

The Montana Public Service Commission must independently review the cause of climate change.

Edwin X Berry, PhD, Theoretical Physics, Certified Consulting Meteorologist

Berry is a graduate of Caltech, Dartmouth, and the University of Nevada where his PhD mentor was the best student of Physics Nobel Laureate Werner Heisenberg.

Berry's PhD thesis in theoretical physics was a breakthrough in cloud physics and numerical modeling that put Nevada's *Desert Research Institute* (DRI) "on the map."

Berry is a member of the elite *Sigma Delta Psi* national athletic honorary.

As the first chief scientist of DRI's airborne research facility, he led research flights through Sierra Nevada wave clouds and winter storms, Alberta hailstorms, and geysers in Yellowstone National Park.

He is a *Certified Consulting Meteorologist* (CCM) and a pilot with glider, single engine land, and instrument ratings. He was a consultant to DOD on weather modification.

As the National Science Foundation Program Manager for Weather Modification, he managed the *Metropolitan Meteorological Experiment* (METROMEX) which was the first experiment to show how large cities change their local climate.

He helped the FAA understand and stop airline accidents caused by downdrafts.

His interactive courtroom software for the defense in a high-profile murder trial won the *People's Choice Award* at a Microsoft *Windows World Open* contest.

The University of Nevada Alumni Association gave Berry its *Professional Achievement Award*.

Berry with his wife as crew won US and World centerboard sailing championships. He has placed in the USA top ten in age-group run-bike-run and senior track events. He now holds Concept2 rowing world records for the 80-89 age-group in 100m and 1min.

He has self-funded his research work in the causes of climate change since 2008.

UK climate scientist and professional reviewer, Richard Courtney, wrote in 2023,

"Berry's work is the only breakthrough in climate science in the last four decades."

The presentation below summarizes Berry's breakthrough climate work.

1. Introduction

Over 40 Montana organizations and businesses have petitioned the Montana Public Service Commission (PSC) to consider “climate change” in its regulation of Montana gas and electricity utilities.

Their petition is based on the Held v Montana “climate” lawsuit, where Judge Seeley correctly ruled on the evidence presented in the trial.

Unfortunately, Held v Montana was NOT a “climate science” trial because Montana’s Attorney General did not legally, ethically, or morally defend Montana against the Plaintiffs’ climate science claims.

On June 12, 2023, just before the trial began, Montana Assistant Attorney General Michael Russell stipulated,

“for the purposes of trial, there is a scientific consensus that earth is warming as a direct result of human GHG emissions, primarily from the burning of fossil fuels.”

Montana’s defense did not counter any Plaintiff’ expert’ climate claim and did not present any expert witnesses on true climate science (of which there are many) to challenge the Plaintiffs’ experts.

The Held v Montana trial, which ended on June 20, 2023, will go down in history as the trial where Montana Republicans joined the Democrats to censor climate truth, support climate fiction, and indoctrinate Montana and its children in climate alarmism.

The Held v Montana “climate” trial has no scientific meaning.

Therefore, the PSC must decide whether to follow the irrelevant Held v Montana trial or to do its own independent review of climate change science.

The PSC must uphold the Montana Constitution, but that requires the PSC to determine the truth. The PSC has the right and the obligation to review claims that human CO₂ changes the climate because Held v Montana did not prove human CO₂ is guilty.

2. Held v Montana did not prove human CO₂ is guilty.

The plaintiffs did not show any evidence that human CO₂ caused their claimed damages. And Montana’s Attorney General did not point that out to the court.

Human CO₂ was the real defendant in Held v Montana, but no one defended human CO₂.

In a trial where a prosecution accuses Smith of shooting Jones, the prosecution will try to show a connection between Smith having a gun, aiming his gun at Jones, pulling the trigger, and shooting a bullet at Jones.

In the famed witch-trials, plaintiffs claimed innocent women caused harmful weather events. But they did not, and could not, show any connection between the women and their weather events. Nevertheless, they burned the innocent women anyway.

In Held v Montana, the Plaintiffs claimed human CO₂ caused harmful “climate events.” But they did not, and could not, show any connection between human CO₂ and their climate events. Nevertheless, they convicted human CO₂ anyway.

