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Christopher Monckton, Editor ♦ www.scienceandpublicpolicy.org
Time for rational decisions on ‘green’ spending

The authoritative Monthly CO\textsubscript{2} Report for October 2010 points out the extravagant cost and extraordinary ineffectiveness of some of the measures that are proposed to mitigate the warming that the IPCC expects to occur from manmade causes. Editorial Comment: Page 3.

- **Our graphs explained:** An account of how we compile our authoritative SPPI temperature and CO\textsubscript{2} graphs. Page 4.
- IPCC assumes CO\textsubscript{2} concentration will reach 836 ppmv by 2100, but, on present trends, it will be well short. Pages 5-7.
- Since 1980 global temperature has risen at only 2.9 °F (1.6 °C)/century, not 6 F° (3.4 C°) as IPCC predicts. Pages 8-11.
- Sea level rose just 8 inches in the 20\textsuperscript{th} century, and has been rising since 1993 at a very modest 1 ft/century. Page 12.
- Arctic sea-ice extent has been growing rapidly as usual following its summer minimum. In the Antarctic, sea ice extent was recently at its third-highest in the 30-year record. Global sea ice extent shows little trend for 30 years. Pages 13-17.
- Hurricane and tropical-cyclone activity remains near its lowest since satellite measurement began. Pages 18-21.
- Sunspot activity continues to underperform, following the long – and cool – solar minimum. Pages 22-23.
- The (very few) benefits and the (very large) costs of the Waxman/Markey Bill are illustrated at Pages 24-27.
- A Special Focus shows how government bailouts work. Page 28.
- As always, there’s our “global warming” ready reckoner, the surest way to check policy costs against benefits. Pages 29-30.
- And our selection of recent scientific papers of interest, compiled by Dr. Craig Idso of www.co2science.org. Pages 31-34.
- The medieval warm period was real, global, and warmer than the present, as our global map shows. Page 35.
- And finally ... in the weird world of taxpayer-funded climate science, bad news is good news! Page 36.
HERE IS a general obligation on policymakers to think first and spend later. It is other people’s money we are spending, and the hard-pressed taxpayer, especially in difficult times, expects those who govern him to use his money wisely.

However, as soon as the label “green” is attached to any proposal to spend our money, policymakers simply switch off their minds and cease to think or check. As a result, some profoundly unwise spending decisions have been made.

Of course, one could justifiably argue that no scientific case – still less any economic case – has yet been made out for the expenditure of a single red cent of other people’s money on the non-problem of “global warming”.

However, some of the extravagances that have been proposed in the name of Saving The Planet are outrageously absurd even by the very low standards that seem to apply in chancelleries and treasuries worldwide as soon as the dreadful but fashionable misnomer “green” is uttered.

Consider, for instance, the Waxman-Markey climate Bill, now resoundingly defunct after the heavy defeat the Democrats endured in the mid-term Congressional elections. The Bill would shut down 83% of the US carbon economy – and that means just about the whole economy – in only 40 years.

Set aside for a moment the question whether any such drastic measure would ever actually be carried into full effect. Consider instead how little would be achieved, and with what little effect, if it were.

First, how much “global warming” would full implementation of WaxKey forestall? This not unimportant question is not addressed anywhere in the thousand pages of the Bill – because the Bill has nothing to do with the climate and everything to do with what has become the habitual attitude of the governing class on both sides of the aisle: increasing their power and wealth at the expense of the hapless citizen, and regardless of the true costs or benefits.

A little calculation establishes that full compliance with the Waxman-Markey Bill over the 40-year timespan provided in the Bill would forestall – wait for it – just 0.3 °C of “global warming”, and only that much on the generous assumption that the IPCC’s probably-exaggerated estimates of the warming caused by CO2 are correct.

The cost of this negligible alteration in global temperature would be $180 billion a year for 40 years, or $7.2 trillion, and only on the extremely generous assumption that closing down much of the US economy could be achieved that cheaply.

So the cost of the WaxKey Bill, per Celsius degree of “global warming” forestalled, would be $24 trillion. The IPCC says “global warming” of 3.4 °C (about 6 °F) will occur this century, though there is little sign of it yet after a decade with no “global warming” to speak of. Forestalling all of that with global measures whose cost-ineffectiveness is on a par with the Waxman-Markey proposals would cost $82 trillion. Yet the Copenhagen accord promised just $100 bn a year from 2020 onward: that’s $8 trillion if it’s kept up till 2100. It won’t be. In the end, sense will surely prevail.  

Monckton of Brenchley
Letting the real-world data speak out

BEFORE we began producing the *Monthly CO₂ Reports*, it was easy for “global warming” profiteers to pretend, and repeatedly to state, that “global warming” is “getting worse”, and that the climate is changing “faster than expected”. Now they are unable to get away with such falsehoods as easily as before.

