

Why Is It So Cold? Should the Big Freeze Alter Our Approach to Climate Change?

By [Washington's Blog](#)

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Theme: [Environment](#)

In-depth Report: [Climate Change](#)

Preface: If you believe in man-made global warming, please read this essay from the beginning to the end. If you are skeptical of man-made global warming, please skip ahead to the last two sections of this essay so that you see where I'm going.

Europe, the U.S. East Coast, and many other places are suffering through one of the coldest winters on record.

How can this be when we are supposedly experiencing global warming?

Is the Gulf Stream Shutting Down?

Climate scientists have long speculated that global warming could cause a new ice age in.

As I [noted](#) in May:

As the red arrows at the left of the following drawing show, the Gulf Stream runs from Florida up the Eastern Coast of the United States:



[Click [here](#) for full image.]

Global warming activists have warned for years that warming could cause [the "great conveyor belt" of warm ocean water to shut down](#). They say that such a shut down could – in turn – cause [the climate to abruptly change, and a new ice age to begin](#). (This essay neither tries to endorse or refute global warming or global cooling in general: I am focusing solely on the oil spill.)

The drawing above shows the worldwide "great conveyor belt" of ocean currents, which are largely driven by the interaction of [normal ocean water with colder and saltier ocean currents](#).

And see [this](#), [this](#) and [this](#).

Did the Oil Spill Make It Worse?

An Italian PhD professor of physics at the Frascati National Laboratories and the National Institute of Nuclear Physics (Gianluigi Zangari) [argues](#) that an analysis of satellite data shows that the loop current was stopped for the first time a month or two after the BP oil

spill started, and concludes:

Since comparative analysis with past satellite data until May 2010 didn't show relevant anomalies, it might be therefore plausible to correlate the breaking of the Loop Current with the biochemical and physical action of the BP Oil Spill on the Gulf Stream.

It is reasonable to foresee the threat that the breaking of a crucial warm stream as the Loop Current may generate a chain reaction of unpredictable critical phenomena and instabilities due to strong non linearities which may have serious consequences on the dynamics of the Gulf Stream thermoregulation activity of the Global Climate.

Professor Zangari does not propose a mechanism by which the oil stops the loop current, but on May 2nd (2 weeks after the start of the oil spill), I [proposed](#) a mechanism, but noted that such an event was extremely unlikely:

The Associated Press [notes](#):

Experts warned that an uncontrolled gusher could create a nightmare scenario if the Gulf Stream carries it toward the Atlantic.

This would, in fact, be very bad, as it would carry oil far up the Eastern seaboard.

How could the oil get all the way from Louisiana to Florida, where the Gulf Stream flows?

[The Loop Current].

In a worst-case scenario – if the oil leak continued for a very long period of time – the oil could conceivably be carried from the Gulf Stream into world-wide ocean currents (see drawing above).

I do not believe this will happen. Even with the staggering quantity of oil being released, I don't think it's enough to make its way into other ocean currents. I think that either engineers will figure out how to cap the leak, or the oil deposits will simply run out. It might get into the Gulf loop current, and some might get into the Gulf Stream. But I don't believe the apocalyptic scenarios where oil is carried world-wide by the Gulf Stream or other ocean currents.

Changing the Climate

There is an even more dramatic – but even less likely – scenario.

Conceivably – if the oil spill continued for years – the greater thickness or "[viscosity](#)" of the oil in comparison to ocean water, or the different ability of oil and seawater to hold warmth (called "[specific heat](#)"), could interfere with the normal temperature and salinity processes which drive the ocean currents, and thus shut down the ocean currents and change the world's climate.

However, while this is an interesting theory (and could make for a good novel or movie), it simply will not happen.

Why not?

Because there simply is not enough oil in the leaking oil pocket to interfere with global ocean currents. And even if this turns out to be a much bigger oil pocket than geologists predict, some smart engineer will figure out how to cap the leak well before any doomsday scenario could possibly happen.

I certainly hope that what I wrote in May – before the Loop Current allegedly shut down – was right, and that there wasn't enough oil to affect climate. But one season does not make a trend, and we will have to see if the Loop Current is back to normal next year or is permanently weakened.*

Jet Stream Shifting North?

Scientists say that the jet stream – – has moved North.

