How to tell a climate science denier from a genuine skeptic

By Joe Romm on Jun 2, 2011 at 1:45 pm

All scientists are skeptics. The motto of The UK's Royal Society — "the world's oldest scientific academy in continuous existence," founded in 1660 — is Nullius in verba — Latin for "On the words of no one" or "take nobody's word for it." It is "an expression of its enduring commitment to empirical evidence as the basis of knowledge about the natural world."

Long-time Climate Progress Guest blogger John Cook has a post at The Drum that examines the difference between real skeptics and the climate science deniers, who claim to be ones. Cook is the founder of the must-read site Skeptical Science and co-author of Climate Change Denial.

In the charged discussions about climate, the words skeptic and denier are often thrown around. But what do these words mean?

Consider the following definitions. Genuine skeptics consider all the evidence in their search for the truth. Deniers, on the other hand, refuse to accept any evidence that conflicts with their pre-determined views.

So here's one way to tell if you're a genuine skeptic or a climate denier.

When trying to understand what's happening to our climate, do you consider the full body of evidence? Or do you find the denial instinct kicking in when confronted with inconvenient evidence?

For example, let's look at the question of whether global warming is happening. Do you acknowledge sea level rise, a key indicator of a warming planet, tripling over the last century? Do you factor in the warming oceans, which since 1970 have been building up heat at a rate of two-and-a-half Hiroshima bombs every second? Glaciers are retreating all over the world, threatening the water supply of hundreds of millions of people. Ice sheets from Greenland in the north to Antarctica in the south are losing hundreds of billions of tonnes of ice every year. Seasons are shifting, flowers are opening earlier each year and animals are migrating towards the poles. The very structure of our atmosphere is changing.

We have tens of thousands of lines of evidence that global warming is happening. A genuine skeptic surveys the full body of evidence coming in from all over our planet and concludes that global warming is unequivocal. A climate denier, on the other hand, reacts to this array of evidence in several possible ways.

The most extreme form of climate denier won't even go near the evidence. They avoid the issue altogether by indulging in conspiracy theories. They'll pull a quote out of context from a stolen 'Climategate' email as proof that climate change is just a huge hoax. I have yet to hear how the ice sheets, glaciers and thousands of migrating animal species are in on the conspiracy, but I'm sure there's a creative explanation floating around on the Internet.

The hardcore denier, firmly entrenched in the "it's not happening" camp, denies each piece of evidence. When confronted by retreating glaciers, their thoughts flick to the handful of growing glaciers while blocking out the vast majority of glaciers that are retreating at an accelerating rate.

They ignore sea level rise by focusing on short periods where sea levels briefly drop before inevitably resuming the long-term upward trend. The key to this form of denial is cherry picking. If you stare long and hard enough at a tiny piece of the puzzle that gives you the answer you want, you find the rest of the picture conveniently fades from view.

Some climate deniers have found it impossible to ignore the overwhelming array of evidence that the planet is warming (cognitive bias does have its limits) and moved onto the next stage of denial: "it's happening but it's not us". After all, climate has changed throughout Earth's history. How can we tell it's us this time?

The answer, as always, is by surveying the full body of evidence. Warming from our carbon dioxide emissions should yield many tell tale patterns. We don't need to rely on guess work or theory to tell us humans are causing warming. We can measure it.

If carbon dioxide is causing warming, we should measure less heat escaping to space. Satellites have observed this, with heat being trapped at those very wavelengths that carbon dioxide absorb radiation. If less heat is escaping, we should see more heat returning to the Earth's surface. This has been measured. Greenhouse warming should cause the lower atmosphere to warm but simultaneously, the upper atmosphere to cool. That's indeed what we observe is happening.

As far back as the 1800s, scientists predicted greenhouse warming should cause nights to warm faster than days and winters to warm faster than summers. Both predictions have come true. Everything we expect to see from greenhouse warming, we do see.

We have, as science historian Naomi Oreskes aptly puts it, "multiple, independent lines of evidence converging on a single coherent account". This consensus of evidence is the reason why we have a consensus of scientists with 97 out of 100 climate experts convinced that humans are driving global warming.

So which camp do you fall in?

Do you look at the full body of evidence, considering the whole picture as you build your understanding of climate? Or do you gravitate towards those select pieces of data that, out of context, give a contrarian impression, while denying the rest of the evidence?

Even for those of us who accept the scientific consensus, there is a more insidious form of denial – accepting that humans are causing climate change, but choosing to ignore it. Governments deny the implications of global warming when they make lots of noise about climate change but fail to back their words up with action. When we let politicians get away with inaction, we let denial prosper.

