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1. Particle physics' big bang

Anthony W. Thomas

From: [The Australian](#) March 02, 2011 12:00AM

<http://www.theaustralian.com.au/news/arts/particle-physics-big-bang/story-e6frg8nf-1226013300201>

IT'S not a normal lift ride. You pass a control room with 20 or more young people clustered around computer screens and T-shirts are the fashion statement.

Then a long slow ride more than 80m underground before you emerge in Aladdin's cave, housing the ATLAS experiment. But there are no sparkling jewels, no glittering gold, just a gigantic pile of sophisticated electronics, comparable in size to the cathedral of Notre Dame. At least that's the way the scientists using it like to describe it and that tells you a great deal about how they view their mission. This is the modern search for the Holy Grail, driven by the desire to discover the most fundamental laws that govern the universe.

We are at the Large Hadron Collider at CERN, the European Laboratory for Research in Nuclear and Particle Physics near Geneva. This is a remarkable institution, bearing no resemblance to the laboratory described in Dan Brown's novel *Angels and Demons*, although it does indeed produce anti-matter. The LHC itself is the "fastest racetrack on the planet", with 9300 superconducting magnets arranged in a circular tunnel 27km in circumference between 50m and 150m underground. These magnets keep two beams of protons circulating in opposite directions as they are accelerated to 99.9999991 per cent of the speed of light, or an energy of seven trillion electron volts. At defined points these beams collide and the hundreds of particles created in those collisions are precisely tracked by a set of detectors, of which ATLAS is one.

2. Clive James on the day it rained all over the alarmists' parade

Andrew Bolt

Saturday, March 05, 2011 at 03:28pm

http://blogs.news.com.au/heraldsun/andrewbolt/index.php/heraldsun/comments/clive_james_on_t

[he day it rained all over the alarmists parade/](#)

A lovely essay by Clive James on the mass-forgetting in these warmist times of our past and of our poetry - in particular, of Dorothea Mackellar's lines about this land of "droughts and flooding rains".

An extract, in which James tells of the day when the alarmists who preached of a "permanent drought" in which "the rain that falls isn't actually going to fill our dams" finally took a cold shower:

Until the rains came, the voice of Professor Tim Flannery had been loud in the land. More moderate professors, who said that there might indeed be some man-made global warming, but not a lot, were heard only occasionally. Professor Flannery was heard all the time, and always predicting that the major cities would run out of water. The nice thing about him was that he was without guile and therefore ready to say that a certain city would run out of water in some verifiable time: say, two years. Two years later, abundant rain would be falling on that city. But he always had an explanation, and the media always liked his story best, because it was a story about Australia eventually and inevitably running out of water, even though what appeared to be water might currently be seen to be falling out of the sky. Then an awful lot of it fell on his head at once and he was finally seen to be short of credibility.

3. Sun setting on European solar subsidies

Peter Wilson, Europe correspondent

From: The Australian March 05, 2011 12:00AM

<http://www.theaustralian.com.au/news/world/sun-setting-on-european-solar-subsidies/story-e6frg6so-1226016112557>

Tim German works for Cornwall, the warmest and southernmost county in Britain, but his mood right now is anything but sunny.

In fact, Mr German, the manager of renewable energy for Cornwall council, is furious about what he sees as a cack-handed policy shift by the British government that has clouded the county's plans for grabbing a slice of Europe's solar energy boom.

"We've got dozens of companies lining up to invest here and create new jobs by developing clean energy and suddenly, bang - it could all be killed off," he said yesterday.

To Mr German's chagrin, Britain is joining other major European countries in rolling back the consumer-paid subsidies that have fostered the world's most dramatic growth in solar power installations.

Europe now accounts for about 80 per cent of world demand for solar power equipment, but governments from Germany to Portugal have started to remove their guarantees of long-term artificially high rewards for anybody who puts solar panels on their roof or invests in an industrial-scale solar energy farm.

Industry experts say those feed-in tariffs, which are usually guaranteed for 20-25 years, have succeeded in their primary aim of kick-starting the solar energy industry by encouraging enough investment and economies of scale to bring down the prices of solar power equipment.

In some parts of Europe, such as southern Italy, solar power is already close to being able to compete on price with fossil-burning electricity for retail consumers, and broad areas of the continent should reach the same point by 2015.

