



Introduction: Why Do We Lack Trust in our Climate Scientists?

I have been trying to figure out why the public doesn't understand climate science since the early 1990s. It just doesn't make sense. We trust our scientists in every other area but climate. What is it about climate that allows us to not faithfully follow those who we have demonstrated that we will trust? Why do we not trust those whose lives are

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dedicated to the this knowledge - who we know understands the science so much better than ourselves?

Why should a climate scientist deserve any less trust than any other scientist? Don't we generally trust those other scientist implicitly? (well most of us at least) Don't we trust the scientists at the Environmental Protection Agency who tell us how much lead is bad for us, the scientists at the Food and Drug Administration that tell us the safe levels of pesticides in our foods, the scientists at the Federal Communications Commission that tell us that our cell phones are safe, the scientists at the Federal Energy Regulatory Commission that tell us that their electrical transmission lines are safe.

Why are these scientists (and engineers) any different from climate scientists? Why don't we trust the climate scientists when they say CO₂ is an atmospheric pollutant capable of extreme destruction? We trust the EPA about the risk of lead, the FDA about the risks of pesticides. When the ozone hole was discovered, the planet reacted very quickly to what the scientists said was an atmospheric pollutant capable of extreme destruction. Ozone almost got out of control, but we stopped it in time. Today, CO₂ emissions may be out of control. Scientists are telling us that tipping points are near, that catastrophic global results could occur and may already have started. They are telling us that these events could happen much more quickly that we have understood in the past and the effects could be much more extreme than we have previously understood.

Why don't we believe them?

What I have here for this introduction is certainly not the entire answer, and it may not be the rightful reason at the top of the list. It has floated to the top of my list however and needs to be shared. For society and its leaders to be able to support climate change initiatives appropriately they have to understand their fears, assumptions and just exactly why it is that they are mistrusting the scientists.

Of course there are those citizens that do not trust any scientist, or those citizens who have a reason not to spend money on the future when, based on their "present value economic models" they show that money is worth so much more spent on today, and

future money really has no significance today because of inflation. Sure, there are those people out there. But if enough of us understand the reality of the problem, the future value of the enormous impacts of our current understated impacts of climate change - and react – those people can be voted off of the island – they will become insignificant.

There are two parts of the discussion at the top of the list actually, both with a great amount of importance, and both generally overlooked as the root cause of the climate change “debate”.

The weather may be the number one cause of the all of the hullabaloo. The weather is a part of our every day lives. We are immersed in the weather: winter, springs, summer, fall - our fashions, food, football and farms. Climate is the common thread of the weather that connects us all. The climate in the Northeast is cool and pleasant, the Midwest is cold in winter and hot in summer, the northwest it rains all the time, the south is steamy and hot, Florida has those afternoon thunderstorms that run by the clock, California is paradise except for the fires that are just as much of their climate as snow is apart of the climate in Aspen, Colorado.

But wait a minute. Is this what climate really is? Why is everything I have just said in the above paragraph dramatically wrong? Our climate is not the everyday weather that we endure or relish. It is not the five day forecast with ever changing chances of rain. It is not about the large swings of weather from pleasant to harsh, hot to cold, windy to calm, blue to gray.

Climate is not really about the climate that we all know about, it's not about the weather in Phoenix being hot all the time, or the humidity in Mobile. It's not about moving from Minnesota to Orlando to have a change of climate from the cold to the sublime. It is not about the tornado-ridden Great Plains or the hurricane infested Gulf Coast. Sure all of these things are a part of the climate where we live, but they are only a very small part of what climate change is all about.

You see; climate change is about all of these things put together. It is about the immense planet wide ecosystems that are bigger than the Great Plains, the Gulf Coast

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or the Rocky Mountains. Most importantly, climate change is about the sensitivity of the Earth as we know it to changes in the overall planet wide climate.