The centerpieces of our monthly series of graphs showing what is happening in the real world are our CO₂ and temperature graphs, now regarded as the definitive standard worldwide.

**Our CO₂ concentration graphs** show changes in real-world CO₂ concentration as measured by monitoring stations worldwide and compiled by NOAA. We also calculate and display the least-squares linear-regression trend on the real-world data. Because this trend has been very close to a straight line since late 2001, it is a better guide to future CO₂ concentration than the UN’s projections that we also display, based on its A2 “business as usual” scenario – the one that comes closest to reality at present. The one difference is that, for clarity, we zero the UN’s projections to the start-point of the linear-regression trend on the real-world data.

The UN predicts that, this century, CO₂ concentration will rise exponentially – at an ever-increasing rate – towards 836 [730, 1020] parts per million by volume in 2100. In reality, however, for ten years CO₂ concentration has been following an exponential curve towards just 618 ppmv by 2100. If this trend continues, the UN’s central estimate of CO₂ concentration is excessive.

**Our global-temperature graphs** show changes in real-world temperature at or near the Earth’s surface. Each temperature graph represents the mean of two satellite datasets: the monthly lower-troposphere anomalies from the satellites of Remote Sensing Systems, Inc., and of the University of Alabama at Huntsville. We do not use the Hadley/CRU or NCDC/GISS datasets: the Climate-gate scandal has shown these to be unreliable.

On each graph, the anomalies are zeroed to the least element in the dataset. For clarity, the IPCC’s range of predictions is zeroed to the start-point of the least-squares linear-regression trend on the real-world data. Since late 2001, global temperature has been falling.

To preserve consistency with the IPCC’s published formulae for evaluating climate sensitivity to atmospheric CO₂ enrichment, the IPCC’s projections are evaluated directly from its projected exponential growth in CO₂ concentration using the IPCC’s own logarithmic formula for equilibrium temperature change adjusted for transient warming, yielding a net *near-linear* range of projections.

*Equilibrium* change – final temperature response when the climate has settled down after an external perturbation – is greater than the *transient* change predicted by the UN. However, on the A2 scenario that we use, the difference by 2100 is just 0.5 C° (0.9 F°). Therefore, when the UN and other scientists say that global warming “in the pipeline” will go on for “thousands of years”, just 0.5 C° of additional warming is all that they are talking about.
CO₂ concentration rises, but not at the predicted ever-increasing rate

**CO₂ is rising in a near-straight line**, well below the IPCC's projected range (pale blue region). The deseasonalized real-world data are shown as a thick, dark-blue line overlaid on the least-squares linear-regression trend, heading for 570 ppmv by 2100, compared with the 730 ppmv predicted by the IPCC. The rate of CO₂ growth has been declining for more than a decade, and – on present trends – will not reach even the minimum 2100 value of 730 ppmv projected on the IPCC's A2 scenario. **Data source:** NOAA.
IPCC predicts rapid, exponential CO$_2$ growth that is not occurring.

Observed CO$_2$ growth is near-linear, and is nothing like as steeply exponential as predicted by the UN’s climate panel. If CO$_2$ concentration does not rise as rapidly as the IPCC predicts, nor will temperature. Data source: NOAA.
The dark-blue line shows CO₂’s actual path, well below the exponential-growth curves (bounding the pale blue region) predicted by the IPCC in its 2007 report. Note that our graphs use true exponential curves, not the supra-exponential curves of the IPCC (which nevertheless says its A2 projections for CO₂ are exponential). If CO₂ continues on its present path, the IPCC’s central temperature projection for the year 2100 must be considerably reduced. Data source: NOAA.
The 30-year global warming trend is just 2.9 °F (1.6 °C) per century

Global temperature for the past 30 years has been undershooting the IPCC’s currently-predicted warming rates (pink region). The warming trend (thick red line) has been rising at well below half of the IPCC’s central estimate. The El Nino of 2010 has now ended, and temperatures have fallen back to the long-run trend-line. **Data source:** SPPI index, compiled as the arithmetic mean of the monthly global lower-troposphere temperature anomalies of Remote Sensing Systems Inc. and the University of Alabama at Huntsville. SPPI no longer uses any terrestrial-temperature datasets, because they have proven unreliable.
Hardly any ‘global warming’ since the turn of the millennium

