

# Exaggerating climate change

| by Marcel Crok

In the run-up to the climate summit in Copenhagen in December, politicians are warning that the earth is warming up at an ever increasing rate. There is just one problem with this argument: it is not true.

Those who listen regularly to what top politicians have to say about the climate get the impression that the earth's temperature is climbing faster by the day. European Commissioner for the Environment, Stavros Dimas, for instance, told an audience in Brussels last February: 'Climate change perhaps represents the greatest threat of all – to our prosperity as well as to the lives and livelihoods of millions of people in the world's most vulnerable areas. Climate change is happening already and the latest science tells us that it is accelerating.' Shortly thereafter he said: 'The importance of this new agreement must not be underestimated. Global warming is accelerating. Copenhagen is the world's last chance to bring climate change under control.'

For some years now, Rajendra Pachauri, chairman of the IPCC, the United Nations climate panel, has also been warning that climate change is speeding up. In a lecture held in 2007 he said: 'In 2005 the concentration of carbon dioxide exceeded the natural range that has existed for over 650,000 years. Eleven of the warmest years since instrumental records have been kept, occurred during the last 12 years and climate change is therefore accelerating.'

A conference held in Copenhagen last March served as a warm-up to the big climate summit in the Danish capital in December, where binding agreements are to be made concerning a substantial reduction in greenhouse gases after 2012, when the Kyoto protocol expires. The organisers wanted to get a few messages out in advance, the first of which was: 'Recent observations confirm that, given high rates of observed emissions, the worst-case IPCC scenario trajectories (or even worse) are being realised. The climate system is already moving beyond the patterns of natural variability for many key parameters. Our society and economy have developed and thrived within these parameters, which include global mean surface temperature, sea-levels, ocean and ice sheet dynamics, ocean acidification, and extreme climatic events. There is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts.'

These are just a few examples of numerous pronouncements advising us that global warming is heating up. It sounds pretty threatening which is probably the intention from a political standpoint. But are the assertions made by Dimas, Pachauri and others based on scientific fact? Dimas speaks of the "latest science", without entering into detail. Pachauri does give some evidence. For him, the fact that 11 of the last 12 years are among the hottest since temperatures have been measured is proof of "acceleration". This is an interesting statement. Strictly speaking, the term "acceleration" means that a certain parameter, whether



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temperature or rise in sea level, is increasing at an ever greater rate. In other words, every year, or more generally speaking, every period, more is added than in the previous period.

### Stabilisation |

Let's look at the global temperature on the earth's surface over the past 150 years. It has increased by 0.7 to 0.8 degrees Celsius, says the IPCC. However, it did not develop along a flat line that suddenly started to rise, so this cannot be what Pachauri means. Temperatures rose between 1910 and 1940 and dropped again between 1940 and 1970, followed by another rise between 1970 and 2000 and since then there is a kind of status quo, a level trend.

People are saying that the speed at which global warming has occurred during the past 50 years is unprecedented. And yet, one look at the graph is sufficient to see that there is very little difference between 1910-1940 and 1970-2000. Emissions of greenhouse gases in the first period were minimal, so that natural factors must have had a major influence at that time.

The hottest year to date is 1998 which was affected by a very strong El Niño. During El Niños like that of 1998, the Pacific Ocean in the tropics warms up significantly, which is reflected in a rise in global temperatures. After 1998, temperatures stabilised somewhat and have subsequently experienced a downward trend since 2001. After the 1998 super El Niño several El Niños have occurred, cooling the Pacific Ocean down. Therefore, most supporters of the greenhouse hypothesis say that these conditions temporarily mask the warming caused by greenhouse gases. Be that as it may, there has been no statistically significant rise of temperatures since 1997. In short, there has been no further global warming for eight to twelve years. So there is no basis for saying that temperatures have accelerated during the past twelve years, the time in which international attention for the climate has increased considerably and the influential third (2001) and fourth (2007) IPCC reports were published.

Pachauri points out that each of the past few years are among the hottest "ever". "Ever" in this case means 1850 or 1900 when temperature measurements became more reliable and temperature readings were available practically all over the world, especially on land. The chairman of the IPCC has a point here. Even if the temperature has stabilised somewhat in the past 10 years, they have all been "warm". But this does not prove that global warming is accelerating. If it were, record highs would need to be broken virtually every year, which is not the case.