We humans can deal with climate changes that are dozens of times or even hundreds of times greater than our planet can deal with. For example, if our planet warmed up just 20 degrees, there is the possibility that our oceans would evaporate into space. If it warmed up 40 degrees, it is a certainty that this would happen. Our planet would become like Venus – hot beyond imagining. There is no water on Venus. There is no life on Venus.

Now think about what a 40-degree change means to you and me. That's the difference in temperature between a frosty early spring morning and the following warm sunny afternoon. It is the difference in average temperature between winter and summer in most places. What does that mean to us humans? It doesn't really mean much. Now think of the difference in temperature between winter and summer in Minnesota, or even Texas. A cold winter day is likely to be 60 or 70 or even 100 degrees colder than a hot summer day, maybe more. We use the air conditioner in the summer (those of us in the south at least) and the heater in the winter. We wear shorts in the summer and long underwear in the winter. No big deal.

But change our global climate by just a tiny fraction of this amount and chaos arises. The last time our planet was just 2 to 3 degrees warmer than it is today, sea level was 80 feet higher than now. The last time the planet's temperature was 4 to 5 degrees warmer than today, sea level was 200 feet higher and there was no ice on the planet. The average global temperature difference between the depths of an ice age and the warmest periods between ice ages is just 9 degrees F.

The Intergovernmental Panel on Climate Change says that their super computer climate models predict that our climate will warm four or five degrees by the year 2100 under their "likely" scenario. That is – with the reduction in our CO₂ emissions that will probably happen. This change in temperature is not even as much as we get with a weak cold front in the fall. Yet, in our planet's history, when climate across the globe is considered, four or five degrees is enough to melt all of the ice in the world and submerge Houston under 150 feet of ocean; Washington D.C. under 90 feet, New York

City under 160 feet, Boston 60 feet, London 120 feet, Shanghai 180 feet, Tokyo 140 feet, Manila 150 feet, Sydney 190 feet, Athens 130 feet, Beijing 60 feet, Bangkok 190 feet, Singapore 150 feet, Berlin 85 feet.

Traditional wisdom says this will take thousands of years; traditional that is in the late 20th century. Today's computer models are becoming widely recognized as being conservative. Ice is melting faster than the worse case scenarios. CO2 is increasing faster than the worse case scenarios, and many unexpected things are happening that the models do not even consider.

The worst case scenario predicts that our average planet temperature in 2100 will be about eleven and a half degrees warmer than today. This prediction is partly based on carbon dioxide concentrations in the atmosphere. Today's carbon dioxide concentration has unexpectedly increased to what the IPCC was assuming for their worse case scenario (just one of the reasons why the IPCC projections are considered conservative).

The last time the temperature was 2 to 3 degrees higher than today was about 3 million years ago. The last time that temperature was 4 to 5 degrees higher was 20 million years ago. Sure it has been warmer, but not much. And our planet was a vastly different place then. Much less oxygen was in the atmosphere, and the continents were in vastly different positions to where they are now, creating a completely different way that the Earth soaks up heat from the sun. The sun, and the way that heat is absorbed here on the planet: that's what makes up climate. Not Duluth's weather.

Weather forecasts, discussions, theory, etc. are only concerned with days, or weeks, maybe several months, maybe 18 months at the longest. Seasonal forecast exist, but their accuracy is not very good beyond the current, or maybe the next season. The accuracy of these forecasts taints our every day trust in what the weather person says our climate will be like tomorrow, or next week. Climate considers time spans one hundred to one thousand times greater, at the minimum, than weather forecasts. The shortest climate discussions are based on 20 or 30 years worth of weather, all added up and averaged out. There is a crossing of definitions here that completely confuses the situation. Remember back in the 1980s when the scientists said the it would be 20 years

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before we knew if mankind was responsible for changing our climate? That wasn't because we would have to wait and see if the species of humans were big enough to actually do something to climate. That was so that enough data could be accumulated, so that the warming being felt in the 1980s could be proven statistically to be valid, and not just a fluke of nature – a natural weather cycle.