For nine and a half years since the turn of the millennium on 1 January 2001, the trend in global temperatures has been negligible. The IPCC’s predicted equilibrium warming path (pink region) bears no relation to the far lesser rate of “global warming” that has been observed in the 21st century to date. Note the very sharp peak in global temperature in early 2010, caused by a strong El Niño Southern Oscillation. Now that the El Niño has ended, it is unlikely that 2010 will set a new global instrumental-era temperature record. The previous record was set in the El Niño year of 1998. Source: SPPI global temperature index, the mean of the RSS and UAH datasets.
Remote Sensing Systems’ satellite record since the turn of the millennium on 1 January 2001 shows a minuscule warming trend in global temperatures over the present decade. Source: RSS Inc.
The University of Alabama at Huntsville’s recently-revised satellite record since the turn of the millennium on 1 January 2001 echoes the RSS dataset in showing a slight warming trend in global temperatures over the decade. However, this warming trend, at just 0.9 C° per century, is nothing like as high as the IPCC predicts. The contrast between the RSS and UAH graphs exemplifies data uncertainties. 

Source: UAH.
Sea level continues to rise more slowly than the UN predicts

Sea level (anomaly in millimetres) is rising at just 1 ft/century: The average rise in sea level over the past 10,000 years was 4 feet/century. During the 20th century it was 8 inches. As recently as 2001, the IPCC had predicted that sea level might rise as much as 3 ft in the 21st century. However, this maximum was cut by more than one-third to less than 2 feet in the IPCC’s 2007 report, with a central estimate of 1 ft 5 in. Mörner (2004) says sea level will rise about 8 inches in the 21st century. Mr. Justice Burton, in the UK High Court, bluntly commented on Al Gore’s predicted 20ft sea-level rise as follows: “The Armageddon scenario that he depicts is not based on any scientific view.” A fortiori, James Hansen’s prediction of a 246ft sea-level rise, made in an article in The Guardian in 2009 is mere rodomontade. Source: University of Colorado, 2010, release 4.
Arctic sea ice extent (millions of square kilometers: left scale): The red curve for this year shows that the extent of sea ice in the Arctic has fallen from above the 10-year mean a few months ago to track the 2008 curve. In 2005, 2007, and 2008, sea-ice extent during the September low season was below the 30-year minimum. Arctic summer sea ice covered its least extent in 30 years during the late summer of 2007. However, NASA has attributed that sudden decline to unusual poleward movements of heat transported by currents and winds: the Arctic climate has long been known to be volatile. The decline cannot have been caused by “global warming”, because, as the SPPI Global Temperature Index shows, there has been very little warming globally during the past decade. At almost the same moment as summer sea-ice extent reached its 30-year minimum in the Arctic, sea-ice extent in the Antarctic reached its 30-year maximum, though the latter event was very much less widely reported in the media than the former. **Source:** IARC JAXA, Japan, November 2010.
Recovering to the mean: The Danish Meteorological Institute’s graph of Arctic sea-ice extent (millions of square km on left scale: 2010 in black) shows Northern-Hemisphere sea ice returning to what has been normal in the past decade. Short-run fluctuations either side of the decadal mean are to be expected, and do not indicate long-run changes. Source: DanMet.
... and summer minimum sea-ice extent grew 24% in 2 years

Arctic summer sea-ice extent (purple) increased in 2008 and 2009, and in 2010 is similar to 2008, a little below the mean for the past decade, though well within natural variability. Since there has been little “global warming” since 1995, and since the decline in summer sea-ice extent has occurred only in the past five years, the decline that occurred in 2007 cannot be attributed to “global warming”. A paper by NASA in 2008 attributed the 2007 summer sea-ice minimum to unusual poleward winds and currents bringing warm weather up from the tropics. A few weeks after the Arctic sea-ice minimum, there extent of Antarctic sea ice reached a 30-year maximum. The Arctic was in fact 2-3°F warmer in the 1930s and early 1940s than it is today.

A recent paper suggesting that the Arctic is now warmer than at any time for 2000 years is based on the same defective data, and is by the same authors, as the UN's attempt to abolish the medieval warm period in its 2001 report. In fact, for most of the past 10,000 years the world – and by implication the Arctic – was appreciably warmer than it is today. One of the authors of that report had previously told a fellow-researcher, “We have to abolish the medieval warm period.” However, papers by almost 800 scientists from more than 450 institutions in more than 40 countries over more than 20 years establish that the medieval warm period was real, was global, and was warmer than the present. **Source:** University of Illinois, 15 September 2009.
Antarctic sea-ice extent has shown an up-trend for 30 years

Antarctic sea-ice extent (anomaly from 1979-2000 mean, millions of km²: left scale) was recently close to its third-highest in 30 years. This fact has scarcely been reported in any mainstream news medium. The peak extent, which occurred late in 2007, followed shortly after the decline in Arctic sea ice in late summer that year. In the summer of 2009, less Antarctic sea-ice melted than since records began 30 years previously, confirming that whatever warming is occurring is not global. **Source:** University of Illinois, November 2010.
The regular “heartbeat” of global sea-ice extent: steady for 30 years