For example, the University of Arizona created the following graphic in 2008 to illustrate the Northern shift of the jet stream between 1978 and 1997 (via Scientific American):



X

STORM TRACKER: The jet stream that carries moisture from Pacific storms over the U.S. has shifted north in recent decades, making the arid Southwest even drier.

Image: COURTESY OF STEPHANIE MCAFEE
UNIVERSITY OF ARIZONA/2008

Associated Press [wrote](#) in 2008:

The jet stream — America's stormy weather maker — is creeping northward and weakening, new research shows.

That potentially means less rain in the already dry South and Southwest and more storms in the North. And it could also translate into more and stronger hurricanes since the jet stream suppresses their formation. The study's authors said they have to do more research to pinpoint specific consequences.

From 1979 to 2001, the Northern Hemisphere's jet stream moved northward on average at a rate of about 1.25 miles a year, according to the paper published Friday in the journal Geophysical Research Letters. The authors suspect global warming is the cause, but have yet to prove it.

The jet stream is a high-speed, constantly shifting river of air about 30,000 feet above the ground that guides storm systems and cool air around the globe. And when it moves away from a region, high pressure and clear skies predominate.

Two other jet streams in the Southern Hemisphere are also shifting poleward,

the study found.

The study looked at the average location of the constantly moving jet stream and found that when looked at over decades, it has shifted northward. The study's authors and other scientists suggest that the widening of the Earth's tropical belt — a development documented last year — is pushing the three jet streams toward the poles.

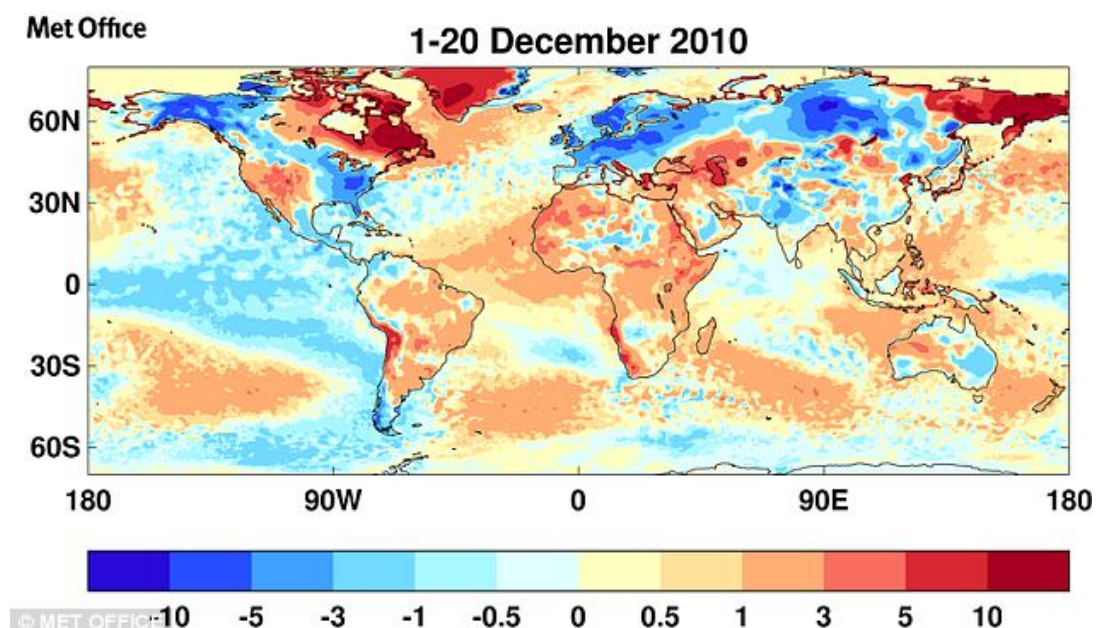
Climate models have long predicted that with global warming, the world's jet streams would move that way, so it makes sense to think that's what happening, Caldeira said. However, proving it is a rigorous process, using complex computer models to factor in all sorts of possibilities. That has not been done yet.

"We are seeing a general northward shift of all sorts of phenomena in the Northern Hemisphere occurring at rates that are faster than what ecosystems can keep up with," he said. Dian Seidel, a research meteorologist for the National Oceanic and Atmospheric Administration who wrote a study about the widening tropical belt last year, said she was surprised that Caldeira found such a small shift.