Held v Montana was a “witch” trial. It presumed, without evidence, that human CO₂ caused the Plaintiffs’ damages.

3. Science must follow the Scientific Method.

Held v Montana did not follow the scientific method.

The Scientific Method originated four thousand years ago. Today, it is part of the Philosophy of Science. It is not an arbitrary set of rules. It is the only way to find truth in science.

Figure 1 illustrates the Scientific Method.

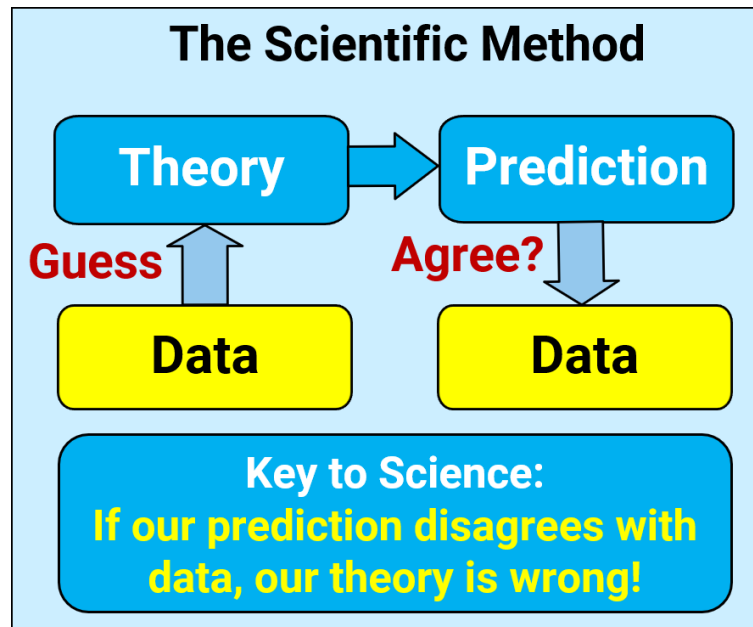


Figure 1. The scientific method.

John Kemeny (1959) taught the Scientific Method at Dartmouth College in the 1960’s using his book *A Philosopher looks at Science*. Richard Feynman, Nobel Laureate in Physics, taught the same Scientific Method at Cornell and Caltech.

A theory (or hypothesis or idea) is a proposed connection of cause and effect. It must be able to make a testable prediction.

All hypotheses or theories begin and end with data. Scientists insert data into a hypothesis to make a prediction. Then they compare the prediction with new data.

If a prediction is correct, the hypothesis may be correct, but successful predictions do not prove a hypothesis is true because the next experiment may prove it is false. Albert Einstein said, many experiments may prove him right, but it takes only one to prove him wrong.

The key to science is: if a prediction disagrees with data, the hypothesis is false.

4. Plaintiffs have the burden of proof.

In civil trials, a defendant is not liable unless the burden of proof is first met. In climate trials, courts must assume human CO₂ is not liable until proof is offered to the contrary. Scientists call this the “Null Hypothesis.”

5. Plaintiffs’ invalid prediction proves their science is false.

In 2011, in *Barhaugh v. Bullock*, a set of petitioners similarly situated with those in Held v Montana petitioned the Montana Supreme Court because, they claimed, a catastrophic climate event would occur before they could get to the Montana Supreme Court if they began in a district court.

Their predicted catastrophic climate event did not occur. Therefore, they proved their own climate hypotheses are wrong.

6. Plaintiffs assume three hypotheses are true.

Plaintiffs’ experts assumed but did not prove their following hypotheses:

1. H1: Human CO₂ caused all the CO₂ increase above 280 ppm, or since 1750.
2. H2: The CO₂ increase from 280 ppm to ~420 ppm caused global warming.
3. H3: Global warming caused harmful stuff to happen.

The *Intergovernmental Panel on Climate Change* (IPCC) assumes these three hypotheses are true, and all climate alarmism derives from these false assumptions.

To prevail, the Plaintiffs must defend these three hypotheses. The defense needs to prove only one of these three hypotheses is false to prevail.