Planetary cardiogram showing global sea-ice area (millions of square kilometers: left scale): There has been a very slight decline in the trend (red) of global sea-ice extent over the decades, chiefly attributable to loss of sea ice in the Arctic during the summer, which was well below the mean in 2007, with some recovery in 2008 and a further recovery in 2009. However, the 2008 peak Arctic sea-ice extent was exactly on the 1979-2000 mean, and current sea-ice extent is not far below the 1979-2000 mean. The decline in summer sea-ice extent in the Arctic, reflected in the global sea-ice anomalies over most of the past decade, runs counter to the increase in Antarctic sea-ice extent over the period, suggesting that the cause of the regional sea-ice loss may not have been “global warming”. Source: University of Illinois, November 2010.
Hurricane, typhoon, and tropical-cyclone activity is at a 30-year low

Global and northern-hemisphere tropical-cyclone accumulated cyclone energy index, 1979-2010 (ACE units: 10^4 kts^2): Global tropical-cyclone, typhoon, and hurricane activity remains close to its 30-year low. Since Hurricane Katrina (August 2005) and the publication of high-profile papers in Nature and Science, global tropical cyclone Accumulated Cyclone Energy has collapsed by half. This continues the now 4-consecutive-years’ global crash in tropical cyclone activity. While the Atlantic on average makes up about 10% of the global, yearly hurricane activity, and the 2009 hurricane season in the North Atlantic was only half as active as normal, the other 90% of worldwide tropical-cyclone activity has also been significantly depressed since 2007.

The graph shows the 24-month running sum of tropical-cyclone energy from January 1979 for the entire globe (blue: top) and the Northern Hemisphere only (green). The difference between the two time series is the Southern Hemisphere total. Intensity estimates of southern-hemisphere cyclones are often missing before the graph’s start-date. Source: Ryan Maue, Florida State University, November 2010.
Global hurricane days are at their lowest in 30 years

Hurricane activity in decline: The 24-month running sum of hurricane days around the globe has been at its lowest level in 30 years during the 2009 season, confirming the findings of hurricane experts such as Dr. Chris Landsea to the effect that a warming world need not expect hurricanes to become more frequent, longer, or more severe. Source: Ryan Maue, Florida State University, 2010.
Global major hurricane days are almost at their lowest in 30 years

Extreme hurricanes are not common at present: The 24-month running sum of major hurricane days around the globe is not far above its lowest level in the 30-year record, confirming that mere warming of the planet does not necessarily entail more intense hurricanes. Source: Ryan Maue, Florida State University, 2010.
Almost no trend in North Atlantic hurricane activity for 60 years

North Atlantic Accumulated Cyclone Energy Index (ACE: left scale), 1950-2010: The ACE is a 24-month running sum that represents the combined frequency, intensity, and duration of hurricanes and tropical cyclones. Historically, the North Atlantic hurricane activity is usually characterized as a feast or a famine, making definitions of what is normal difficult. In "active" periods (such as 1995-present), a "normal" season sees much hurricane activity compared to inactive periods (such as 1970-1994). In the above figure, the light blue line indicates the linear trend of North Atlantic accumulated cyclone energy from 1950-2009 – a 60-year period of decent records – and the line is almost flat: no trend since 1950. When seasonal forecasters like Gray & Klotzbach at CSU and Tropical Storms Risk announce their upcoming seasonal forecast, they represent an entire season's worth of activity in an integrated sense either by predicting counts/frequency or ACE. However, there is no reason to assume that the entire hurricane season between June and November will experience uniform favorable or unfavorable atmospheric and oceanic conditions for tropical-cyclone formation. Indeed, the North Atlantic tends to spurt activity. For instance, one storm after another may form from African Easterly Waves and trek across the main development region for Atlantic hurricanes during the peak of the season. Source: Ryan Maue, Florida State University, 2010.
Solar activity is heading for what may be a small 2013 maximum

Monthly solar sunspot numbers (black curve, smoothed in blue, and predicted in red) since January 2000: Sunspot activity had been less than for 100 years, but is now recovering as the new solar cycle gets under way. Note that the currently-predicted solar maximum for 2013-14 is considerably less intense than the previous solar maximum in 2000-01. However, the solar flux reaching the top of the atmosphere typically varies by only 0.15% between the minimum and the maximum of the ~11-year solar cycle. Source: ISES/NOAA/SWPC, Boulder, CO, USA, September 2010.
The minima of solar cycles 23 and 24 compared