Jet Stream Temporarily Shifting South?

However, neither a shutdown of the conveyor belt or a Northward-shifting jet stream would explain the extremely cold being experienced right now in the U.S. East Coast, Southern California, Australia and many other southerly locations. Specifically, if either condition was occurring, England and other parts of Europe would indeed be getting hit with blizzards, but Southerly locations shouldn't also be getting walloped. In other words, neither theory can explain what we are currently seeing.

Indeed, the Met - England's official climate agency - says that the problem isn't that the jet stream has shifted North, but that it has temporarily shifted South. As the Daily Mail [noted](#) last week:



Daily mean temperature anomalies around the world between 1st December and 20th December compared with the 30 year long term average between 1961 and 1990

During these grey winters, Britain's prevailing winds come from the west and south west, and bring with them warm and moist air from the sub-tropical Atlantic.

This year a high-pressure weather system over the Atlantic is blocking the jet stream's normal path and forcing it to the north and south of Europe.

The areas of high pressure act like stones in a stream – blocking the normal flow of milder air from the west and instead forcing colder air from the north down across the UK.

In California more than 12 inches of rain has fallen in parts of the Santa Monica Mountains in the south and 13 feet of snow has accumulated at Mammoth Mountain ski resort.

And Australians expecting to bask in early summer sun this Christmas are instead shivering as icy gusts sweeping up from the Southern Ocean have blanketed parts of east coast states New South Wales and Victoria with up to four inches of snow.

When the jet-stream is blocked by high pressure it dips southwards and lets freezing air flood in from the Arctic regions.

Other weather patterns are also causing havoc across the may also be affecting the weather, such as the current in the tropical Pacific Ocean, called La Nina, which is disturbing the jetstream over the north Pacific and North America.

A combination of our usual wet Atlantic weather systems striking these freezing cold fronts results in huge amounts of snowfall – and brings Britain grinding to a halt.

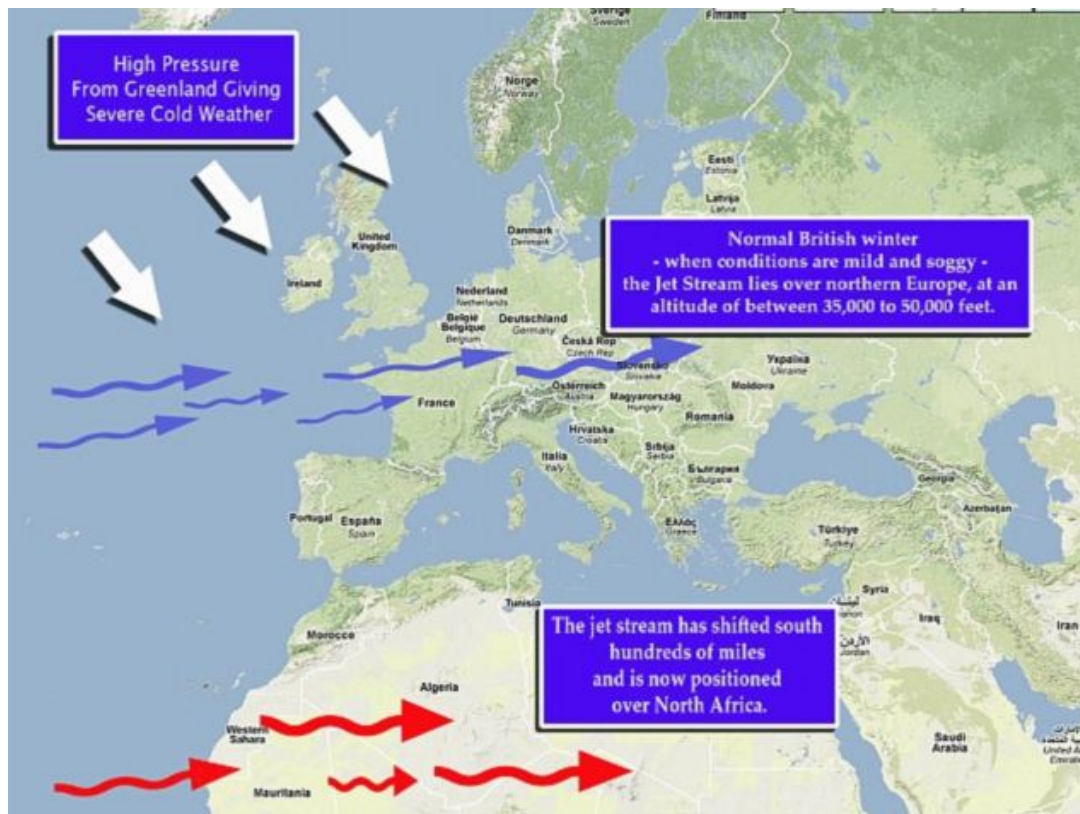
A Met Office spokesman: 'The problem is we are not getting the warmer Atlantic air that normally keeps our winters mild.'