The problem, according to Phil Dominy, a senior executive at the London office of financial consultants Ernst & Young, is that the FITs "have been too successful for their own good".

"They have attracted much more investment than governments had expected, and suddenly governments have got nervous about imposing billions of euros in higher costs on consumers."

The subsidies for the solar industry are paid by consumers in the form of higher electricity charges rather than higher deficits on national budgets, but this year no government is comfortable about raising utility charges in a flagging economy.

4. Myth of green jobs is leading to industrial decline

Oliver Marc Hartwich

From: *The Australian* March 05, 2011 12:00AM

<http://www.theaustralian.com.au/news/opinion/myth-of-green-jobs-is-leading-to-industrial-decline/story-e6frg6zo-1226016106218>

POLITICIANS love "creating" jobs, especially when these jobs serve a greater good, such as fighting climate change.

Greens leader Bob Brown recently praised Germany's renewable energy policy.

Brown believes that investment in green technologies saved Germany's economy from the global financial crisis.

This in itself is a questionable assertion: the German gross domestic product fell by 4.7 per cent in 2009, and despite a 3.6 per cent growth in 2010, output has not returned to pre-crisis levels.

Brown also claims "330,000 extra jobs have been created in Germany because of legislation moving to a clean, green energy future". If only.

The figure of 330,000 green energy jobs may well be true if you add up all employees working in industries such as wind energy, biomass and solar power.

But were these extra jobs created as a result of green legislation? And at what cost?

First, it is necessary to count the costs of the alleged green jobs miracle. A study by the respected economic research institute RWI concluded that every single worker in these industries had been supported to the tune of E175,000 (\$240,000). Given this enormous subsidy, it is remarkable how few jobs have been created.

In Germany, subsidies for renewable energies are paid for by energy users. Renewable energy suppliers can feed their production into the grid at guaranteed high prices; the additional cost of green electricity is passed on to private and business energy users.

As consumers have to pay more for power than they would have otherwise, they cannot spend the money elsewhere. Job losses then occur in other industries.

In particular, high-energy costs threaten energy-intensive industries such as aluminium smelting, steel and cement. The future of Germany's largest aluminium smelter, Rheinwerk, employing more than 600 people in the city of Neuss, hangs in the balance as high energy costs leave it uncompetitive. The weekly *Die Zeit* recently reported that Rheinwerk is only producing at 10 per cent capacity, despite a growing global demand for aluminium.

Aluminium is not an exception. According to the RWI study, net employment effects of green energies are minimal and may well be negative. Instead of creating extra jobs, renewable energies are destroying jobs. These lost jobs are dispersed across the economy and not always easy to spot.

This week, EU Energy Commissioner Gunther Oettinger warned that high energy taxes had triggered a "creeping process of deindustrialisation" in Germany.

As regulatory elements accounted for more than 40 per cent of energy costs, companies were moving their activities abroad, Oettinger said. Far from creating green industries, Germany eco-subsidies have led to industrial decline.

Maybe that is what Brown would like to see in Australia as well.

Oliver Marc Hartwich is a research fellow at the Centre for Independent Studies.

5. Doubt over green energy's clean bill of health

Graham Lloyd, Environment editor

From: The Australian March 05, 2011 12:00AM

<http://www.theaustralian.com.au/news/features/doubt-over-green-energys-clean-bill-of-health/story-e6frg6z6-1226016137554>

WIND turbines are closing in on four generations of the Quinn family who still live at Mt Bryan in South Australia's picturesque and productive Mt Lofty Ranges.

Rosemary Quinn, 74, says she spends her nights locked inside the 1900s stone house she has occupied for 55 years. She shuts the windows and sets the ceiling fan on high to cover the noise of the wind turbines 2km away.

Quinn's son Bill and his wife Jenny are about to gamble their 200ha property in a Federal Court challenge to the expansion plans of wind farm developer AGL.

Bill Quinn's daughter Deb, 32, who works for businesses that profit from the wind farm developments, is worried about the future of her daughter, Jacqueline, and what long-term exposure to nearby wind turbines may mean.

The Quinns are not alone.

They are part of an increasingly vocal army of people in rural settlements who believe they have become collateral damage in Australia's rush to embrace wind as an alternative energy to combat climate change.

