

# Scientific American's Climate Lies

*From The Viscount Monckton of Brenchley*

In December 2009, Scientific American, once a respected popular-science journal and now a pulp science-fiction picture comic, viciously attacked US Senator James Inhofe because he had proclaimed 2009 to be the Year of the Skeptic. By skepticism, he meant “standing up and exposing the science, the costs and the hysteria behind global warming alarmism”.

Venomously, Science Fiction American's editorial comment continued: “Within the community of scientists and others concerned about anthropogenic climate change, those whom Inhofe calls skeptics are more commonly termed contrarians, naysayers and denialists.” Yah-Boo! This name-calling marks the depth of unscientific desperation to which the proponents of the “global warming” nonsense have now sunk.

Unscientific American pompously continued: “Not everyone who questions climate change science fits that description, of course—some people are genuinely unaware of the facts or honestly disagree about their interpretation. What distinguishes the true naysayers is an unwavering dedication to denying the need for action on the problem, often with weak and long-disproved arguments about supposed weaknesses in the science behind global warming.”

Politicized American, following a host of similarly left-leaning bodies such as the Royal Society and the unspeakable BBC, proceeded to parody and then condemn the now-overwhelming scientific case against the notion that CO<sub>2</sub> is the principal driver of the past half-century's “global warming” by setting up and then knocking down seven feeble straw men – childish, dishonest simulacra of the true scientific arguments against “global warming” hysteria. It described its straw men as “only a partial list of the contrarians' bad arguments”. Yah-Boo!

In this introduction, we have made some rude remarks about Scientific American. Did those remarks grate as you read them? If so, you will know what it feels like when, day after day, those scientists whose diligent research has shown the “global warming” scare to be nonsense have to put up with invective and vilification of the sort that Scientific American doles out in its poisonous article.

From here on, therefore, we shall confine ourselves solely to scientific argument, with no name-calling. Scientific American would do well to learn from this approach.

We shall reproduce each of Scientific American's seven straw men in bold face, state the true skeptical argument in italic face, and discuss the scientific truth in Roman face.

**Straw Man 1: “Anthropogenic CO<sub>2</sub> can't be changing climate, because CO<sub>2</sub> is only a trace gas in the atmosphere and the amount produced by humans is dwarfed by the amount from volcanoes and other natural sources. Water vapor is by far the most important greenhouse gas, so changes in CO<sub>2</sub> are irrelevant.”**

*True skeptical argument: CO<sub>2</sub> is a greenhouse gas, second only to water vapor. It is settled science that the direct effect of adding it to the atmosphere will be some warming – but not very*

*much. The effect of measured changes in cloud cover over the past 30 years has caused at least four times as much warming as CO<sub>2</sub>, which is a bit-part player. Water vapor concentration – column absolute humidity – increases as the atmosphere warms, theoretically causing an amplifying feedback that is, however, offset partly by the lapse-rate feedback and partly by the cloud-albedo feedback, which the IPCC finds strongly positive when it is in fact strongly negative. Even large volcanic eruptions do not cause significant increases in measured CO<sub>2</sub> concentration: to this extent, therefore, volcanoes are irrelevant.*

Scientific American's knockdown of its straw man begins by citing with approval an 1896 paper in which Svante Arrhenius, a Swedish research chemist and Nobel chemistry laureate, had calculated that doubling CO<sub>2</sub> concentration (which may happen this century) would warm the world by 6 C° (11 F°). Scientific American carefully failed to cite the 1906 paper in which Arrhenius acknowledged that his previous paper had overstated the position almost fourfold, and said that the direct warming effect of doubling CO<sub>2</sub> was just 1.6 C° (3 F°), which might be doubled by the water-vapor feedback. He made insufficient allowance either for the lapse-rate feedback or for the strongly-negative cloud-albedo feedback.

Scientific American continues by saying that volcanic CO<sub>2</sub> emissions account for less than 1% of human CO<sub>2</sub> emissions each year. Quite right: but no scientist on the skeptical side of the debate attributes recent “global warming” to volcanoes.