'We can see that it is unseasonably warm over Canada and Greenland, this is where warm air has been diverted.'

He said that any change in the pressure over the Atlantic would need to last for several days before we would notice any change in the weather in Europe.

Freezing-cold winters and milder winters tend to cluster in groups, as the jet stream changes its path.

Experts are still unsure why this is but suspect it may be related to the EL Nino weather system as well as changes in sea temperatures and solar activity.



A system of high pressure has forced the jet stream further south, allowing biting cold winds in from the north

In January, Weather.com [explained](#) last year's cold snap in terms of the "Greenland Block":



Jet Stream Pattern during a Greenland Block

Although there are other determining factors which caused the recent prolonged arctic cold spell, one of main culprits was something called the Greenland Block.

The Greenland Block is a very strong area of high pressure located over the country of Greenland.

The block does what you may think it does - it creates an atmospheric traffic jam.

Air currents want to move west to east (in the northern hemisphere) but when the Greenland Block is in place it has to navigate around the block. So air currents either flow up and around the block or dig south.

In the graphic above, the block is designated by a ridge of high pressure with the jet stream buckling northward up and around the high pressure area.

On either side of the ridge, the jet stream buckles southward creating two troughs - one located over the central and eastern United States and another over western and central Europe.

As the trough digs south, arctic air is no longer locked in the...well...arctic. It is free to spill away from the cold dungeon.

The cold air surges southward and depending on how far south the jet stream digs, is sometimes capable of reaching typically mild or warm areas such as south Texas, the Deep South and Florida.

Over Europe, the cold air originates out of Siberia and spill south and west overwhelming much of the continent.



Stuck Low Pressure System Means a Persistent Northerly Flow

In an Op-Ed in the New York Times, climate scientist Judah Cohen [focuses](#) on Siberia's role in the process:

As global temperatures have warmed and as Arctic sea ice has melted over the past two and a half decades, more moisture has become available to fall as snow over the continents. So the snow cover across Siberia in the fall has steadily increased.

The sun's energy reflects off the bright white snow and escapes back out to space. As a result, the temperature cools. When snow cover is more abundant in Siberia, it creates an unusually large dome of cold air next to the mountains, and this amplifies the standing waves in the atmosphere, just as a bigger rock in a stream increases the size of the waves of water flowing by.

The increased wave energy in the air spreads both horizontally, around the Northern Hemisphere, and vertically, up into the stratosphere and down toward the earth's surface. In response, the jet stream, instead of flowing predominantly west to east as usual, meanders more north and south. In winter, this change in flow sends warm air north from the subtropical oceans into Alaska and Greenland, but it also pushes cold air south from the Arctic on the east side of the Rockies. Meanwhile, across Eurasia, cold air from Siberia spills south into East Asia and even southwestward into Europe.

That is why the Eastern United States, Northern Europe and East Asia have experienced extraordinarily snowy and cold winters since the turn of this century. Most forecasts have failed to predict these colder winters, however, because the primary drivers in their models are the oceans, which have been warming even as winters have grown chillier. They have [ignored the snow in Siberia](#).

Do We Really Know What's Causing It?

The Independent [reported](#) last week:

Scientists have established a link between the cold, snowy winters in Britain and melting sea ice in the Arctic and have warned that long periods of freezing weather are likely to become more frequent in years to come.

An analysis of the ice-free regions of the Arctic Ocean has found that the higher temperatures there caused by global warming, which have melted the sea ice in the summer months, have paradoxically increased the chances of colder winters in Britain and the rest of northern Europe.