Stories such as the Quinns', and much, much worse, are scattered through the more than 1000 submissions to a Senate inquiry into the effect of wind farm developments on rural communities.

The inquiry by the Senate community affairs committee has certainly received many submissions of support for wind-farm developments to meet the federal government's 20 per cent renewable energy target by 2020. Local community and sporting groups have praised the donations they have received.

But alongside the positive feedback are stories of gag orders, split communities, strongarm tactics and details of awful physical symptoms that people feel sure are the result of living in the auditory and sun-flicker shadow of wind turbine developments that are sweeping the rural landscape.

Family First senator Steve Fielding, who pushed for the Senate inquiry, says: "This is not a question about the viability of renewable technologies. It is to have a look at any adverse health effects for people living in close proximity."

He says the Senate committee has approached the inquiry with an open mind, but "certainly there are people whose health has deteriorated to the stage that they have had to move out at a complete loss to themselves".

Public hearings will be held in Canberra on March 25, Ballarat on March 28, Melbourne on March 29 and Perth on March 31.

6. Business backs a 'big' Australia and nuclear energy

Matthew Franklin, Chief Political Correspondent

From: The Australian March 01, 2011 12:00AM

<http://www.theaustralian.com.au/news/nation/business-backs-a-big-australia-and-nuclear->

[energy/story-e6frg6nf-1226013770573](http://www.abc.net.au/news/energy/story-e6frg6nf-1226013770573)

Big business has rejected Julia Gillard's distaste for a big Australia, advocating strong population growth and calling for the use of nuclear energy to slash growth in carbon emissions.

The Business Council of Australia has warned that opting for low growth could damage the economy and reduce living standards, and called on political leaders to inspire Australians about the advantages of growth rather than scaring them about their personal circumstances.

The council, representing the nation's 100 biggest companies, has also criticised state governments for "willful blindness" in the face of growth, calling for greater delivery of infrastructure to support development.

Projections in the federal government's intergenerational report suggest the population is headed for 36 million by 2050.

After ousting Kevin Rudd to become Prime Minister last year, Ms Gillard walked away from her predecessor's support for "a big Australia", instead stressing the need for sustainable development.

Ms Gillard said many people on the edges of Australian cities were concerned about the impact of population growth on already scarce services, and renamed Tony Burke Sustainable Population Minister with the immediate task of creating a strategy for sustainable growth.

The BCA's submission to Mr Burke, released yesterday, warns that opting for low growth would be fraught with risks.

"Restricting our population to the level it is today will drag down our lifestyles and lead to a different kind of Australia to the one we have all grown up in and value for our children," BCA president Graham Bradley said.

"We believe that the way to have a sensible debate about our population choices is to show leadership that tells a story about how population growth can achieve our shared goals."

Mr Bradley also said high growth required better infrastructure delivery, and more realistic regulatory and pricing regimes to encourage private investment.

The report argues that the nation must consider all power sources to meet rising energy needs, including nuclear power and a market mechanism for greenhouse gas emissions.

Mr Burke yesterday would not comment on the submission, and Resources Minister Martin Ferguson refused to comment on the nuclear power call.

Opposition population spokesman Scott Morrison said the first step was to establish a level of growth that would not strain services and communities.

"What that sustainable rate is needs to be informed" by an independent Productivity Commission assessment, he said.

7. Lungs of the world choked by drought

By Steve Connor

11:26 AM Saturday Feb 5, 2011

http://www.nzherald.co.nz/environment/news/article.cfm?c_id=39&objectid=10704301

A widespread drought in the Amazon rainforest last year caused the "lungs of the world" to produce more carbon dioxide than they absorbed, potentially leading to a dangerous acceleration of global warming.

Scientists have calculated that the 2010 drought was more intense than the "one-in-100-year" drought of 2005.

They are predicting it will result in around eight billion tonnes of CO₂ being expelled from the Amazon rainforest, which is more than the total annual carbon emissions of the United States.

For the second time in less than a decade, the earth's greatest rainforest released more CO₂ than it absorbed because many of its trees dried out and died.

Scientists believe that the highly unusual nature of the two droughts, which occurred in the space of just five years, may be the result of higher sea-surface temperatures in the tropical Atlantic, which could also be influenced by global warming caused by the release of man-made emissions of CO₂ and other greenhouse gases.