Next, the magazine says CO<sub>2</sub> concentration has risen since 1832 from 284 parts per million by volume to 388 ppmv. It calls this “a remarkable jump to the highest levels seen in millions of years”. Here, a sense of perspective is needed. For most of the past 600 million years, CO<sub>2</sub> concentration was above 1000 ppmv: at least two and a half times today's concentration. In the Cambrian and Jurassic eras, according to the UN's climate panel, the IPCC, CO<sub>2</sub> concentration was 15-20 times today's. Therefore, in the perspective of geological time, there is nothing particularly exciting or unusual about today's CO<sub>2</sub> concentration.

The central question in the climate debate is not whether we have added CO<sub>2</sub> to the atmosphere, or whether the CO<sub>2</sub> we have added will cause warming, but how much warming the CO<sub>2</sub> we are adding causes. It is this central, quantitative question that each one of the numerous “straw-man” documents circulating today is very careful not to address. And here is why.

The UN's climate panel says that the direct warming effect of CO<sub>2</sub> (in Kelvin) is the product of its radiative forcing (in Watts per square meter) of 5.35 times the logarithm of a given proportionate increase in CO<sub>2</sub> concentration and the Planck parameter (0.3125 Kelvin per Watt per square meter) that converts the forcing to temperature in the absence of any temperature feedbacks or where they sum to zero.

At CO<sub>2</sub> doubling, therefore, the direct warming would be  $0.3125(5.35 \ln 2) = 1.2$  K. So even Arrhenius' second attempt at guessing the direct warming effect of CO<sub>2</sub> was exaggerated by one-third.

However, the UN imagines that the water-vapor and cloud-albedo feedbacks are strongly positive, when in fact the first is weakly positive and the second strongly negative. The UN's

calculations suggest that all feedbacks, taken together, almost triple the original direct warming, so that a CO<sub>2</sub> doubling will cause 3.3 C° (6 F°) of warming.

The UN gives each of the various direct radiative forcings a “level of scientific understanding”. Most of them are “low” or “very low”. The temperature feedbacks, however, are so little understood that the UN does not assign them a “level of scientific understanding” at all. Indeed, its chosen values for each of the feedbacks are taken from just one paper in the literature, written by the lead author of the UN chapter that mentions feedbacks.

Since nearly two-thirds of the putative warming effect of CO<sub>2</sub> comes from these feedbacks, it is on the quantification of feedbacks that the scientific debate rages. The literature is moving in the direction long proposed by Professor Richard Lindzen, who suggests that feedbacks might be net-zero or even somewhat net-negative because the positive water vapor feedback is wholly offset by the lapse-rate feedback and the cloud-albedo feedback. Other feedbacks, by comparison, are of lesser importance.

In short, the IPCC’s estimate of CO<sub>2</sub>’s warming effect depends on four factors multiplied together: the logarithm of the proportionate increase in CO<sub>2</sub> concentration; a coefficient to convert that logarithm to radiative forcing; the Planck parameter to convert the forcing to temperature in the absence of feedbacks; and the sum of all the feedbacks.

All four of these factors are hotly disputed in the scientific literature or in the real-world data, or in both.

- ? The logarithm of the proportionate increase in CO<sub>2</sub> concentration: Though CO<sub>2</sub> emissions are rising at an ever-increasing rate as China and India develop, CO<sub>2</sub> concentration has risen in a straight line for a decade, and is now pointing towards just 575 ppmv by 2100, compared with the UN’s central estimate (on the A2 “business-as-usual” scenario) of 836 ppmv.
- ? The radiative-forcing coefficient: The UN’s climate panel itself is not clear how much direct forcing will be caused by adding CO<sub>2</sub> to the atmosphere. Until 2001, it had adopted 6.4 as the value for this coefficient: then, to take account of the overlap with other (generally net-negative) anthropogenic forcings, it reduced the coefficient by 15% to 5.35. However, there is some evidence that even this value is too high, perhaps by 15%.
- ? The Planck parameter: This variable is the most important of the four, for it occurs twice in the calculation. At the surface, its value is 0.185; at the characteristic-emission altitude, it is 0.269; yet the UN’s value is 0.3125, higher than anything in the literature, and a recent paper has suggested that the correct value is the surface value reduced to just 0.15. If this paper is right, the UN’s overstatement of this single parameter, on its own, causes a fourfold overstatement of the warming effect not only of CO<sub>2</sub> but of all other greenhouse gases.
- ? The feedback sum: Given that feedbacks account for almost two-thirds of the warming that the UN imagines will occur at CO<sub>2</sub> doubling, this variable, too, is of key importance. It is now near-certain that the UN has overvalued the water-vapor feedback, and has vastly over-valued the actually-net-negative cloud-albedo feedback. In particular, the