The findings are being assessed by British climate scientists, who have been asked by ministers for advice on whether the past two cold winters are part of

a wider pattern of climate change

Some climate scientists believe that the dramatic retreat of the Arctic sea ice over the past 30 years has begun to change the wind patterns over much of the northern hemisphere, causing cold, Arctic air to be funnelled over Britain during winter, replacing the mild westerly airstream that normally dominates the UK's weather.

The researchers used computer models to assess the impact of the disappearing Arctic sea ice, particularly in the area of the Barents and Kara seas north of Scandinavia and Russia, which have experienced unprecedented losses of sea ice during summer.

Their models found that, as the ice cap over the ocean disappeared, this allowed the heat of the relatively warm seawater to escape into the much colder atmosphere above, creating an area of high pressure surrounded by clockwise-moving winds that sweep down from the polar region over Europe and the British Isles. Vladimir Petoukhov, who carried out the study at the Potsdam Institute for Climate Impact Research in Germany, said the computer simulations showed that the disappearing sea ice is likely to have widespread and unpredictable impacts on the climate of the northern hemisphere.

One of the principal predictions of the study was that the warming of the air over the ice-free seas is likely to bring bitterly cold air to Europe during the winter months, Dr Petoukhov said. "This is not what one would expect. Whoever thinks that the shrinking of some far away sea-ice won't bother him could be wrong. There are complex interconnections in the climate system, and in the Barents-Kara Sea we might have discovered a powerful feedback mechanism," he said.

In the paper, submitted in November 2009 but published last month in the Journal of Geophysical Research, Dr Petoukhov and his colleague Vladimir Semenov write: "Our results imply that several recent severe winters do not conflict with the global warming picture but rather supplement it."

Stefan Rahmstorf, professor of physics of the oceans at the Potsdam Institute, said the floating sea ice in winter insulates the relatively warm seawater from the bitterly cold temperatures of the air above it, which can be around -20C or -30C.

"The Arctic sea ice is shrinking and at the moment it is at a record low for mid-to-late December, which provides a big heat source for the atmosphere," Professor Rahmstorf said. "The open ocean actually heats the atmosphere above because the ocean in the Arctic is about 0C, and that's much warmer than the atmosphere about it. This is a massive change compared with an ice-covered ocean, where the ice operates like a lid. You don't get that heating from below.

"The model simulations show that, when you don't get ice on the Barents and Kara seas, that promotes the formation of a high-pressure system there, and, because the airflow is clockwise around the high, it brings cold, polar air right into Europe, which leads to cold conditions here while it is unusually warm elsewhere, especially in the Arctic," he explained.

The scientists emphasised that the climate is complex and there were other factors at play. It is, they said, too early to be sure if the past two cold winters

are due to the ice-free Arctic.

"I want to be cautious, but basically in the past couple of months the sea ice cover has been low and so, according to the model simulations, that would encourage this kind of weather pattern," Professor Rahmstorf said.

"The last winter of 2009-10 turned out to be fitting that pattern very well, and perhaps this winter as well, so that is three data points. I would say it's not definite confirmation of the mechanism, but it certainly fits the pattern," he said.

The computer model used by the scientists also predicted that, as the ice cover continues to be lost, the weather pattern is likely to shift back into a phase of warmer-than-usual winters. Global warming will also continue to warm the Arctic air mass, Professor Rahmstorf said.

"If you look ahead 40 or 50 years, these cold winters will be getting warmer because, even though you are getting an inflow of cold polar air, that air mass is getting warmer because of the greenhouse effect," he said. "So it's a transient phenomenon. In the long run, global warming wins out."

Even the leading proponents of this theory admit that their theory is only tentative, and that further research is needed to confirm or deny that the theory explains the last couple of winters.

Indeed, the BBC recently [chalked up](#) the variation in the jet stream to random cycles:

Under "normal" circumstances, this jet stream brings in weather systems from the Atlantic, causing the wet, windy, cloudy weather that is typically associated with mild British winters.

But the path of the jet stream, like this year, can wander, meaning the mild weather systems are not being brought to the UK in the same way.

During these periods of "weakening westerlies" the cold weather from the north moves in.

Years of weakening westerlies have come in clumps of three and four in recent decades. So we could well get another very cold winter next year.

