

<http://wattsupwiththat.com/2013/09/03/cooks-97-consensus-disproven-by-a-new-paper-showing-major-math-errors/> Retrieved Jan. 26, 2014

xliv

A team of 12 individuals completed 97.4% (23 061) of the ratings; an additional 12 contributed the remaining 2.6% (607). Initially, 27% of category ratings and 33% of endorsement ratings disagreed. Raters were then allowed to compare and justify or update their rating through the web system, while maintaining anonymity. Following this, 11% of category ratings and 16% of endorsement ratings disagreed; these were then resolved by a third party <http://iopscience.iop.org/1748-9326/8/2/024024/article> [There were 9 co-authors listed; it is not clear their roles in the '12 individuals'.] Retrieved Jan. 21, 2014

xlv

<http://climate.nasa.gov/scientific-consensus> (Retrieved Sept 12, 2013) "Ninety-seven percent of climate scientists agree that climate-warming trends over the past century are very likely due to human activities,¹ and most of the leading scientific organizations worldwide have issued public statements endorsing this position."

xlvi <http://www.jamespowell.org/> Retrieved Jan. 21, 2014

xlvi <http://phys.org/news/2013-07-geoscientist-beavers-role-climate.html> Retrieved Jan 21, 2014

xlvi Rejection of science must be distinguished from true scepticism, which may prompt the revision of a scientific claim on the basis of evidence and reasoned theorizing. Skepticism is not only at the core of scientific reasoning but has also been shown to improve people's discrimination between true and false information (e.g., Lewandowsky, Stritzke, Oberauer, & Morales, 2005, 2009).

xlvi <http://www.bris.ac.uk/expsych/people/stephan-lewandowsky/index.html> Retrieved Jan. 20, 2014

i <http://www2.macleans.ca/2009/12/13/centre-of-the-storm/> Retrieved Jan. 21, 2014

li <http://climateaudit.org/2013/03/28/lewandowsky-doubles-down/> Retrieved Jan. 20, 2014

lii <http://australianclimatemadness.com/2013/11/02/lewandowsky-forgets-who-funds-his-university-the-aussie-taxpayer/> Retrieved Jan. 21, 2014

liii <http://geoffchambers.wordpress.com/2013/02/07/lewandowsky-the-liar/> Retrieved Jan. 21, 2014

liv As noted on McIntyre's site, Lewandowsky^{liv} said: "While consistency is a hallmark of science, conspiracy theorists often subscribe to contradictory beliefs at the same time – for example, that MI6 killed Princess Diana, and that she also faked her own death." This is based on data from a Wood et al article. McIntyre obtained the data by FOI requests.

McIntyre wrote " Within the Wood dataset, **only two (!)** respondents purported to believe that Diana faked her own death. Neither of these two respondents also purported to believe that MI6 killed Princess Diana. The subpopulation of people that believed that Diana staged her own death and that MI6 killed her was precisely zero. [The blog posts gives detail of how they reach their conclusions from zero data.]

lv <http://oss.sagepub.com/content/33/11/1477.full> Retrieved Jan. 22, 2014

lvi Ayres, Alex (Ed) (1987) *The Wit & Wisdom of Mark Twain*. New York: Harper & Row

lvii "NASA Faked the Moon Landing—Therefore, (Climate) Science Is a Hoax An Anatomy of the Motivated Rejection of Science" Lewandowsky, S. Oberauer, K., Gignac, G. July 7, 2012; more recent version 05-10-2013

lviii <http://theconsensusproject.com/> Retrieved Jan. 27, 2013

lix <http://theconsensusproject.com/> Retrieved Jan. 20, 2014

lx <http://www.forbes.com/sites/patrickmichaels/2011/06/16/peer-review-and-pal-review-in-climate-science/>

lx <http://www.utstat.utoronto.ca/reid/sta2201s/2014/Unreliable.pdf> Retrieved Jan. 27, 2014



Friends of Science have spent a decade reviewing a broad spectrum of literature on climate change and have concluded the sun is the main driver of climate change, not carbon dioxide (CO₂). The core group of the Friends of Science is made up of retired earth and atmospheric scientists.

Contact:

Friends of Science Society
P.O.Box 23167, Connaught P.O.
Calgary, Alberta
Canada T2S 3B1
Toll-free Telephone: 1-888-789-9597
Web: www.friendsofscience.org
E-mail: contact@friendsofscience.org