The confusion exists because there are two definitions for climate. The climate in the travel brochures, the one that describes a city's climate for vacationers or job seekers is vastly different from what the climate crisis is about.

Climate change is about the big picture. Just a few degrees of change can radically alter this planet. Any more than that and all bets are off. To us at home though, a few degrees of change is a very small change in climate. It doesn't matter to us one bit. We don't even have to put on a coat if it changes a few degrees.

The other big issue is surprisingly, or maybe not surprisingly: religion. There is a

Conflicting Views on the Origins of Life				
<i>Some people think that humans and other living things have evolved over time. Others think that humans and other living things have existed in their present form since the beginning of time.</i>				
<i>Which of these comes closest to your view?</i>				
<i>(If 'Evolved'...) And do you think that humans and other living things have evolved due to natural processes such as natural selection, or do you think that a supreme being guided the evolution of living things for the purpose of creating humans and other life in the form it exists today?</i>				
Source: Pew Research Center July 7-17, 2005				
<i>Which do you think is more likely to actually be the explanation for the origin of human life on earth: evolution...or...the biblical account of creation?</i>				
<i>(If 'The biblical account of creation,'...) And by this do you mean: that God created the world in six days and rested on the seventh as described in the Book of Genesis or that God was a divine presence in the formation of the universe?</i>				
Source: NBC News March 8-10, 2005				
<i>Which one of the following statements comes closest to your views on the origin and development of human beings?...</i>				
<i>(1st and 3rd options are rotated)</i>				
<i>--Humans developed over millions of years from less advanced forms of life, but God guided this process.</i>				
<i>--Human beings have developed over millions of years from less advanced forms of life, but God had no part in this process.</i>				
<i>--God created human beings pretty much in the present form at one time within the last 10,000 years or so.</i>				
Source: Gallup	Evolution, no part in process	Evolution, God guided the process	God created in present form	DK
November 7-10, 2004	13	38	45	4
February 19-21, 2001	12	37	45	5
August 24-26, 1999	9	40	47	4
November 6-9, 1997	10	39	44	7
June 18-21, 1993	11	35	47	7
July 23-26, 1982	9	38	44	9

Reference: Public Divided on Origins of Life, Religion a Strength and Weakness for Both Parties, Pew Research Center for the People and the Press, The Pew Charitable Trusts, August 2005. This poll was a telephone survey of 2,000 adult individuals of diverse backgrounds.

very large portion of society that believes that the Earth has been around for 6,000 or 10,000 or 20,000 years. A Pew Research Center poll in 2005 found that 40% to 50% of Americans believe in that biblical creationist account of the origin of life. This large portion of society has changed little in their beliefs for the last 25 years.

There are many religions that have a dualistic approach to creation, not at all like the Creationist approach. This view is that the bible is an ancient document and that we as society have learned many things since the bible was written. This philosophy allows for the understanding of Earth and the Universe as things that are billions of years old. With this understanding, it is easy to see hundreds of thousands or millions of years of climate records from ice and sediment and other sources.

God created the heavens and the Earth. Aren't the heavens and the Earth principally what our climate is? The poll above has been repeated six times by the PEW Center since 1982. The topic is about the origin of man.

The numbers in the poll above, *Conflicting Views on the Origins of Life*, show the belief in the Creationist theory of life where Man was created more or less in their present form about 10,000 years ago. Of the persons participating in the poll, nearly half appear to follow the Creationist philosophy. Even more telling is the poll history at the bottom of the table. Since 1982, six separate polls have shown virtually the same thing.

How can this large proportion of our society trust science if science is based on hundreds of thousands of years of climate information? In order to truly understand why the misunderstandings about climate change exist, we have to know why they exist.

These are just the top two reasons that are swimming about in my head at this point. I don't think I will mention religion again, but it is an important part of the discussion of why our society has a difficult time with the topic of climate change and it needs to be understood. As for the weather and climate? You bet that will be a topic of considerable interest in the rest of this book.

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Full report: <http://people-press.org/reports/pdf/254.pdf>