7. Plaintiffs presented no evidence that H1 and H2 are true.

Plaintiffs’ (2023) Expert Report by Steve Running and Cathy Whitlock assumes H1 and H2 are true, and incorrectly uses “consensus” and “climate model projections” as “evidence.”

Climate models assume H1 and H2 are true, so model predictions are not evidence that H1 and H2 are true.

Plaintiffs make the following six invalid claims related to H1 or H2:

1. (H1) If GHG emissions continue to increase, atmospheric CO₂ concentrations will continue to climb.
2. (H1) Human CO₂ remains in the atmosphere for thousands of years.
3. (H1) Carbon isotopes prove fossil fuels are the source of increasing CO₂.
4. (H2) CO₂ causes global warming.
5. (H2) The increased CO₂ has disrupted Earth's energy balance.
6. (H2) Until atmospheric CO₂ concentrations are reduced to 350 ppm, Earth's energy balance will continue to be positive.

Plaintiffs argue because H3 is true, therefore H1 and H2 are true. They assume events prove their cause, which is an invalid argument.

Five paragraphs of the district courts' findings of fact summarize the Plaintiffs' climate arguments. Here are the district court's paragraph numbers with the relevant hypotheses:

71. (H1) A substantial portion of CO₂ emitted by human activities persists in the atmosphere for as long as hundreds of years or millennia. As a result, CO₂ steadily accumulates in the atmosphere.

78. (H2) The rise in atmospheric CO₂ has caused global, national, and Montana air temperatures to rise.

82. (H2) The Earth's energy imbalance (EEI) is the most critical metric for determining the amount of global heating and climate change.

85. (H2) If more GHGs are added to the atmosphere and more incoming energy received from the sun is trapped as thermal energy, the Earth's climate system will continue to heat up.

87. (H1, H2) The buildup of CO₂ and the current Earth energy imbalance is due to anthropogenic changes in the environment, not natural variability.

The Plaintiffs provided no valid argument or "facts" to support their above claims.

All Plaintiffs' damage claims assume H1 and H2 are true. Below, we will prove H1 and H2 are false. Therefore, Plaintiffs' damage claims are not caused by human CO₂, and restricting human CO₂ will not reduce their claimed damages.

8. “Consensus” does not decide scientific truth.

Plaintiffs’ Expert Report by Steve Running and Cathy Whitlock says:

There is a scientific consensus that the rise in atmospheric CO₂ that we are witnessing is attributable to human activities, primarily the burning of fossil fuels.

The vast majority of actively publishing climate scientists – 97 percent – agree that humans are causing global warming and climate change. Most leading science organizations around the world have issued public statements expressing this, including international and U.S. science academies, the United Nations Intergovernmental Panel on Climate Change, and a whole host of reputable scientific bodies around the world.

Aristotle showed the consensus argument fails. Wikipedia (2023) says,

argumentum ad populum is a fallacious argument which is based on claiming a truth because the majority thinks it is true.

Argumentum ad populum is similar to an argument from authority (argumentum ad verecundiam). It uses an appeal to the beliefs of a group of people, stating that because a certain opinion is held by a majority, it is therefore correct.

Plaintiffs argue H1 and H2 are true because other people, who never appear in court for cross-examination, believe these hypotheses are true. The consensus scientists include each other because they have no data to prove their claims.

Clintel (2023) – *World Climate Declaration: There is no Climate Emergency* – shows the opposite consensus argument, signed by 1609 professional scientists who disagree with the Plaintiffs’ claims, as follows:

Climate models have many shortcomings and are not remotely plausible as global policy tools. They blow up the effect of greenhouse gases such as CO₂.

CO₂ is not a pollutant. It is essential to all life on Earth. It is also good for agriculture, increasing the yields of crops worldwide.

There is no statistical evidence that global warming is intensifying hurricanes, floods, droughts and such like natural disasters, or making them more frequent. However, there is ample evidence that CO₂ mitigation measures are as damaging as they are costly.

According to the scientific method, truth in science is not decided by consensus or votes, but by proving hypotheses false.

9. IPCC's natural and human carbon cycles

Figure 2 shows the Intergovernmental Panel on Climate Change (IPCC, 2013, p. 471, Figure 6.1) natural carbon cycle and human carbon cycles.