The Anglo-Brazilian team of researchers has emphasised that there is as yet no proof that the two highly unusual droughts in the Amazon are the direct result of rising CO₂ levels in the atmosphere, but the scientists have warned that the world is gambling with its future if it fails to curb fossil fuel emissions.

Simon Lewis of Leeds University, the lead author of the study, said: "If greenhouse gas emissions contribute to Amazon droughts that in turn cause forests to release carbon, this feedback loop would be extremely concerning. Put more starkly, current emissions pathways risk playing Russian roulette with the world's largest rainforest.

"Two unusual and extreme droughts occurring within a decade may largely offset the carbon absorbed by intact Amazon forests during that time. If events like this happen more often, the Amazon rainforest would reach a point where it shifts from being a valuable carbon sink slowing climate change to a major source of greenhouse gases that could speed it up.

"Having two events of this magnitude in such close succession is extremely unusual, but is unfortunately consistent with those climate models that project a grim future for Amazonia."

The study, published in the journal *Science*, analysed satellite data on rainfall across two million square miles (5.2 million sq km) of rainforest during the 2010 dry season. The scientists were able to make a direct comparison with an earlier study of the 2005 drought, which also looked at the effect of the low rainfall on the growth of trees.

In the 2005 drought, the scientists estimated that the rainforest turned from a net absorber of about two billion tonnes of CO₂ to an exporter of around 5 billion tonnes of CO₂, which is almost as much as the 5.4 billion tonnes emitted annually by the US.

However, the drought last year was more widespread and more intense than the earlier drought, with a far bigger impact on the growth and death of trees, which is why the scientists expect the overall release of CO₂ from dead and decaying organic matter to reach 8 billion tonnes.

"The extent of the 2010 drought was much larger than in 2005.

"In 2010, the Rio Negro River, which is the biggest tributary to the Amazon, was at its lowest level since records began at the start of the 20th century, so we have independent evidence of these droughts," Dr Lewis said.

- INDEPENDENT

8. Scientists connect global warming to extreme rain

5:30 AM Friday Feb 18, 2011

http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=10706953

Extreme rainstorms and snowfalls have grown substantially stronger, two studies suggest, with scientists for the first time finding the telltale fingerprints of man-made global warming on downpours that often cause deadly flooding.

Two studies in Wednesday's issue of the journal *Nature* link heavy rains to increases in greenhouse gases more than ever before.

One group of researchers looked at the strongest rain and snow events of each year from 1951 to 1999 in the Northern Hemisphere and found that the more recent storms were 7 percent wetter. That may not sound like much, but it adds up to be a substantial increase, said the report from a team of researchers from Canada and Scotland.

The study did not single out specific storms but examined worst-of-each-year events all over the Northern Hemisphere. While the study ended in 1999, the close of the decade when scientists say climate change kicked into a higher gear, the events examined were similar to more recent disasters: deluges that triggered last year's deadly floods in Pakistan and in Nashville, Tennessee, and this winter's paralyzing blizzards in parts of the United States.

The change in severity was most apparent in North America, but that could be because that is where the most rain gauges are, scientists said.

Both studies should weaken the argument that climate change is a "victimless crime," said Myles Allen of the University of Oxford. He co-authored the second study, which connected flooding and climate change in Britain. "Extreme weather is what actually hurts people."

Jonathan Overpeck, a University of Arizona climate scientist, who did not take part in either study, praised them as sensible and "particularly relevant given the array of extreme weather that we've seen this winter and stretching back over the last few years."

Not all the extreme rain and snow events the scientists studied cause flooding. But since 1950, flooding has killed more than 2.3 million people, according to the World Health Organisation's disaster database.

The British study focused on flooding in England and Wales in autumn of 2000. The disaster cost more than \$1.7 billion in insured damages and was the wettest autumn for the region in more than 230 years of record-keeping.

Researchers found that global warming more than doubled the likelihood of that flood occurring. Similar studies are now under way to examine whether last year's deadly Russian heat wave and Pakistan floods - which were part of the same weather event - can be scientifically attributed to global warming.

For years scientists, relying on basic physics and climate knowledge, have said global warming would likely cause extremes in temperatures and rainfall. But this is the first time researchers have been able to point to a demonstrable cause-and-effect by using the rigorous and scientifically accepted method of looking for the "fingerprints" of human-caused climate change.