literature has established that the tripling of surface warming in the tropical upper air predicted by all the UN's models as the characteristic fingerprint of "global warming" is absent in observed reality, and that subsidence drying is the reason why water vapor does not accumulate in the upper air as theory had suggested. The literature has also confirmed by measurement what is readily demonstrable theoretically: that the cloud-albedo feedback is strongly negative. The more clouds, the more sunlight bounces harmlessly back to space.

The product of multiplying all of these exaggerations together is itself a very large exaggeration. The literature is increasingly settling around 0.5-1 C° (1-2 F°), not 3.3 C° (6 F°), as the true warming effect of doubling CO2 concentration: but the warming that the UN predicts for the 21st century must be halved again because CO2 concentration is rising towards only half the predicted value for 2100.

The bottom line, then, is that instead of a 3.4 C° (6 F°) warming to 2100 we can expect around 0.25-0.5 C° (0.5-1 F°), an entirely harmless and largely beneficial warming rate. Since CO2 is a powerful plant food, a doubling of today's CO2 concentration by 2100 will increase the yield of some staple crops by an impressive 40%. The notion that CO2 is any kind of pollutant, therefore, is ill founded.

Next, Scientific American says, "Contrarians frequently object that water vapor, not CO2, is the most abundant and powerful greenhouse gas; they insist that climate scientists routinely leave it out of their models." Yes, water vapor is the most important greenhouse gas; and yes, models routinely include it. However, as we have discussed, the UN's climate panel greatly overstates the water vapor feedback.

Finally, Scientific American says that CO2 is the main driver forcing the greenhouse effect, and adds: "Because of CO2's inescapable greenhouse effect, contrarians holding out for a natural explanation for current 'global warming' need to explain why, in their scenarios, CO2 is not compounding the problem."

This is a classic "straw-man" presentation of the argument, and it is easily answered. Yes, anthropogenic changes in CO2 concentration are the main driver forcing changes in the total greenhouse effect exercised by the entire atmosphere. However, they are not the main driver forcing changes in the total climate. To take one example of a natural forcing many times larger than the tiny CO2 forcing, between 1990 and 2000 a 5% decrease in cloudiness increased the total surface radiative flux by 6 Watts per square meter: yet in the past 250 years the entire CO2 forcing as estimated by the UN's climate panel was just 1.6 Watts per square meter. It is for this reason that skeptics consider CO2 to be a bit-part player in the climate: it has a role in causing warming, but its role is minuscule compared with natural influences, and is – as our calculations have demonstrated – causing much less warming than the UN's climate panel imagines.

**Straw Man 2: "The alleged 'hockey stick' graph of temperatures over the past 1600 years has been disproved. It doesn't even acknowledge the existence of a 'medieval warm period' around 1000 A.D. that was hotter than today is. Therefore, global warming is a myth.**

*True skeptical argument: As papers by more than 770 scientists from more than 450 institutions in more than 40 countries over the past 25 years demonstrate by proxy temperature reconstructions from measured data, the medieval warm period was real, was global, and was warmer than the present, in some places by almost 4 C° (6.3 F°). The “hockey-stick” graph is not an “alleged” graph: the UN’s climate panel reproduced it six times, large and in full color, in its 2001 assessment report. The measured data from all around the world disprove the graph, which was compiled using numerous false statistical techniques. However, the mere existence of the medieval warm period, and the fact that some 7500 of the past 11,400 years have been warmer than the present, do not in themselves establish that “global warming” is a myth. They do establish, however, that today’s global temperatures are well within the natural variability of the climate.*

Scientific American says that proxy evidence from numerous sources confirms that the planet has been warming, and that the National Research Council in 2006 found that temperature during the late 20th century was warmer than for 400 years. Scientific American does not say that the NRC report found that the “hockey-stick” graph reached a conclusion that was no better than “plausible”, and that it had a statistical validation skill not significantly different from zero – in short, that it was worthless, a conclusion strongly endorsed by the report of three statisticians consulted by the Energy & Commerce Committee of the US House of Representatives.