Number of days without any visible sunspots during the previous solar minimum (blue) and the present solar minimum (red). During the last ~11-year solar minimum, in September/October 1996, the longest period without sunspots was 37 days, compared with 44 days in March/April 2009 and 51 days in July/August 2009. Source: Jan Alvestad, February 2010.
## The stupefying cost of the Waxman/Markey Climate Bill

<table>
<thead>
<tr>
<th>Waxman/Markey Climate Bill</th>
<th>The facts and figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ concentration in 2100 [A2]</td>
<td>836 ppmv</td>
</tr>
<tr>
<td>– CO₂ concentration in 2000</td>
<td>368 ppmv</td>
</tr>
<tr>
<td>= 21st-century CO₂ increase</td>
<td>468 ppmv</td>
</tr>
<tr>
<td>/ 21st-century warming [A2]</td>
<td>3.4 C°</td>
</tr>
<tr>
<td>= Concentration increase per C°</td>
<td>140 ppmv/C°</td>
</tr>
<tr>
<td>x CO₂ emissions per ppmv</td>
<td>14,150 million tons CO₂</td>
</tr>
<tr>
<td>= Emissions cuts for 1 C° cooling</td>
<td>2 trillion tons CO₂</td>
</tr>
<tr>
<td>/ WaxKey emissions cuts/year</td>
<td>5 billion tons CO₂/year</td>
</tr>
<tr>
<td>= Years to prevent 1 C° warming</td>
<td>400 years</td>
</tr>
<tr>
<td>x 100 years’ warming [A2]</td>
<td>3.4 C°</td>
</tr>
<tr>
<td>= Years to stop 100 years’ warming</td>
<td>1360 years</td>
</tr>
<tr>
<td>x $180 billion/year WaxKey cost</td>
<td>$250 trillion</td>
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*This postcard has all the key figures on the Waxman/Markey climate Bill in one place. Bottom line: to prevent the 3.4 C warming projected by the UN for this century under the A2 carbon emissions scenario would take 1360 years even if the Bill were fully implemented, and would cost $250 trillion. Source: SPPI calculations.*
Why cap-and-trade will not change the global climate one iota

A pointless Bill: The Waxman/Markey Bill will cost billions to implement, but will reduce US carbon emissions hardly at all, unless the numerous exceptions in the Bill are implemented, in which event it will not reduce US carbon emissions at all. Source: www.breakthrough.org.
The Waxman/Markey Climate Bill will scarcely affect temperatures

Temperature change predicted by the UN, and (dotted line) adjusted to reflect the negligible impact of the Waxman/Markey Climate Bill, which might cut temperatures by 0.2-0.02 F by 2100, at a cost of $18 trillion. Source: Chip Knappenberger: cost estimates $180 bn/year from the White House.
The Waxman/Markey Climate Bill will scarcely affect sea level

Sea-level change predicted by the UN, and (dotted line) adjusted to reflect the negligible impact of the Waxman/Markey Climate Bill, which might cut sea-level by less than half an in by 2100, at a cost of $18 trillion. Source: Chip Knappenberger: cost estimates $180 bn/year from the White House.
‘Global warming’ is the most expensive and least cost-effective use of taxpayers’ money by governments, ever. This is the most costly boondoggle of our era – or of any era. How come? The reason, perhaps, is that the governing class is not held personally accountable for its mistakes with our money. We are grateful to Mr. Eddie Millar for sending us this light-hearted account of how government bailout packages work.

It’s a slow day in a damp little Illinois town. The rain is beating down, and all the streets are deserted. Times are tough, everybody is in debt, and everybody lives on credit.

On this particular day, a rich Washington D.C. Congressman is driving through the town. He stops at the local hotel.

- The Congressman says he wants to inspect the rooms upstairs in order to pick one to spend the night, and leaves a $100 note on the desk for the hotel owner.

- The hotel owner gives the Congressman some room keys. As soon as the Congressman has walked upstairs, the hotelier grabs the $100 note and runs next door to pay his debt to the butcher.

- The butcher takes the $100 note and runs down the street to repay his debt to the pig farmer.

- The pig farmer takes the $100 note and heads off to pay his bill at the Farmer’s Co-Op.

- The Farmers’ Co-Op guy takes the $100 note and runs to pay his drinks bill with the barkeep.

- The barkeep slips the money along to a certain customer (just now sitting at the bar), who has also been facing hard times and has had to offer him services on credit – the hooker.

- The hooker then rushes to the hotel and uses the C-note to pay off her room bill to the hotel owner.

- The hotel owner then places the $100 note back on the counter, to make sure it goes back to the Congressman.

- The Congressman comes down the stairs, picks up the $100 note, states that the rooms are not satisfactory, pockets the money and leaves town.