The scientists took all the information that shows an increase in extreme rain and snow events from the 1950s through the 1990s and ran dozens of computer models numerous times. They put in the effects of greenhouse gases - which come from the burning of fossil fuels - and then ran numerous models without those factors. Only when the greenhouse gases are factored in do the models show a similar increase to what actually happened. All other natural effects alone don't produce the jump in extreme rainfall. Essentially, the computer runs show climate change is the only way to explain what's happening.

In fact, the computer models underestimated the increase in extreme rain and snow. That is puzzling and could be even more troubling for our future, said Michael Oppenheimer of Princeton University, who was not part of the study.

Similar fingerprinting studies have found human-caused greenhouse gas emissions triggered changes in more than a dozen other ecological ways: temperatures on land, the ocean's surface, heat content in the depths of the oceans, temperature extremes, sea level pressure, humidity at ground level and higher in the air, general rainfall amounts, the extent of Arctic sea ice, snowpack levels and timing of runoff in the western United States, Atlantic Ocean salinity, wildfire damage, and the height of the lower atmosphere.

All those signs say global warming is here, said Xuebin Zhang, a research scientist for the Canadian government and co-author of the Northern Hemisphere study. "It is affecting us in multiple directions."

Most of the 10 outside climate experts who reviewed the papers for The Associated Press called the research sound and strong.

However, climate scientist Jerry North of Texas A&M University, while praising the work, said he worried that the studies were making too firm a connection based on weather data that could be poor in some locations. But Francis Zwiers of the University of Victoria, a lead author of the study with Zhang, said the data was from National Weather Service gauges and is reliable.

"Put the two papers together and we start to see an emerging pattern," said Andrew Weaver of the University of Victoria, who wasn't part of either study. "We should continue to expect increased flooding associated with increased extreme precipitation because of increasing atmospheric greenhouse gas. And we have no one to blame but ourselves."

- AP

9. Year proves climate sceptics wrong

5:30 AM Friday Jan 14, 2011

http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=10699535

It is a tie: Last year equalled 2005 as the warmest year on record, United States Government climate experts reported.

The average worldwide temperature was 0.62C above normal last year. That's the same as six years ago, the National Climatic Data Centre said.

Climate experts have become increasingly concerned about rising global temperatures over the past century. Most atmospheric scientists attribute the change to gases released into the air by industrial processes and petrol-burning engines.

In addition, the Global Historical Climatology Network said yesterday that last year was the wettest on record.

"The warmth this year reinforces the notion that we are seeing climate change," said David Easterling, chief of scientific services at the climatic data centre.

Nine of the 10 warmest years on record have occurred since 2000, he noted. The exception was 1998, which is the third warmest year on record going back to 1880.

Easterling said the data disproves unequivocally claims that climate warming ended in 2005.

The readings are collected at land stations and from ships and buoys at sea. The "normal" reading they use is the average worldwide temperature for the 20th century, which was 14C.

Temperatures over land were the warmest on record last year, averaging 1C above normal, while ocean temperatures were the third warmest on record at 0.49C above average.

Other findings included:

* There were seven named storms and three hurricanes in the Pacific, the fewest since the mid-1960s but the Atlantic hurricane season had 19 named storms and 12 hurricanes.

* Arctic sea ice cover was the third smallest since records began in 1979, trailing only 2007 and 2008. The ice cover is considered a marker of climate change as global warming tends to be seen first at the poles.

* 2010 saw record cold and snow in January and February in the Northern Hemisphere.

* From mid-June to mid-August a strong jet stream shifted northward, bringing an unprecedented two-month heatwave to Russia and adding to devastating floods in Pakistan. AP

10. La Nina, global warming to blame for floods

7:26 PM Thursday Jan 13, 2011

http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=10699504

Experts blame a combination of a La Nina weather pattern and global warming for the magnitude of the Queensland flood disaster.

One scientist warns the catastrophe is only the start of things to come, saying what are described now as one-in-100-year floods could arrive every 20 years.

The La Nina effect, the inverse of the drought-inducing El Nino effect, results in higher than average sea temperatures in the Pacific Ocean leading to heavy rain.

Professor Will Steffen, executive director of the Australian National University's (ANU) Climate Change Institute, says it is likely the floods are climate change related.