But it does not mean the UK is getting colder. The cold winters of the last couple of years contrast with the mild winters that preceded them. But in the 1960s and 1940s there were very cold winters too.

A handful of cold winters means no more than a handful of hot summers.

Solar Variation?

Skeptics of man-made global warming point to the sun as the cause of climate change.

As I [noted](#) last year, the sun and other things beyond our atmosphere do, in fact, affect the Earth more than scientists previously realized:

National Geographic [reported](#) in 2006 that the Earth's magnetic field is changing rapidly.

[Some] scientists have concluded that [the Earth's magnetic shield does affects climate](#).

In addition, two Danish geophysicists at Aarhus University in western Denmark [propose](#) that the increased cosmic radiation allowed by a weakened magnetic shield in turn changes the amount of rainfall at the tropics, thus affecting climate (they acknowledge that CO2 also affects climate, but state that climate is more complex than generally believed).

Nigel Marsh of the Danish Space Research Institute in Copenhagen also [argues](#) that clouds are scarce near the equator and thicker towards the tropics, because cosmic rays have a hard time punching through Earth's magnetic field at the equator, but can leak in through the relatively weaker field nearer the poles. If correct, this bolsters the Danish geophysicists' hypothesis that changes to the Earth's magnetic shield affect cloud cover (and thus precipitation and climate in general).

Moreover, it is known that intense solar activity can destroy ozone in the Earth's atmosphere, thus affecting climactic temperatures. See [this](#), [this](#), [this](#), [this](#) and [this](#). Indeed, the effects of solar energy on ozone may be one of the main ways in which the sun influences Earth's climate.

The sun itself also affects the Earth more than previously understood. For example, according to the [European Space Agency](#):

Scientists ... have proven that sounds generated deep inside the Sun cause the Earth to shake and vibrate in sympathy. They have found that Earth's magnetic field, atmosphere and terrestrial systems, all take part in this cosmic sing-along.

Scientists have recently [discovered](#) that [cosmic rays from a "mysterious source" are bombarding the Earth](#) (and see [this](#)). This is occurring at the same time that [the protective bubble around the sun that helps to shield the Earth from harmful interstellar radiation is shrinking](#) and getting weaker. In addition, a recent study shows that [increased output from the Sun might be to blame for 10 to 30 percent of the global warming that has been measured in the past 20 years](#). The sun is simply [getting hotter](#). Indeed, [solar output has been increasing steadily ever since scientists have been able to measure it](#). Another study shows that [solar activity variations have a "marked influence" on the Earth's climate](#).

If extra-planetary events affect Earth's climate, wouldn't other planets in the solar system be affected as well?

Yes. In fact, there is evidence of global warming [around 10 years ago] on [Pluto](#), [Mars](#), [Jupiter](#) and [Neptune's moon](#). See also [this](#).

The sun also apparently affects the [amount of rainfall](#) on Earth, which in turn affects climate.

As Nasa [pointed out](#) last year:

The sunspot cycle is behaving a little like the stock market. Just when you think it has hit bottom, it goes even lower.

2008 was a bear. There were no sunspots observed on 266 of the year's 366 days (73%). To find a year with more blank suns, you have to go all the way back to 1913, which had 311 spotless days.... Prompted by these numbers, some observers suggested that the solar cycle had hit bottom in 2008.

Maybe not. Sunspot counts for 2009 have dropped even lower. As of March 31st, there were no sunspots on 78 of the year's 90 days (87%).

It adds up to one inescapable conclusion: "We're experiencing a very deep solar minimum," says solar physicist Dean Pesnell of the Goddard Space Flight Center.

"This is the quietest sun we've seen in almost a century," agrees sunspot expert David Hathaway of the Marshall Space Flight Center.

As one scientific site [noted](#) in August:

Solar cycle 23, which ended recently, lasted longer than previous cycles, with a prolonged phase of low activity that scientists had difficulty explaining.

Nasa [predicts](#) that sun activity will pick up again in cycle 24, but not nearly as much was seen at the height of the last cycle around 10 years ago:

✖ Proponents of human-caused global warming argue that solar variation is not enough to account for recent changes in climate.

So What Should We Do?

Given the different theories about what is causing the extreme cold weather, some argue that we should do nothing until the science is settled. Indeed, given that - in the 1970s - leading scientists ([including](#) Obama's current science advisor) [believed we were facing a catastrophic ice age, and considered pouring soot over the Arctic to melt the ice to make the world warmer](#), caution should be exercised by all.