There are many ways we can roll back climate denial and contribute to the solution, such as reducing our own carbon footprint. But the greatest contribution we can make is to let our leaders know we demand climate action. Politicians may or may not care about the planet's future. But one thing we know with certainty is they care about their own future, particularly at the next election.

If we send a strong message to our politicians that we demand climate action, they will be forced to act.

– *John Cook*

Below are the earlier comments from the Facebook commenting system:

Ben Lieberman

Case in point: Jeff Jacoby of the Boston Globe–write a column denying global warming by attacking Al Gore and then calling up William Happer. The beauty part: you know that William Happer will tell you what you want to hear–that is if you wish to deny human generated global warming. A true skeptic would actually collect and survey scientific opinion.

June 2 at 2:14pm

Susan Williams ·Oh Ben, you're just a tool of the left-wing liberal media. (kidding, in case anyone who knows you didn't see this as humor).

June 7 at 9:33am

Chris Paradise

I was pretty active in the comments thread of Jacoby's article…I found the irony of his last sentance particularly appealing.

June 2 at 3:10pm

Joan Savage

Newsweek cover story is “Weather Panic, This is the New Normal (and we’re hopelessly unprepared)” by Sharon Begley in the June 6, 2011 edition. Begley focused on government preparedness, comparing several countries and recent US policy. I hate the word hopeless, but it leads to quotes from Bill McKibben.

June 2 at 5:06pm

Joan Savage

Science is the organized skepticism in the reliability of expert opinion.
— Richard Feynman.

June 2 at 5:09pm

Neal J. King

Yes, but part of being skeptical is being skeptical of your own prejudices. Another quote from RPF: “The first principle is that you must not fool yourself – and the easiest person to fool is yourself!”

June 3 at 7:15am

John G Mason

How to tell a Climate Skeptic from a Climate Crank.

June 2 at 7:00pm

Metzomagic

I have a very high regard for the likes of John Cook and the scientists at Real Climate. An uphill struggle against willful ignorance cannot be easy.

Personally, I was mostly oblivious to the whole climate change issue until ‘ClimateGate’ reared its ugly head in Oct/Nov 2009. Since then, I have been reading up a lot on climate science and am convinced we’ve soiled humanity’s comfy little nest. When I try to broach the subject with family or colleagues, all I inevitably get is the ‘sheep in headlights’ reaction.

At this point in time, there appears to be almost zero chance that we will get a mandate from John Q. Public any time soon to take the necessary steps to curtail our profligate use of fossil fuels. Not if the big Noise Machine (TM) is allowed to keep churning out its paid-for FUD, anyway.

As a result, I have become… rather depressed of late. I initially tried to put it down to a mid-life crisis, but being a true skeptic, I can see what’s coming at us down the pike in another 20 – 30 years if we keep up the fossil fuel burning ‘business as usual’ scenario. Being 55 years old at the time of writing, I likely won’t even live to see it. Part of me would love to, in a vain sort of way, because I know how this will most likely pan out. And then I could play the “Told you so!” card.

Most people seem to assume that, if anything, it will be sea level rise that will be our eventual undoing. But no, it will be shifting weather patterns affecting the world’s current breadbaskets that will hit us first, and it will hit us hard. There will be untold distress, displacement of entire countries’ populations, and wars the likes we have never witnessed. You can see the first manifestations of it creeping up on us already the past two years or so, with all these ‘once in 500 years’ extreme weather events occurring multiple times in just the past few decades. Just sayin’…

June 2 at 8:04pm

Peter S. Mizla

Climate change Deniers immediately bring up Al Gore- he seems to be the only understanding of the

‘Science’.

Skeptics attempt to ‘cherry pick’ data in an effort to present themselves as ‘credible’.

June 2 at 8:55pm

Peter S. Mizla

Climate change Deniers immediately bring up Al Gore- he seems to be the only understanding of the ‘Science’ they seem to have (correction).

Skeptics attempt to ‘cherry pick’ data in an effort to present themselves as ‘credible’.

June 2 at 8:56pm

Richard Brenne

Today I attended the last in a series of talks sponsored by two universities and the USGS about climate change and hydrology (although often you wouldn’t know it, especially today’s talk which was a veritable love poem to an esteemed hydrologist). While IPCC Report Lead Author Phil Mote and highly-regarded geology department chair and glaciologist Andrew Fountain gave their usual excellent talks (I’ve had each as panelists) as part of the series, the geographers, engineers and especially world-class hydrologists who spoke were beyond skeptical, siding with the hackers instead of climate scientists when discussing Climategate, and privately dissing NOAA, Tom Karl and the IPCC Report process in ways that made my own blood temperature rise about 6 C.