No one produced anything. No one earned anything.

However, the whole town is now out of debt and looking to the future with a lot more optimism. And that, gentle taxpayer, is how government bailout packages work.
Your ‘global-warming’ ready reckoner

Here is a step-by-step, do-it-yourself ready-reckoner which will let you use a pocket calculator to make your own instant estimate of global temperature change in response to increases in atmospheric CO₂ concentration.

STEP 1: Decide how far into the future you want your forecast to go, and estimate how much CO₂ will be in the atmosphere at that date.

Example: Let us do a forecast to 2100. The Monthly CO₂ Report charts show CO₂ rising to \( C = 575 \) parts per million by the end of the century, compared with \( B = 385 \) parts per million in late 2008.

STEP 2: Next, work out the proportionate increase \( C/B \) in CO₂ concentration. In our example, \( C/B = 575/385 = 1.49 \).

STEP 3: Take the natural logarithm \( \ln(C/B) \) of the proportionate increase. If you have a scientific calculator, find the natural logarithm directly using the “ln” button. If not, look up the logarithm in the table below. In our example, \( \ln 1.49 = 0.40 \).

| \( n \) | 1.05 | 1.10 | 1.15 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.50 | 1.55 | 1.60 | 1.65 | 1.70 | 1.75 | 1.80 | 1.85 | 1.90 | 1.95 | 2.00 |
| \( \ln \) | 0.05 | 0.10 | 0.14 | 0.18 | 0.22 | 0.26 | 0.30 | 0.34 | 0.37 | 0.41 | 0.44 | 0.47 | 0.50 | 0.53 | 0.56 | 0.59 | 0.62 | 0.64 | 0.67 | 0.69 |
| \( n \) | 2.05 | 2.10 | 2.15 | 2.20 | 2.25 | 2.30 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 | 2.60 | 2.65 | 2.70 | 2.75 | 2.80 | 2.85 | 2.90 | 2.95 | 3.00 |
| \( \ln \) | 0.72 | 0.74 | 0.77 | 0.79 | 0.81 | 0.83 | 0.85 | 0.88 | 0.90 | 0.92 | 0.94 | 0.96 | 0.97 | 0.99 | 1.01 | 1.03 | 1.05 | 1.06 | 1.08 | 1.10 |

STEP 4: Choose a climate sensitivity coefficient \( c \) from the table below –

<table>
<thead>
<tr>
<th>Coefficient ( c ) ...</th>
<th>SPPI minimum</th>
<th>SPPI central</th>
<th>SPPI maximum</th>
<th>IPCC minimum</th>
<th>IPCC central</th>
<th>IPCC maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>... for ( ^\circ \text{C} )</td>
<td>0.7</td>
<td>1.4</td>
<td>2.1</td>
<td>2.9</td>
<td>4.7</td>
<td>6.5</td>
</tr>
<tr>
<td>... for ( ^\circ \text{F} )</td>
<td>1.25</td>
<td>2.50</td>
<td>3.75</td>
<td>5.25</td>
<td>8.5</td>
<td>11.75</td>
</tr>
</tbody>
</table>

STEP 5: Find the temperature change \( \Delta T \) by multiplying the natural logarithm of the proportionate increase in CO₂ concentration by your climate sensitivity coefficient. In our example we’ll choose the SPPI central estimate \( c = 2.50 \ ^\circ \text{F} \). Then –

\[
\Delta T = c \ln(C/B) = 2.50 \times 0.40 = 1.0 \ ^\circ \text{F},
\]

your predicted manmade warming to 2100. It’s as simple as that!
Why cutting carbon emissions can never be cost-effective

<table>
<thead>
<tr>
<th>Atmospheric CO₂ concentration, 2009</th>
<th>NOAA global CO₂</th>
<th>388 ppmv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding 2 ppmv/year causes warming of</td>
<td>UN central est.:</td>
<td>0.024 C°</td>
</tr>
<tr>
<td></td>
<td>4.7 ln(390/388)</td>
<td></td>
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<tr>
<td>No. of years to prevent 1 C° warming</td>
<td>UN guess:</td>
<td>40 years</td>
</tr>
<tr>
<td></td>
<td>(0.024)^{-1}</td>
<td></td>
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<tr>
<td>x UN 4-fold hyping of CO₂ warming</td>
<td>Real world:</td>
<td>160 years</td>
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<td></td>
<td>41 years x 4</td>
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</table>