Indeed, the Washington Post [noted](#) that the government forced a switch from one type of chemical to another because it was believed the first was enlarging the ozone hole. However, according to the Post, the chemical which the government demanded be used instead is 4,470 times more potent as a greenhouse gas than carbon dioxide.

Currently, "government scientists are studying the feasibility of sending nearly [microscopic particles of specially made glass into the Earth's upper atmosphere to try to dampen the effects of 'global warming.'](#) " Others are currently suggesting [cutting down trees and burying them](#). Other ways to [geoengineer the planet](#) are being proposed.

So we should approach climate change from the age-old axiom of "first, do no harm", making sure that our "solutions" to not cause more damage than the problems.

On other other hand, global warming activists say that global warming will win out in the end, that the cold snap is temporary, and that delaying action could doom us to an unpleasant - and very warm - future.

So what should we do?

Well, as I've repeatedly pointed out, everyone should agree on [two things](#):

The Carbon Footprint of War

First, as Harvey Wasserman [notes](#), continuing the wars in Afghanistan and Iraq will more than wipe out any reduction in carbon from the government's proposed climate measures. Writing about the escalation in the Afghanistan war, Wasserman says:

The war would also come with a carbon burst. How will the massive emissions created by 100,000-plus soldiers in wartime be counted in the 17% reduction rubric? Will the HumVees be converted to hybrids? What is the carbon impact of Predator bombs that destroy Afghan families and villages?

The continuance of the Afghanistan and Iraq wars completely and thoroughly undermines the government's claims that there is a global warming emergency and that reducing carbon output through cap and trade is needed to save the planet.

I can't take anything the government says about carbon footprints seriously until the government ends the unnecessary wars in Afghanistan and Iraq. For evidence that the Iraq war is unnecessary, see [this](#). Read [this](#) for evidence that the U.S. could have taken Bin Laden out years ago and avoided a decades long war in Afghanistan. And for proof that the entire war on Muslim extremists is unnecessary for our national security, see [this](#).

War is also very harmful to the economy. See [this](#), [this](#) and [this](#).

Carbon Trading

Second, the proposed solution to global warming – cap and trade – is a scam. Specifically:

- The economists who invented cap-and-trade [say](#) that it won't work for global warming
- Many environmentalists [say](#) that carbon trading won't effectively reduce carbon emissions
- Our bailout buddies over at Goldman Sachs, JP Morgan, Morgan Stanley, Citigroup and the other Wall Street behemoths are buying heavily into carbon trading (see [this](#), [this](#), [this](#), [this](#), [this](#) and [this](#)). As University of Maryland professor economics professor and former Chief Economist at the U.S. International Trade Commission Peter Morici [writes](#):

Obama must ensure that the banks use the trillions of dollars in federal bailout assistance to renegotiate mortgages and make new loans to worthy homebuyers and businesses. Obama must make certain that banks do not continue to squander federal largess by padding executive bonuses, acquiring other banks and pursuing new high-return, high-risk lines of businesses in merger activity, carbon trading and

complex derivatives. Industry leaders like Citigroup have announced plans to move in those directions. Many of these bankers enjoyed influence in and contributed generously to the Obama campaign. Now it remains to be seen if a President Obama can stand up to these same bankers and persuade or compel them to act responsibly.

In other words, the same companies that made billions off of derivatives and other scams and are now getting bailed out on your dime are going to make billions from carbon trading.

In addition, as I have [extensively discussed](#), soot has been discovered to be a leading cause of snow and ice melting in the Arctic and the Himalayas, soot has a much faster influence on temperature than CO2, and it is relatively easy to reduce soot. (Breathing soot is also horrible for people's health, so reducing it is a win-win). Both global warming activists and skeptics should demand international treaties which reduce soot.

Finally, Noam Chomsky and James Lovelock (environmentalist and creator of the "Gaia hypothesis") have both [said](#) that they would be okay with an authoritarian approach to tackling global warming. But whatever one might think about climate change, we should agree that fascism is not justified.

* Note: No one has even asked whether or not the currents could be affected by dumping millions of gallons of dispersant into the Gulf. Dispersant is apparently [still](#) being applied.

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