The “hockey-stick” graph – with its long shank falsely suggesting no temperature change for a millennium and its blade indicating a very large uptick in temperatures in the 20th century – is the most thoroughly discredited artifact in the history of science.

Scientific American says, “Even if the ‘hockey stick’ was busted, what of it? ... Even if the world were incontrovertibly warmer 1,000 years ago, it would not change the fact that the recent rapid rise in CO<sub>2</sub> explains the current episode of warming more credibly than any natural factor does – and that no natural factor seems poised to offset further warming in the years ahead.”

No. As we have already described, changes in cloud cover, and hence in the amount of sunlight actually striking the Earth’s surface, provide a much more credible correlation with measured variability in global temperature over the past 30 years than the monotonically-increasing CO<sub>2</sub> concentration; they provide a radiative forcing that is many times larger over the period than that from CO<sub>2</sub>; and, as numerous papers in the literature now suggest, the cooling of the past nine full years may well continue for at least another couple of decades, for natural reasons.

Finally, the rate of warming from 1975-1998, when we might, in theory, have made some small contribution to the warming, is no greater than the rate of warming from 1860-1880 and again from 1910-1940, when we could not have had any measurable influence at all over temperature.

**Straw Man 3: “Global warming stopped a decade ago; Earth has been cooling since then.”**

*True skeptical argument: Though 2000-2009 was the warmest decade in the 150-year instrumental record, there has been no statistically-significant “global warming” for 15 years, and there has been rapid and statistically-significant global cooling for nine years, ever since the turn of the millennium on 1 January 2001. The UN’s models had all predicted a continuation*

*and acceleration of “global warming”. Though natural variability explains the recent cooling, by the same token it also explains the preceding period of warming, which was not exceptional even in the recent record. During the 40 years 1695-1735, for instance, surface temperature in Central England rose by 2.2 C° (4 F°), whereas during the 100 years 1906-2006 global temperature rose by just 0.6 C° (1.1 F°).*

Scientific American says: “Given the extended duration of the warming trend, the expected (and observed) variations in the rate of increase and the range of uncertainties in the temperature measurements and forecasts, a decade’s worth of mild interruption is too small a deviation to prove a break in the pattern.” The “warming trend” in fact began in 1695, some 305 years ago. During all but 23 of those 305 years, the “warming trend” cannot have been caused by humankind. During the 23 years 1975-1998, we may have contributed to the warming rate: however, that rate is far from unprecedented. Even in the 150 years of the instrumental record, that rate has been observed on two previous occasions.

Scientific American says: “Fundamentally, contrarians who have resisted the abundant evidence that supports warming should not be too quick to leap on evidence that only hints at the opposite.” However, skeptics do not “resist the abundant evidence that supports warming”: the warming, however, has been going on for far longer than Scientific American is willing to admit, and the warming trend, even at its highest rates from 1860-1880, from 1910-1940 and from 1975-1998, is well below even the relatively small warming trend predicted by the UN’s climate panel for the current decade. In this context, a stasis of a decade and a half in “global warming” does raise serious questions – questions not about whether warming has happened or may continue to happen but about the rate at which it is predicted to happen, which is increasingly at odds with observed reality.

**Straw Man 4: “The Sun or cosmic rays are much more likely to be the real causes of global warming. After all, Mars is warming up, too.”**

*True skeptical argument: It was warmer than the present, by 7 C° (12.5 F°), for most of the past 600 million years; warmer by up to 6 C° (11 F°) in each of the past four interglacial warm periods; warmer throughout 7500 of the past 11,400 years in the current or Holocene interglacial warm period; and warmer in the Holocene, Minoan, Roman, and medieval climate optima. Therefore, today’s temperatures, and the observed rates of warming, are well within the natural variability of the climate, and no other explanation is necessary. However, changes in solar activity may exert a larger influence on terrestrial climate than the direct changes in total solar irradiance suggest.*

One possible mechanism for this amplification of changes in solar irradiance is the Svensmark effect – the displacement of cosmic rays by the solar wind at times of high solar activity, reducing the rate at which cloud nucleation takes place. However, this theory is not yet established. It has been noticed – though the uncertainty in the measurements is high and not too much weight should be put on them – that warming has occurred on the surface of Mars, on Jupiter, on Neptune’s largest moon, and even on distant Pluto.