In its fourth report, published in 2007, the IPCC states that it cannot be "coincidence" that the last years are the warmest. This statistical statement does not automatically mean that greenhouse gases are responsible but that, from a statistical point of view, something improbable is going on. That statistical claim, however, is challenged by researchers who believe that the IPCC is thinking in terms of a blank slate, so that every new year can be hot or cold. The researchers who challenge this, such as Greek hydrologist Demetris Koutsoyiannis, say that the climate does not start at zero on every first day of the year. Climate "remembers"

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## The global record

There are three groups in the world that keep global temperature records: MetOffice and CRU in England (HadCrut3), James Hansen at NASA in the US (GISS) and NCDC, also a US group. The IPCC usually shows the HadCrut3-series ([www.cru.uea.ac.uk/cru/data/temperature/](http://www.cru.uea.ac.uk/cru/data/temperature/)). Sea ice records for the North and South Pole are recorded daily on Cryosphere Today (<http://arctic.atmos.uiuc.edu/cryosphere/>). As of this writing, sea ice coverage is exactly at the long-term average (since 1979), so no decreasing trend there.

CO<sub>2</sub>-concentrations in the atmosphere are recorded on the volcano of Mauna Loa in Hawaii since 1958 (<http://scrippsco2.ucsd.edu/>). Changes in the Pacific Decadal Oscillation are recorded on <http://jisao.washington.edu/pdo/>.



the climate of previous years and perhaps even the climate of hundreds or thousands of years ago. If the current year is a warm year, chances are that next year will be warmer, too. If Koutsoyiannis takes this into account in the statistics it suddenly isn't all that coincidental that the hottest years all fell in the last decade. Indeed, a cluster of hot, cold, dry or wet years is rather normal in systems with long-term persistence such as the climate.

### Ice-free North Pole |

But aren't there any other indicators of accelerating climate change? What about the North Pole, which is often cited as a proof of this theory? No one could fail to notice that the North Pole has been melting "dramatically" over the past few years. Scientists seem to constantly bring their prognosis for an ice-free North Pole (in the summer) forward. First it was going to be by 2040, then a group of researchers suggested 2013 and another group even maintained it would be in 2008. The good thing about 2008 and 2013 is that we can check the prognoses within the foreseeable future. And no, you did not miss anything in last year's media; the North Pole was not ice-free in 2008.

The sea ice surface area around the North Pole (there is no ice on land, contrary to the South Pole) has been measured from satellites since 1979. In the pitch black and ice cold winter, virtually the entire Arctic freezes over to cover approximately 14 million square kilometres of sea (an area only slightly smaller than the largest country on earth, Russia). Much of this melts away in summer, leaving behind approximately five million square kilometres of ice. So annual fluctuations are tremendous. During the past few summers more ice has melted away, however. In 2007 only three million square kilometres was left, a substantial decrease compared to the usual five million.

Researchers thought this alarming because their computer models – which include the impact of greenhouse gases – "predicted" that shrinkage would occur more gradually. They concluded that the North Pole is melting faster than expected. However, some comments seem to be in order. First and perhaps most importantly is that we have hardly any idea of the natural fluctuations that occur in the sea ice. The ice has only been measured properly since 1979. The few temperature measurements dating from 1910-1940, indicate that the Arctic was perhaps warmer than it is today. The impact this may have had on the expanse of the sea ice is anyone's guess. The start of the satellite measurements coincided with the end of a cooler period in the Arctic. It is therefore logical that a downward trend in the sea ice surface can be observed. Models now show that the shrinkage is caused by greenhouse gases, but we cannot be certain whether the same models could simulate the 1910-1940 period.

Then, the definition of sea ice coverage is not what most people would expect. If 15 percent of an area is covered in sea ice, researchers consider that as being covered. Covered does not mean one unbroken sheet of ice. Imagine a strong wind blowing from a certain direction for a protracted length of time. This could drive the ice in one direction. That is exactly what some researchers say happened in 2007. Another potential culprit is the soot deposit originating from China in particular. In the snow, soot has the same effect as a stone. Snow and ice melt quicker around particles of soot. This effect is not yet factored into many climate models. The expectation for the summer of 2008 was even less sea ice than in 2007, but this was not the case. On the contrary; a recovery could be observed which seems to continue to this day. For a while in April 2009 the amount of sea ice was back to its long-term average since 1979.