A very simple calculation demonstrates definitively and conclusively that any attempt to address the imagined (and imaginary) “problem” of “global warming” is doomed not to be cost-effective. NOAA’s global CO₂ concentration record shows 388 parts per million by volume in the atmosphere in 2009/10. Throughout this millennium CO₂ concentration has been rising in a straight line at 2 ppmv/year, as our CO₂ concentration graphs show every month. How much warming will this 2 ppmv/year increase cause? Using the formula for the UN’s implicit central estimate of CO₂’s warming effect, taken from our Ready Reckoner, we can work this out thus: the warming, in Celsius degrees, is 4.7 times the Naperian logarithm of [(388+2)/388], which works out as 0.024 C° per year, or less than one-fortieth of a Celsius degree. So we should have to shut down the entire global carbon economy for 41 years, without any right to use an auto, train, or plane, to prevent just 1 Celsius degree of warming. However, the UN has exaggerated CO₂’s warming effect at least fourfold, so make that 160 years. Closing the entire carbon economy would in effect close the entire global economy. And all this for the sake of a non-solution to a non-problem.
The Monthly CO₂ Report summarizes key recent scientific papers, selected from those featured weekly at www.co2science.org, that significantly add to our understanding of the climate question. This month we review papers about global warming and human mortality, El Niño, dimethylsulfide, biospheric respiration, ocean acidification, sea level rise, tropical cyclones and permafrost. Our final paper gives evidence that the Middle Ages were warmer than today.

**Thirty-Second Summary**

- Warmer climate is highly beneficial to human health, even without any overt adaptation to it. When adaptations are made, warming is highly beneficial in terms of lengthening human life span.
- At least for the past three decades, the warming of the warm pool in the Central Pacific region occurred primarily because intense, naturally-occurring El Niño events were more frequent in that region.
- Dimethylsulfide production in a warming world may provide a very substantial moderating influence on the primary impetus for warming that is produced by mankind's emissions of CO₂ and other trace greenhouse gases.
- New research reduces fears that respiration fluxes may increase strongly with temperature, accelerating climate change.

**Lives saved per life lost owing to ‘global warming’**


According to Christidis *et al.* (2010), “the IPCC’s Fourth Assessment Report states with very high confidence that climate change contributes to the global burden of disease and to increased mortality”, citing the contribution of Confalonieri *et al.* (2007) to the IPCC’s report.

To check this *very-high-confidence* contention of the IPCC, Christidis *et al.* extracted the numbers of daily deaths from all causes-of-death registration data supplied by the UK Office of National Statistics for people 50 or over in England and Wales from 1976-2005, which they divided by daily estimates of population “obtained by fitting a fifth-order polynomial to mid-year population estimates, to give mortality as
deaths per million people”. They compared the death results with data for surface air temperature that showed a warming trend during the same three-decade period of 0.47°C.

They used a technique called optimal detection, a formal statistical methodology, to estimate the role played by human adaptation in the temperature-related changes in mortality they observed.

As expected, during the hottest portion of the year, warming led to increases in death rates. During the winter, however, it led to decreases in death rates.

The three scientists report that if no adaptation had taken place there would have been 1.6 additional deaths per million people per year owing to summer heat from 1976-2005, but there would have been 47 fewer deaths per million per year owing to warming in winter. Accordingly the ratio of lives saved to lives lost thanks to warmer climate was almost 30 to 1, an appreciable net benefit from the 30 years’ warming experienced in England and Wales.

When adaptation to warmer weather was included in the analysis, there were only 0.7 death per million people per year owing to summer heat, but a decrease of 85 deaths per million per year owing to warmer winter weather, increasing the ratio of lives saved to lives lost from 30:1 to more than 120:1.

Accordingly, the IPCC’s “very high confidence” that warmer weather kills more people than it saves is without scientific foundation. Warming is highly beneficial to human health, even without any overt adaptation to the warmer weather. When adaptations are made, warming is handsomely beneficial: it appreciably lengthens the human lifespan.


Intensified el Niños in the central equatorial Pacific


The authors say: “Satellite observations suggest that the intensity of El Niño events in the central-equatorial Pacific has almost doubled in the past three decades,” citing papers by Cane et al. (1997) and Cravatte et al. (2009). The authors find that the increased el Niño intensity “appears to be consistent with theoretically-predicted change of the background sea surface temperature under global warming scenarios”. To test this hypothesis, the authors used satellite observations of sea-surface temperatures over the past three decades in the central Pacific, “distinguishing between the increases in El Niño intensity and changes in background sea-surface temperatures”.

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The two US researchers discovered that the sea-surface temperatures in the central Pacific during el Niño years are “getting significantly higher, while those during La Niña and neutral years are not”. They conclude that “the increasing intensity of el Niño events in the central Pacific region is not simply the result of the well-documented background warming trend in the western-Pacific warm pool: ... it is the increasing amplitude of el Niño events that causes a net warming trend of sea-surface temperatures in the central Pacific region”.