Scientific American says the changes in solar irradiance in recent decades have been too small to cause the observed warming. However, it does not say that there was an 11,400-year solar Grand Minimum in the 70 years 1645-1715, when the rivers Thames (in London) and Hudson (in New York) regularly froze over, though they have not done so since. Nor does it say that in the last 70 years of the 20th century there was an 11,400-year solar Grand Maximum. In short, in the past 300 years there has been an increase in solar activity unprecedented at any time in the past 11,400 years.

Scientific American says: “Contrarians looking to pin global warming on the Sun can’t simply point to any trend in solar radiance: they also need to quantify its effect and explain why CO2 does not consequently become an even more powerful driver of climate change.” Ignoring the childish ad-hominem use of the word “contrarians”, and overlooking silly phrases like “contrarian fad”, this argument is a lamentable instance of the Aristotelian logical fallacy known as the *petitio principii*. The magazine has decided, a priori, and inaccurately, that CO2 is the main driver not merely of greenhouse warming but of all climatic warming: therefore, in its world, warming caused by the Sun would itself be amplified still further by CO2, causing an even greater warming rate than that which has been observed.

The truth, however, is that the true rate of warming from CO2 is far less – perhaps as much as six or seven times less – than that which the UN’s climate panel would like us to believe. It is a component in the overall warming of the past half century, but it is a minority component.

**Straw Man 5: “Climatologists conspire to hide the truth about global warming by locking away their data. Their so-called ‘consensus’ on global warming is scientifically irrelevant because science isn’t settled by popularity.”**

*True skeptical argument: The emails released by the Climategate whistleblower contain clear evidence, now being investigated by the prosecuting authorities in the United Kingdom, that climate scientists prominent in the UN’s climate panel and in leading meteorological institutions round the world conspired to block, withhold, or destroy scientific data that had been validly requested under the UK’s Freedom of Information Act. The emails also show how The Team, as these bad scientists called themselves, tampered with the peer-review process, leaned upon editors to delay publication of papers by those with whom they disagreed and to provide them with advance copies of such papers, and – in essence – made up the global temperature record for the past 150 years. Their scope for fabrication was limited over the past 30 years by independent satellite temperature data: however, it cannot now be said with any certainty whether or to what extent the warming of the previous 120 years was real. There is indeed a legitimate consensus to the effect that CO2 is a greenhouse gas and that enhancing its atmospheric concentration will cause some warming, since this consensus rests upon hypotheses that have long been proven. However, there is no consensus to support the UN’s hypothesis that the warming to be expected from CO2 will be very large and potentially catastrophic.*

Scientific American says: “It is virtually impossible to disprove accusations of giant global conspiracies to those already convinced of them (can anyone prove that the Freemasons and the Roswell aliens aren’t involved, too?). Let it therefore be noted that the magnitude of this hypothetical conspiracy would need to encompass many thousands of uncontroversial

publications and respected scientists from around the world, stretching back through Arrhenius and Tyndall for almost 150 years. ... It is also one so powerful that it has co-opted the official positions of dozens of scientific organizations including the U.S. National Academy of Sciences, the Royal Society, the American Association for the Advancement of Science, the American Geophysical Union, the American Institute of Physics and the American Meteorological Society.”

Now note how the word “conspired” is actually used in the true skeptical argument. Its use is confined to the evidence, entirely clear in the Climategate emails, that powerful scientists right at the heart of the UN’s climate panel round the world had conspired to thwart legitimate requests from other scientists for copies of their data and computer programs. This is a criminal conspiracy, and it carries the maximum financial penalty that may be awarded in the British criminal courts. The conspiracy is now being investigated by the prosecuting authorities, and by an independent enquiry established by the University of East Anglia, which has temporarily removed from his post the Professor in charge of the Climate Research Unit. And note how Scientific American carefully avoids mentioning any of these facts, resorting instead to irrelevancies about Freemasons and about aliens landing at Roswell, New Mexico, shortly after the end of the Second World War.