"What we can say about the Queensland floods is there is a strong La Nina, which tends to give this heavy rainfall, but in addition to that there are very high sea surface temperatures."

Professor Matthew England, joint director of the Climate Change Research Centre at the University of NSW, says the temperatures are the highest ever recorded.

Rising sea temperatures, especially in northern Australia, are a key part of the climate system, says Prof England.

"Climate change has seen a warming of waters globally, and the waters north of Australia are an important part of the climate system for Australia's monsoon rains.

"They are at their warmest ever measured and we cannot exclude climate change from contributing to this warmth, (and) if it is very warm there this enhances evaporation into the atmosphere, creating moist air."

Prof Steffen agrees the temperature rise is a climate change phenomenon.

Sea temperatures have been rising for years, he says.

He cites a study in the US that looks at rainfall in a heavily saturated area over the past 100 years.

"(In the study) there's been a significant increase (in rain in the area) since 1980 consistent with a strong warming," Prof Steffen says.

The study shows the effects of warming will make flooding of the type that has devastated parts of Queensland more common.

"There's definitely a risk and a growing risk that events of this type will become more frequent as the climate warms," Prof Steffen says.

"One-in-100-year events would become a one-in-20 or one-in-30-year event as the climate shifts ... we say with some confidence they are becoming more frequent and they will become more frequent in future."

Prof England says that climate change projections point to extreme weather becoming more common, but it is hard to know how much flooding Australia could get.

"Climate change projections are pointing to more frequent extreme events, that's to say more flooding events, more droughts and fires, but whether Australia as a nation sees many more flooding events or not is still a little bit more complex to pin down," he says.

But not all experts agree that global warming is a factor.

Environmental science Professor Neville Nicholls from Monash University believes the Queensland floods are not due to climate change but purely a result of La Nina.

"The main reason we're seeing this heavy rain is just this incredibly strong La Nina, and that's

almost certainly a natural part of climate variability," he says.

Prof Nicholls says the evidence is inconclusive about the effect of global warming on the La Nina phenomenon.

"The question is, is it exacerbated by climate change or global warming? At the moment, we just can't say. No one has done the studies yet," he says.

"You would have to think the warming we've seen - about half a degree in the last 30 or 40 years - should have had some influence on this event, but we can't tell you reliably or credibly what that influence is."

AAP

11. Chris de Freitas: Emotion clouding underlying science of global warming

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10697845

Unlike most other hot button environmental issues, global warming is widely misunderstood. As a climate scientist thinking about this, it struck me that it was not surprising since accounts of the scientific basics of global warming almost never appear anywhere in the press.

There is not space here to include all the charts and numbers that might accompany such an account. In its place is a necessarily brief summary.

Most people are not shocked to learn that global warming discussions evoke polarised views, but many are surprised to discover that the scientific basics are not contentious. An awareness of these is helpful in building an understanding of the extent to which there is a problem and how it might be addressed.

On average, heat gained by the Earth from energy received from the Sun is equal to heat lost to space. Greenhouse gases in the atmosphere, mostly water vapour, carbon dioxide and methane, regulate this heat loss.

Global warming theory says that mankind's burning of fossil fuels such as oil and coal, adds to the carbon dioxide concentration in the atmosphere, which controls how fast the Earth loses energy to space.

More carbon dioxide causes warming in the lower atmosphere until Earth-to-space energy balance is once again restored.

The degree of warming directly caused by the extra carbon dioxide is, by itself, relatively small. This is not controversial. What is controversial is whether this initial change will trigger further climate changes that would be large or damaging.

Debate focuses on climate feedbacks that may or may not suppress, perpetuate or amplify an initial change caused by increasing concentrations of greenhouse gases. A doubling of carbon dioxide, by itself, adds only about one degree Celsius to greenhouse warming. Computer climate models project more warming because the modellers build in feedbacks from water vapour and clouds that amplify the initial change. These are the so called positive feedbacks. For example, higher temperature would mean more evaporation globally, which in turn means more heat-trapping water vapour is put into the atmosphere leading to even higher temperatures.

On the other hand, negative feedbacks might prevail. For example, more water vapour in the atmosphere could lead to greater cloud cover. Clouds reflect the heat from the Sun and cool the Earth, offsetting the initial rise in global temperature.