The authors say their results “suggest that, at least for the past three decades, the warming of the warm pool in the central Pacific region is primarily because of more intense el Niño events in that region”. In addition, they report that “in contrast to the central Pacific region, the intensity of el Niño events in the eastern Pacific region does not have a warming trend, and even has a cooling trend (though not significant at the 90% level of confidence) over the three-decade period”.

The authors conclude that “further investigation is therefore needed to understand these issues better, given the uncertainty surrounding causal mechanisms and the implications the observed changes have for global climate and societal impacts”.

Reference: The additional reference from this review can be found at http://www.co2science.org/articles/V13/N46/C1.php.

Dimethylsulfide, ‘global warming’ and the Arctic ocean


Qu and Gabric introduce their study by stating that “dimethylsulfide is the main volatile sulfur [species] released during the formation and decay of microbial ocean biota”, and that “aerosols formed from the atmospheric conversion of dimethylsulfide to sulfate and methanesulfonic acid can exert a climate cooling effect directly by scattering and absorbing solar radiation and indirectly by promoting the formation of cloud condensation nuclei and increasing the albedo of clouds, thus reflecting more solar radiation back into space”.

Working with climate and dimethylsulfide production data from the Barents Sea (70-80°N, 30-35°E) from 1998-2002, the authors employed a genetic algorithm to calibrate chlorophyll-a measurements (obtained from SeaWiFS satellite data) for use in a regional dimethylsulfide production model. Then, using temperature outputs from general-circulation climate models for 1960-1970 (assuming a pre-industrial CO₂ level) and 2078-2086 (assuming triple the pre-industry CO₂ level), they calculated the warming-induced enhancement of the dimethylsulfide flux from the Barents Sea region.

The two researchers report that “significantly decreasing ice coverage, increasing sea surface temperature and decreasing mixed-layer depth could lead to annual dimethylsulfide flux increases of more than 100% by the time of equivalent CO₂ tripling (the year 2080) ... such a large change would have a great impact on the Arctic energy budget and may offset the effects of anthropogenic warming that are amplified at polar
latitudes”. They add: “Many of these physical changes will also promote similar perturbations for other biogenic species (Leck et al., 2004), some of which are now thought to be equally influential to the aerosol climate of the Arctic Ocean.”

Therefore, dimethylsulfide production in a warming world – especially when augmented by analogous biogenic phenomena – may provide a significant moderating influence on the primary impetus for warming that is produced by mankind’s emissions of CO₂ and other trace greenhouse gases.

References: Additional references from this review can be found at http://www.co2science.org/articles/V13/N40/C1.php.

Temperature sensitivity of global biospheric respiration


Fourteen authors of an impressive new analysis (Mahecha et al., 2010) write that “the respiratory release of carbon dioxide from the land surface is a major flux in the global carbon cycle” and that “understanding the sensitivity of respiratory processes to temperature is central for quantifying the climate-carbon cycle feedback”. Condensing their explanation of a complex set of operations, Mahecha et al. say they “approximated the sensitivity of terrestrial ecosystem respiration to air temperature across 60 FLUXNET sites with the use of a methodology that circumvents confounding effects”.

The international team of scientists, from Belgium, Canada, Germany, Italy, Norway, Portugal, Switzerland and the United States, report that their results “may partly explain recent findings indicating a less pronounced climate-carbon cycle sensitivity (Frank et al., 2010) than assumed by current climate-carbon cycle model parameterizations”. A parameterization is a simplification of a process that is not fully modeled because data or methods are insufficiently available. The authors say that their results contradict previous work in that they “suggest that the sensitivity of terrestrial ecosystem respiration to air temperature is independent of mean annual temperature, does not differ among biomes, and is confined to values around 1.4 ± 0.1.”

Reich (2010) in a Perspective article in Science that discusses Mahecha et al.’s findings, writes that their new work “reduces fears that respiration fluxes may increase strongly with temperature, accelerating climate change”. Thus, this long-held climate-alarmist tenet no longer appears to have much support within the community of global-change scientists.

References: Additional references from this review can be found at http://www.co2science.org/articles/V13/N35/B1.php.
Middle Ages: real, global, warmer than today

The Climategate emails reveal some of the tricks the IPCC’s leading “scientists” used in an attempt falsely to abolish the Medieval Warm Period, so that they could pretend that today’s temperatures are warmer than at any time in the past 1300 years. However, this graph from www.science-skeptical.de, a German website, shows graphs from scientific papers that examined proxy temperature data from all parts of the world. Visit the ScienceSkeptical.de website for an interactive version of the graph.
... and finally:

“Good news!”