The appeal to “consensus”, which Scientific American and numerous others fall back upon, is indeed an instance of the Aristotelian logical fallacy known as the argumentum ad populum – the “head-count” fallacy. Just because many scientists say they believe a proposition to be true, the proposition is not necessarily true. Likewise, merely because a dozen scientific institutions say they believe all that the UN’s climate panel says, the UN’s climate panel is not necessarily telling the truth. The notion that we must believe the climate panel because it is eminent, or the scientific societies because they are august, is the argumentum ad verecundiam – the “reputation” fallacy.

The father of the scientific method, Abu Ali Ibn al-Hassan Ibn al-Hussain Ibn al-Haytham, in 11th-century Iraq, wrote, “The seeker after truth does not place his trust in any mere consensus, however broad and however venerable. Instead, he subjects what he has learned of it to his hard-won scientific knowledge, and to measurement, scrutiny, and verification. ... The road to the truth is long and hard, but that is the road we must follow.”

Scientific American indulgently suggests that “what is missing” from the Climategate emails “is any clear indication of a widespread attempt to falsify and coordinate findings on a scale that could hold together a global cabal or significantly distort the record on climate change”. Here is just one of many instances that establish exactly that.

Publicly, The Team were saying that the current decade is the warmest in the 150-year instrumental record, and advancing this fact as proof of anthropogenic “global warming” (of course, it is merely proof that there has been at least 150 years of warming: after so long a period of warming, where would anyone expect the warmest years to be?).

Privately, however, one of them wrote to his colleagues that there had indeed been nine years’ global cooling; that The Team could not explain the cooling, and that it was “a travesty” that



they could not explain it. We can explain it, of course: natural factors drown out the tiny warming signal from CO<sub>2</sub>.

Scientific American goes on to say: “Climatologists are frequently frustrated by accusations that they are hiding their data or the details of their models.” Yet that is exactly what The Team did. For years and years, the Professor in charge of the Climate Research Unit was refusing requests to share his data, using an ever-changing variety of pretexts recorded in the emails now released by the whistleblower.

Next, Scientific American cites a non-peer-reviewed essay by Naomi Oreskes suggesting that not one of 928 peer-reviewed publications on “global climate change” had disagreed with the UN’s view that more than half of the warming since 1950 had been caused by anthropogenic CO<sub>2</sub> emissions. However, a subsequent peer-reviewed analysis of 539 papers following on from the point where Oreskes’ research ended showed not a single paper that provided any evidence that “global warming” might prove catastrophic (Schulte, 2008).

Then Scientific American tries to maintain – without offering any evidence – that climate scientists who “do not agree about climate change” are “very much a minority”. This is the tired, old argumentum ad populum again, and it is the very antithesis of the scientific method, in which counting heads plays no part whatsoever. However, the only survey of active climatologists ever conducted found that 97% of them agreed that CO<sub>2</sub> causes some warming, and may have contributed to warming in recent decades. No skeptical scientist would disagree with that.

However, Dr. Art Robinson decided to conduct a wider survey. He approached tens of thousands of scientists and researchers, half of whom were in climate-relevant fields. Some 31,000 of them individually signed statements that they did not agree with the UN’s principal conclusion that “global warming” in recent decades is chiefly manmade. That is the largest head-count ever conducted on this subject. So, if one uses the head-count argument, far more scientists have expressed clear, written opposition to the UN’s official position than those who have expressed the contrary opinion; but, in any event, the head-count argument is unsound, as is the reputation argument, and Scientific American should not have attempted to rely upon either.

Finally, Scientific American says there are only “a few contrary studies”. Yet, as we have already noted, just on the topic of whether there was a medieval warm period there are studies by 770 scientists worldwide that refute what the UN’s climate panel tells us is the “consensus”. On each of the UN’s major conclusions, there are very large numbers of scientific papers that question what we are told is the “consensus”, and the question of the medieval warm period is by no means the only one on which the true consensus in the peer-reviewed literature is entirely the opposite of what the UN wishes us to believe.