The role of negative feedback processes are played down by global warming alarmists, whereas sceptics point to the four-billion-year-old global climate record that shows runaway global cooling or warming has never occurred because negative feedbacks regulate the global climate system.

It is important to consider the above in the proper context. Change is a constant feature of climate, even through recent human history. During the Medieval Warm Period, from 900 to 1200AD, the Vikings sailed in Arctic waters that by 1700 had turned to permanent sea ice, and farmed in Greenland soil in a climate that soon became too cold for agriculture.

The Medieval Warm Period was followed by the Little Ice Age which ended around 1850. It in turn was followed by another warm period. The hottest year since 1850 was 1998. In the nine years since 2002 average annual global temperature has not risen.

Most people are surprised to hear that no one has uncovered any empirical real-world evidence that humans are causing dangerous global warming. Finding this evidence is crucial, since scientific issues are resolved by observations that support a theory or hypothesis. They are not resolved by ballot.

Scientific opinion is like climate models; neither is evidence of dangerous global warming.

None of this is to say we should simply walk away from considerations of a global warming threat, but prudent consideration of the scientific facts is essential.

No science should have to rely on one group or authority saying, "Just trust us," particularly when tens of millions of dollars of public policy decisions are on the line.

Chris de Freitas is an associate professor in the school of environment at the University of Auckland.

12. Cold Jumps Arctic 'Fence,' Stoking Winter's Fury

NEW YORK TIMES Environment

<http://www.nytimes.com/2011/01/25/science/earth/25cold.html>

By JUSTIN GILLIS

Published: January 24, 2011

Judging by the weather, the world seems to have flipped upside down.

For two winters running, an Arctic chill has descended on Europe, burying that continent in snow and ice. Last year in the United States, historic blizzards afflicted the mid-Atlantic region. This winter the Deep South has endured unusual snowstorms and severe cold, and a frigid Northeast is bracing for what could shape into another major snowstorm this week.

Yet while people in Atlanta learn to shovel snow, the weather 2,000 miles to the north has been freakishly warm the past two winters. Throughout northeastern Canada and Greenland, temperatures in December ran as much as 15 to 20 degrees Fahrenheit above normal. Bays and lakes have been slow to freeze; ice fishing, hunting and trade routes have been disrupted.

Iqaluit, the capital of the remote Canadian territory of Nunavut, had to cancel its New Year's snowmobile parade. David Ell, the deputy mayor, said that people in the region had been looking with envy at snowbound American and European cities. "People are saying, 'That's where all our snow is going!'" he said.

The immediate cause of the topsy-turvy weather is clear enough. A pattern of atmospheric circulation that tends to keep frigid air penned in the Arctic has weakened during the last two winters, allowing big tongues of cold air to descend far to the south, while masses of warmer air have moved north.

The deeper issue is whether this pattern is linked to the rapid changes that global warming is causing in the Arctic, particularly the drastic loss of sea ice. At least two prominent climate scientists have offered theories suggesting that it is. But others are doubtful, saying the recent events are unexceptional, or that more evidence over a longer period would be needed to establish a link.

Since satellites began tracking it in 1979, the ice on the Arctic Ocean's surface in the bellwether month of September has declined by more than 30 percent. It is the most striking change in the terrain of the planet in recent decades, and a major question is whether it is starting to have an effect on broad weather patterns.

Ice reflects sunlight, and scientists say the loss of ice is causing the Arctic Ocean to absorb more heat in the summer. A handful of scientists point to that extra heat as a possible culprit in the recent harsh winters in Europe and the United States.

Their theories involve a fast-moving river of air called the jet stream that circles the Northern Hemisphere. Many winters, a strong pressure difference between the polar region and the middle latitudes channels the jet stream into a tight circle, or vortex, around the North Pole, effectively containing the frigid air at the top of the world.

"It's like a fence," said Michelle L'Heureux, a researcher in Camp Springs, Md., with the National Oceanic and Atmospheric Administration.

When that pressure difference diminishes, however, the jet stream weakens and meanders southward, bringing warm air into the Arctic and cold air into the midlatitudes — exactly what has happened the last couple of winters. The effect is sometimes compared to leaving a refrigerator door open, with cold air flooding the kitchen even as warm air enters the refrigerator.