Since I was invited to lunch after the talks with the speakers I was always professional, polite and civil, but I’m extremely disappointed that so many hydrologists feel this way. These hydrologists looking at flood records remind me of the tornado and hurricane experts – all three are looking at mostly 20th Century data and not seeing much if any increase in these three phenomenon (it’s often hard to know if increases are due to far better data collection with satellites and radar) during that time.

If they would look globally and include the last few years and even months their data would be far more complete and often show at least the beginning of a trend. Most like the USGS look almost exclusively at the U.S. and usually only the 48 states – the same for so much tornado and hurricane research. As with temperatures, since the 48 states only comprise 2% of Earth’s surface, one needs to look at phenomenon globally and recently as well.

So these experts are looking at mostly 20th Century data and then making linear extrapolations into the 21st Century that almost certainly will become obsolete. Already with 1 degree F increase since 1970 meaning 4% additional water vapor in the atmosphere we’re seeing events like the Mississippi River rise, unprecedented flooding in Queensland Australia and Pakistan, and 1000-year floods in places like Tennessee. Imagine if the worst-case projections of the conservative IPCC Report or MIT or other projections are realized and there is a 10 F increase by 2100 – water vapor would increase by 40%, meaning the atmosphere would be holding additional water vapor that is the equivalent to 15 Lake Superiors!

That plus the increased energy equivalent to the output of almost 2 million nuclear reactors going 24/7 added to the system would create storms we can’t now imagine.

At the talk today there was an astro-physicist with his PhD from the excellent University of Chicago who has retired into apparently full-time climate change denial, including debunking an op-ed of mine in the Oregonian with his own that ended “The Earth is cooling,” I kid you not. (And I wrote every editor and publisher at the Oregonian chiding them for publishing such nonsense. Would they publish an op-ed with the thesis and statement, “There is no link between smoking and cancer”?)

So I walked outside with the astro-physicist, asking where he got his information and he said from web sites like “Watt’s Up With That.” We were standing waiting for his light rail train and I was debating whether to ask him “As an astro-physicist, did most of your understanding come from astronomers without PhDs or even Masters and who didn’t publish in the field?” or “What are the other areas of science where you disagree with 97 per cent of the world’s acknowledged experts?”.

Unfortunately his train came before I had the chance, but I'd ask the same of those hydrologists and all those scientists like them. The Dunning-Kruger effect is when incompetent people are incompetent to know that they're incompetent. Sometimes high levels of education or achievement in other fields can inflate one's ego to the point where it simply sails over all the observation, data and expertise in the world's most crucial topic.

June 3 at 3:32am

James Sexton

lol, you're a funny guy….."…often show at least the beginning of a trend." To that, I'd say about time, we've had over 30 years of hysteria leading up to this, we should have seen a "beginning of a trend" some time ago.

Also, when "geographers, engineers and especially world-class hydrologists" are "beyond skeptical", rather than be disappointed, I'd pause the way you're thinking and consider why they are beyond skeptical.

More, "The Earth is cooling,"…. I really kid you not, ——- According to RSS and HadCrut it has over the last decade. You can go here, http://suyts.wordpress.com/2011/04/12/rss-going-negative/ to see the trends. The data is properly sourced.

And lastly, obviously you are not familiar with frequent commentators @ WUWT. I can tell you for a fact there are published, credentialed PhD holding Astrophysicists who contribute both in discussions and offerings at WUWT.

Richard, its ok to disagree on certain aspects of this discussion. But to partake in the mis-characterization of typical climate skeptics, as is what's going on here, is a form of bigoted stereotyping.

Take some time and see what the skepticism is about…….. or continue to make sweeping over-generalizations. The choice is yours, you can be part of the discussion or get left behind.

June 3 at 3:08pm

Richard Brenne

James Sexton – If you think the Earth is cooling over the last decade then it's hard to have a rational conversation.

According to NASA, 2005 and 2010 have tied for the warmest years on record. Maybe you know more than everyone at NASA combined, and if so I'd like to know why.