**Straw Man 6: “Climatologists have a vested interest in raising the alarm because it brings them money and prestige.”**

*True skeptical argument: Campaigners on each side of the climate question tend to accuse each other of taking sides for the sake of financial advantage. However, skeptical scientists confine*

*themselves to climate research, and do not involve themselves in ad-hominem point-scoring of this kind.*

Scientific American disingenuously cites a single study by the Government Accountability Office suggesting that between 1993 and 2004 US federal spending on climate change rose from \$3.3 billion to \$5.1 billion. This is bad enough – an increase of more than half in little more than a decade. However, in the recent stimulus package tens of billions more were thrown at climate research. NASA and NOAA, two institutions where several of The Team writing the Climategate emails came from, both received very substantial increases in their budgets. As Professor Richard Lindzen has pointed out, there is now so much money available for climate research that scientists everywhere are reclassifying themselves as climatologists to take advantage of it.

**Straw Man 7: “Technological fixes, such as inventing energy sources that don’t produce CO2 or geo-engineering the climate, would be more affordable, prudent ways to address climate change than reducing our carbon footprint.”**

*True skeptical argument: Adaptation to climate change when and if it occurs, and in whichever direction it occurs, is orders of magnitude cheaper and more cost-effective than attempting to prevent it from occurring by controlling emissions of greenhouse gases. Technological fixes cannot be counted upon, because it is impossible to foresee which will work in future and which will not, and governments are notoriously bad at picking winners.*

Here, Scientific American is adopting another classic straw-man technique – inventing a nonsensical proposition and ignoring a sensible one. The sensible point made by skeptical scientists and policy analysts is that it is far, far cheaper to wait and see than to spend trillions now on what is a non-problem and what, even if it were a problem, would continue to be a problem however much we spent.

Suppose we waited a decade, and continued business as usual, with no curbs on CO2 emissions at all. How much warmer would the world become, even if we were to assume that the UN’s climate panel had not exaggerated CO2’s warming effect prodigiously? The answer can be calculated very simply and robustly. There is 388 ppmv CO2 in the atmosphere, and we are adding 2 ppmv a year. After ten years, therefore, there would be 408 ppmv in the atmosphere, and that, if the UN were right, would cause warming of –

$$4.7 \ln(408/388) = 0.24 \text{ C}^\circ = 0.43 \text{ F}^\circ.$$

Putting it the other way about, in order to forestall less than half a Fahrenheit degree of future anthropogenic warming it would be necessary for us to shut down the entire global economy for a whole decade. No autos. No trains. No planes. Practically no electricity. No elevators. No hospitals. No factories. Back to the Stone Age for ten long years, and without even the right to light a carbon-emitting fire in our caves. Imagine the destruction, disease, degradation, and death that would result from such a policy. Yet that is precisely the policy that the “global warming” extremists advocate – and all this just to forestall less than half a Fahrenheit degree of warming.

Finally, Scientific American falls back on what is rapidly becoming the alarmists’ last line of defense, as it becomes ever more apparent that “global warming” is not happening at anything

like the predicted rate (or, in the last 15 years, at all). Ocean acidification is the next scare. Scientific American says it could have an adverse effect on coral reefs.

Here again, however, the literature is near unanimous in finding that ocean acidification arising from the relatively modest increases in CO<sub>2</sub> concentration that we might be able to achieve is impossible.

Here, as elsewhere in the climate debate, it is useful to keep a sense of due proportion. Theologians and geologists see things sub specie aeternitatis – in the long shadow cast by the kindly light of eternity. They take the long view. When did the calcite corals – the very earliest species – first originate? In the Cambrian era, when CO<sub>2</sub> concentration in the atmosphere, according to the UN's climate panel, was 20 times today's. When did the more delicate and vulnerable aragonite corals originate? In the Jurassic era, when CO<sub>2</sub> concentration was around 15 times today's. Were the oceans appreciably more acidic than today's. No.

Here is why ocean acidification will not be a problem in our own time.