This has happened intermittently for many decades. Still, it is unusual for the polar vortex to weaken as much as it has lately. Last winter, one index related to the vortex hit its lowest wintertime value since record-keeping began in 1865, and it was quite low again in December.

James E. Overland, a climate scientist with NOAA in Seattle, has proposed that the extra warmth in the Arctic Ocean could be heating the atmosphere enough to make it less dense, causing the air pressure over the Arctic to be closer to that of the middle latitudes. "The added heat works against having a strong polar vortex," he said.

But Dr. Overland acknowledges that his idea is tentative and needs further research. Many other climate scientists are not convinced, saying that a two-year span, however unusual, is not much on which to base a new theory. "We haven't got sufficient insight to make definitive claims," said Kevin Trenberth, head of climate analysis at the National Center for Atmospheric Research in Boulder, Colo.

Judah Cohen, director of seasonal forecasting at a company called Atmospheric and Environmental Research in Lexington, Mass., has spotted what he believes is a link between increasing snow in Siberia and the weakening of the polar vortex. In his theory, the extra snow is creating a dense, cold air mass over northern Asia in the late autumn, setting off a complex chain of cause and effect that ultimately perturbs the vortex.

Dr. Cohen said in an interview that the rising Siberian snow might, in turn, be linked to the decline of Arctic sea ice, with the open water providing extra moisture to the atmosphere — much as the Great Lakes produce heavy snows in cities like Buffalo and Syracuse. He is publishing seasonal forecasts based on his work, supported by the National Science Foundation. Those forecasts correctly predicted the recent harsh winters in the midlatitudes. But Dr. Cohen acknowledges, as does Dr. Overland, that some of his ideas are tentative and need further research.

The uncertainty about what is causing the strange winters highlights a core difficulty of climate science. While mainstream researchers are sure that greenhouse gases released by humans are warming the Earth, they acknowledge being on shakier ground in trying to predict the regional effects of that change. It is entirely possible, they say, that some regions will cool temporarily, because of disruption of the atmospheric and oceanic circulation, even as the Earth warms over all.

Bloggers who specialize in raising doubts about climate science have gleefully pointed to the recent winters in the United States and Europe as evidence that climatologists must be mistaken about a warming trend. These commentators have not been as eager to write about the strange

warmth in parts of the Arctic, a region that scientists have long predicted will warm more rapidly than the planet as a whole.

Without doubt, the winter weather that began and ended 2010 was remarkable. Two of the 10 largest snowstorms in New York City history occurred last year, including the one that disrupted travel right after Christmas. The two snowstorms that fell on Washington and surrounding areas within a week in February had no known precedent in their overall impact on the region, with total accumulations of 40 inches in some places.

But the winters were not the whole story. Even without them, 2010 would have gone down as one of the strangest years in the annals of climatology, thanks in part to a weather condition known as El Niño, which dumped heat from the Pacific Ocean into the atmosphere early in the year. Later, the ocean surface cooled, a condition known as La Niña, contributing to heavy rainfall in many places.

Despite cooling from La Niña, newly compiled figures show that 2010 was among the two warmest years in the historical record. It featured a heat wave in Russia, all-time high temperatures in at least 17 countries, the hottest summer in New York City history, and devastating floods in Pakistan, China, Australia, the United States and other countries.

"It was a wild year," said Christopher C. Burt, a weather historian for Weather Underground, an Internet site.

Still, however erratic the weather may have become, it is not obvious to most people how global warming could lead to frigid winters. Many scientists are hesitant to back such assertions, at least until they gain a better understanding of what is going on in the Arctic.

In interviews, several scientists recalled that in the decade ending in the mid-1990s, the polar vortex seemed to be strengthening, not weakening, producing mild winters in the eastern United States and western Europe.

At the time, some climate scientists wrote papers attributing that change to global warming. Newspapers, including this one, printed laments for winter lost. But soon after, the apparent trend went away, an experience that has made many researchers more cautious.

John M. Wallace, an atmospheric scientist at the University of Washington, wrote some of the earlier papers. This time around, he said, it will take a lot of evidence to convince him that a few harsh winters in London or Washington have anything to do with global warming.

"Just when you publish something and it looks like you're seeing a connection," Dr. Wallace said, "nature has a way of humbling us."