For many climate researchers the North Pole fits the picture perfectly, as, in a greenhouse world, the poles are expected to warm up more quickly than the rest of the planet. What is even more confusing, though, is that the South Pole refuses to cooperate. Temperature measurements in this area are very rare, but it would seem that the largest part of the South Pole has cooled down rather than warmed up during the past 50 years. The amount of sea ice around Antarctica confirms this impression. In the summer of 2007, when there was

so little ice on the North Pole, the South Pole had a record sea ice area of 16 million square kilometres. The trends of the North and South Poles counterbalance each other on a global average and the total amount of sea ice has remained quite constant during the past 30 years. This picture is completely different from the one we are usually presented with by climate scientists and the media. They stress the shrinkage on the North Pole and keep silent about the record on the South Pole. It should become apparent over the next few years whether the sea ice around the North Pole will continue to shrink. Do not be surprised if it does not and it was only a matter of a temporary fluctuation.

## China |

In the meantime, researchers are telling us that CO<sub>2</sub> emissions are increasing more than the IPCC indicates in its worst scenarios. This is indeed true. CO<sub>2</sub> emissions are increasing rapidly, especially due to emerging countries like China and India. China surpassed America in 2006 as the largest producer. To give an impression, China's emissions are increasing annually at a rate approximately equal to the total amount of emissions in Germany. Try to prevent that!

At the very least, Pachauri and Dimas can in all conscience say that emissions are exceeding the worst scenarios. But this makes it even more remarkable that warming has stabilised rather than accelerated in the past few years. In the IPCC climate models, a number of factors play a role – natural factors such as the sun that leads to warming and large volcano eruptions that lead to cooling. Moreover, there are anthropogenic factors, i.e., warming due to greenhouse gases and, less well understood, the effect of air pollution that probably causes cooling. This is the mix we have to deal with. The sun has hardly any impact on shorter time scales according to the IPCC, and there have been no large volcano eruptions in the past ten years. In any event, the explosive increase of greenhouse gases should lead to global warming one way or another.

So critics find it alarming (with respect to providing proof of the greenhouse hypothesis) that the earth is not warming up. This could mean that greenhouse gases have a lesser effect than expected and that natural fluctuations, such as in the oceans, are larger than expected; the Pacific Decadal Oscillation (PDO), for instance. The PDO is an oscillation in the oceans west of America that has a major impact on, for instance, the climate of Alaska, but which can probably be felt around the world. There is a remarkable similarity between variations in the Pacific Decadal Oscillation and changes in the average global temperature. The PDO of 1945, for instance, was in a cold phase until 1975 and in a warm phase from 1975 to 2000. Initial climate model studies have been published and confirm that if the PDO remains in a cold phase for the time being, it may not be until 2020 before global temperatures will start rising again. However, the extent to which the PDO has contributed to global warming between 1970 and today is unknown. To date, the IPCC has contributed global warming entirely to CO<sub>2</sub>, so we probably have not heard the last of it.

In any case, we must conclude that global warming is definitely not accelerating. Rather the opposite, despite the fact that CO<sub>2</sub> emissions are accelerating. It is unfortunate that influential politicians like Pachauri and Dimas allow themselves to be seduced into bold claims about accelerated global warming that are not in keeping with reality. Their statements are mainly rhetorical. They may believe that rhetoric is necessary to reach firm agreements in Copenhagen. But sooner or later – and most certainly sooner if global warming does not resume in the next few years – more and more people will come to realise that “the emperor is not wearing any clothes”.

It is probably wise to reduce greenhouse gases in any event, because a significant increase in greenhouse gases may hold the risk of an unforeseen negative impact on the environment (such as the possible acidification of the oceans) or the climate. Exaggerating climatic conditions and the state of science can, however, harm the credibility of the IPCC and politicians and stand in the way of proper mitigation policy. ■

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