There is 70 times as much CO<sub>2</sub> in the oceans as there is in the atmosphere. Suppose we double today's concentration of CO<sub>2</sub>, which is what the UN predicts will happen on the business-as-usual scenario. An amount equivalent to third of what we put into the atmosphere will also accumulate in the oceans. In short, if we do nothing whatever to mitigate our CO<sub>2</sub> emissions, one-third of 1/70 of the existing oceanic concentration will be added. That is less than half of one per cent of the CO<sub>2</sub> already in today's oceans.

And how much CO<sub>2</sub> is in today's oceans? Only 0.025 per cent. CO<sub>2</sub> ranks seventh in the list of substances in the oceans whose concentrations might in theory alter the oceans' acid-base balance. However, CO<sub>2</sub> has a special role as a pivot in the system: even adding quite large concentrations would scarcely alter the pronounced alkalinity of the oceans, which is in any case guaranteed by the fact that the oceans rest upon pronouncedly alkaline rocks. But we won't be adding large concentrations. We'll be adding just about 1 part per million to the proportion of the entire oceans that is represented by CO<sub>2</sub>. This is where a sense of due proportion comes in useful. That is simply too small an amount to make the slightest difference to the oceans.

Scientific American concludes its intemperate and inaccurate attack on the skeptical position with these words: "Responsible action on climate change is what the contrarians seem most interested in denying."

Let us patiently overlook, yet again, the pejorative term "contrarians". The scientists who disagree with what we are falsely told is the "consensus" about climate change are not "contrarians": they are skeptics – and skeptics in the Huxleian sense. TH Huxley, who defeated Bishop "Soapy Sam" Wilberforce in the great debate about evolution at Oxford University in 1860, said this:

"The improver of natural knowledge absolutely refuses to acknowledge authority, as such. For him, skepticism is the highest of duties: blind faith the one unpardonable sin."

The question that the skeptical seeker after truth would ask is this: Would it be more responsible to do nothing, to wait for a decade, and to see whether global temperatures begin to rise at anything like the rate predicted by the UN's climate panel? To that question, we shall show that the answer is an unhesitating Yes.

Why? Well, once again it is necessary to do a simple calculation of the sort that is carefully avoided by Scientific American at every stage. Over the next decade, the West will emit about half the CO<sub>2</sub> that the world emits (China is now the largest single emitter). All drafts of what became the Copenhagen Accord envisaged that, at the very best (as the alarmists would see it), the West would be required to cut its CO<sub>2</sub> emissions by 30% over the next decade, while the rest of the world would not be required to make cuts at all.

Let us pretend that so drastic a cut – which would effectively shut down almost one-third of the Western economy – were actually possible, and were actually achieved. Let us suppose that Copenhagen was a binding, legally-enforceable treaty, and that its provisions were actually complied with, in full. Here's how much "global warming" our shutting down just about a third of our economies would forestall. With no cuts, CO<sub>2</sub> concentration would increase by 2 ppmv per year. With the West cutting 30% of its emissions, or 15% of total emissions by 2020, or 7.5% of total emissions averaged over the ten-year period, CO<sub>2</sub> concentration would increase not by 20 ppmv over the decade but by 18.5 ppmv. So here's how the do-nothing and do-Copenhagen results compare:

Do-nothing option:  $4.7 \ln(408.0/388) = 0.24 \text{ C}^\circ (0.43 \text{ F}^\circ)$   
Full Copenhagen Treaty:  $4.7 \ln(406.5/388) = 0.22 \text{ C}^\circ (0.39 \text{ F}^\circ)$   
Warming forestalled:  $= 0.02 \text{ C}^\circ (0.04 \text{ F}^\circ)$

In practice, of course, the Copenhagen Treaty collapsed, not least because there are plenty of numerate policy analysts in government who can do simple calculations like this, and who realize how pointless the entire exercise is. At the very most, the world will achieve half of what the draft Treaty envisaged. And that – at monstrous cost – would forestall just one-hundredth of a Celsius degree of warming over the next decade. That is all. And only then if the UN's exaggerated estimate of the warming effect of CO<sub>2</sub> is correct, and if every nation does what little the Copenhagen Accord tells them to do. Suppose they only do half, and supposing the UN has exaggerated CO<sub>2</sub>'s warming effect fivefold. Then the huge sacrifices that the West is being asked to make will forestall just one-thousandth of a Celsius degree of warming. You heard it here first.