IPCC assumes (H1) natural CO₂ level stayed constant at 280 ppm after 1750 and human CO₂ caused all the CO₂ increase above 280 ppm. This assumption (H1) is the foundation of the Plaintiffs' case and all climate alarmism.

IPCC's units in Figure 2 are PgC (petagrams of carbon). PgC is numerically equal to Gigatons of carbon (GtC). We use GtC for levels and GtC per year for the flows of carbon between the reservoirs.

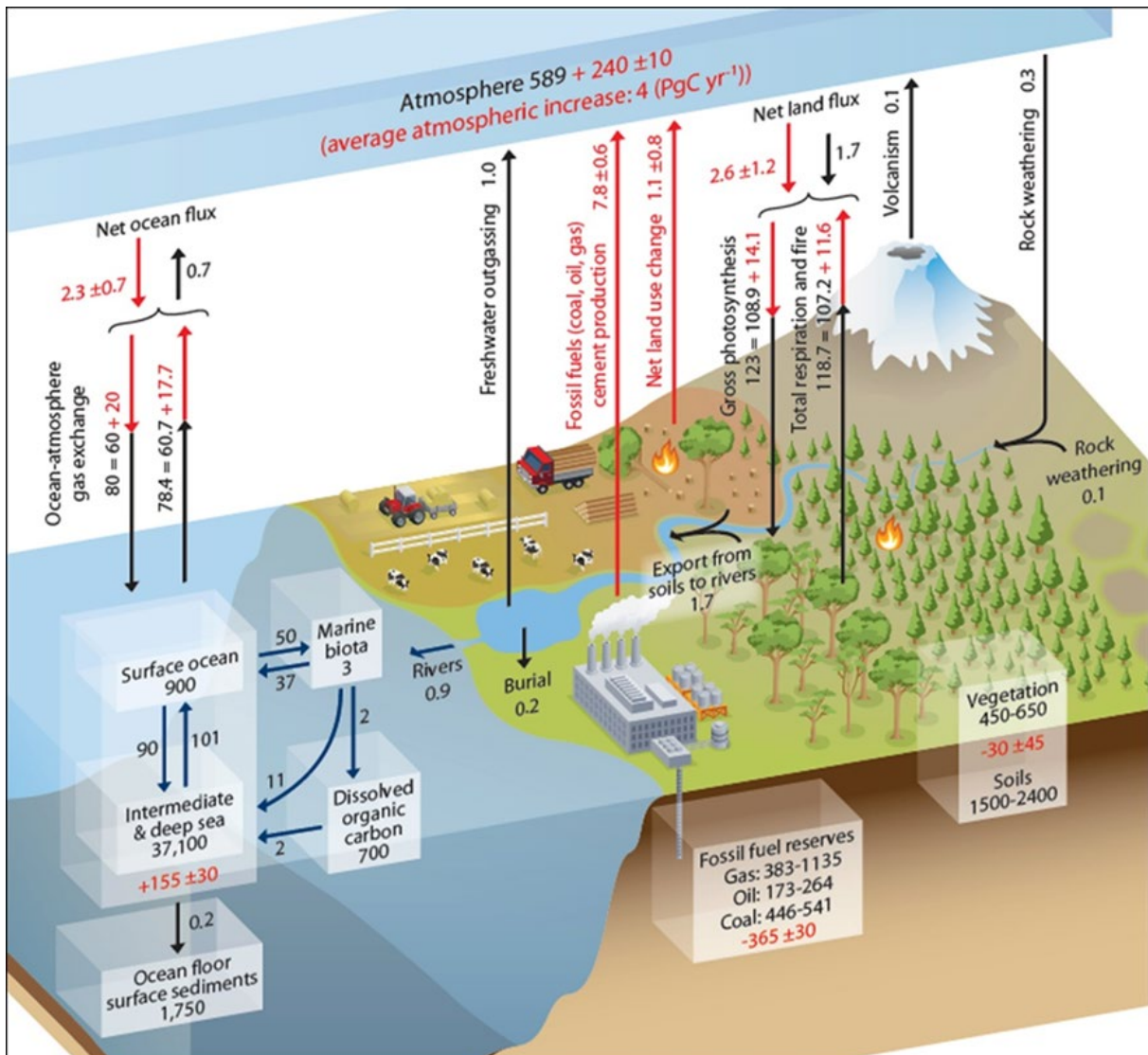


Figure 2. IPCC's (2013, p. 471, Figure 6.1) human (red) and natural (black) carbon cycles. Data is in GtC or GtC per year.