Cherry-picking temperature trends was most often done starting in 1998, at the time the record hot year, with a once-in-a-century El Nino. Such cherry-picking is not just pathetically bad science, it is also fundamentally dishonest. Debating something with someone who is being fundamentally dishonest is usually not productive, but it might help other readers.
Science moves forward from the research and publishing in peer-reviewed journals. Those doing the research, publishing and peer review are all in the field being discussed. What Anthony Watts who isn't a publishing atmospheric scientist (in any of the journals that move science forward) or what an astro-physicist thinks isn't relevant unless they find something real scientists and experts in atmospheric science (you know, professionals) can then research and publish about. The one thing I know about Watts that NOAA picked up on (his claims that the data from many if not most weather stations was invalid) showed the immense gap between working professionals and mere opinion mongers.

If you feel expertise in a field isn't important, then maybe you'd say it was okay for a blogger or an astro-physicist to perform brain surgery. I'd say it wasn't.

June 3 at 11:20pm

Bryan Short

I like to consider myself a genuine skeptic. I do not deny that the planet has warmed. I do not deny that carbon dioxide, methane, and various other gases emitted by human activities are trapping heat in our atmosphere. That's basic science. I am skeptical of the climate models which have a hard time taking into

account well known oceanic and atmospheric cycles. I think they make up for the lack of complexity in the models by simply assigning the changes to various trace gases in our atmosphere… so the mid-century cooling is no longer a product of frequent, strong La Niña conditions in the Pacific that act as a heat sink on the planet (allowing the planet to cool even as the sun was at its most active state in at least 1000 years).. they instead place the blame on sulfur emissions. They state that this makes since because most of the cooling took place in the northern hemisphere where sulfur emissions were high. I think that's a cop out. Sulfur from factory and auto emissions doesn't stay in the air very long and it certainly doesn't go up into the stratosphere in large enough amounts to block incoming solar radiation. The other gaping hole in AGW theory is the placement of the warming. The traditional AGW theory states that the greatest amount of warming should be in the mid troposphere over the tropics, since that's where the greatest combination of GHGs and solar radiation would meet up. But that simply has not been the case. Of course the AGW theory could simply be wrong in that one aspect and still remain largely correct… but this makes me very skeptical. I would instead propose that increased solar radiation and increased water vapor from the oceans have been a major factor. Since water vapor is heavy and stays close to the ground, the planet would warm the most at the surface. Now I am aware that the sun did not become significantly more active after the 1970s, when a strong bout of warming occurred… but I do think natural factors played a significant part in addition to GH warming. La Niña is not a product of a colder planet. It is the product of a warmer planet… especially when the sun is active. Proxy studies have shown that the Pacific Decadal Oscillation was at its most negative point by far during the Medieval Warm Period, indicating a more or less permanent La Niña state in the tropical Pacific. I believe the increased solar radiation greatly increases uplift in the western Pacific and in turn creates stronger trade winds, allowing cold subsurface water to upwell. La Niña tends to strengthen the subtropical highs and the polar vortices, thus strengthening the mid-latitude jet streams while also flattening them out and pushing them northward. The deserts bake while the rainforests drown… hell and high water. I believe this pattern was present in the mid-20th century. We can say with some certainty that the PDO in the mid 20th century was at its most consistently negative run since the MWP. All that increased solar radiation had to go somewhere. I believe it was stored in the oceans and then was released during the positive PDO phase from the 1970s to either the late 1990s or mid 2000s. This is evident in the satellite temperatures as the temperature did not increase gradually as you might expect with gradually increasing greenhouse gases… but instead rose in steps… generally following El Niño events… namely the 1986/87/88 event and the 1997/98 even and perhaps even the 2009/10 event… though that El Niño and the La Niñas of 2007/08/09 and 2010/11 have been unique in the past 35 years. All in all, I think the best thing we can do is keep researching climate… and get rid of this rigid ideology and stop relying so heavily on climate models. Those scientists who say the models are "better than real measurements" shouldn't be scientists. They should be selling fake Rolexes in NYC.

June 5 at 9:04am

Joseph Romm

No, AGW states that 90% of the warming will be in the oceans, which is precisely where it is observed. There are no scientists who say the models are better than real measurements. All of the models are built around real measurements — and many of the crucial measurements are changing at a rate that is faster than the models (arctic sea ice, Greenland ice sheet, Antarctic ice sheet), which should be cause for more worry, not less.

June 5 at 9:28am

Bryan Short

I appreciate the response. I'm not sure where I read somebody claiming that the models are better than observations because they're more robust… I may have gotten the wrong impression.

June 5 at 10:01am

Stephen Leahy

No climate modeller would say ever that. I've talked with dozens over the years. And models are very complex and done by different groups all over the world.

June 8 at 3:13am