Figure 3 shows IPCC's natural and human carbon cycles described in Figure 2.

IPCC's natural carbon cycle is at equilibrium, which makes the flows between the reservoirs equal. Natural atmospheric CO₂ is 280 ppm (~ 589 GtC) based on data that IPCC says is good to about 20 percent.

The total human carbon addition to the carbon cycle is about 400 GtC, which is one percent of nature's total of 40,000 GtC. That alone should beg questions about how the addition of human CO₂ can be catastrophic.

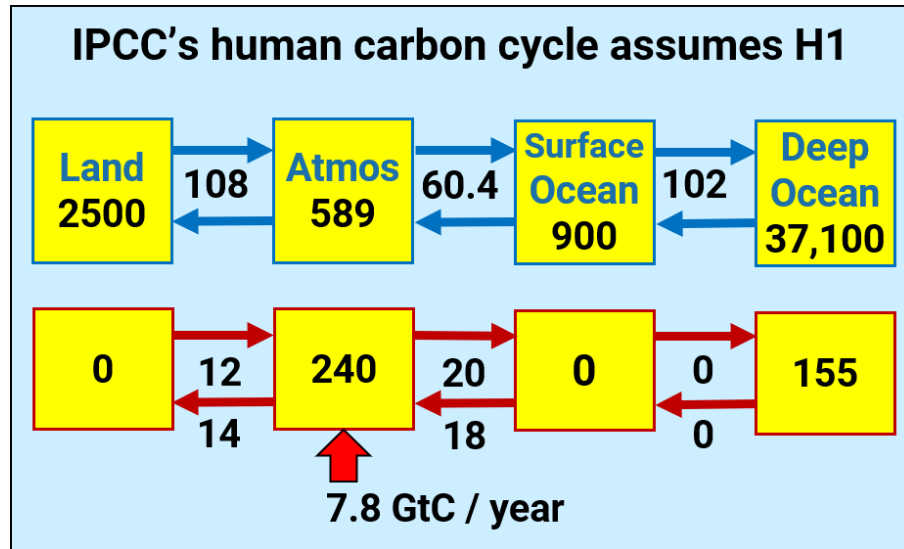


Figure 3. IPCC's natural (blue) and human (red) carbon cycles from data in Figure 2. Numbers in boxes show the carbon levels in GtC. Numbers by arrows show carbon flows in GtC per year.

IPCC's human carbon flowing into the atmosphere is 7.8 GtC per year plus about 1.1 GtC per year due to IPCC's (2013) estimate of human-caused land changes, for a total human-caused carbon inflow of 8.9 GtC per year, which is about 4 ppm per year of CO₂.

By contrast, IPCC's natural carbon cycle shows total natural carbon inflow into the atmosphere (shown in Figure 3) is 108 GtC from land plus 60.4 GtC from surface ocean, or 168 GtC per year, which is about 80 ppm per year. These IPCC (2016) data show human CO₂ inflow is 5% of total CO₂ inflow. We will use this information later.

IPCC's and the Plaintiffs' problem is that we cannot measure human CO₂ in the atmosphere separate from natural CO₂ because human and natural carbon-12 atoms and CO₂ molecules are identical.

There are no direct data that show H1 is true because we can't measure human CO₂ independently from natural CO₂. That's why H1 is a hypothesis.

10. CO₂ flows through the air as water flows through a lake.

To evaluate the effect of CO₂, we must understand how CO₂ flows through the atmosphere and the carbon cycle. An analogy is how water flows into a lake and out over a dam.

Figure 4 illustrates how CO₂ flows through the atmosphere as water flows through a lake. The faster the inflow, the higher the level. The higher the level, the faster the outflow. The level will rise or fall until outflow equals inflow. The level always seeks equilibrium.

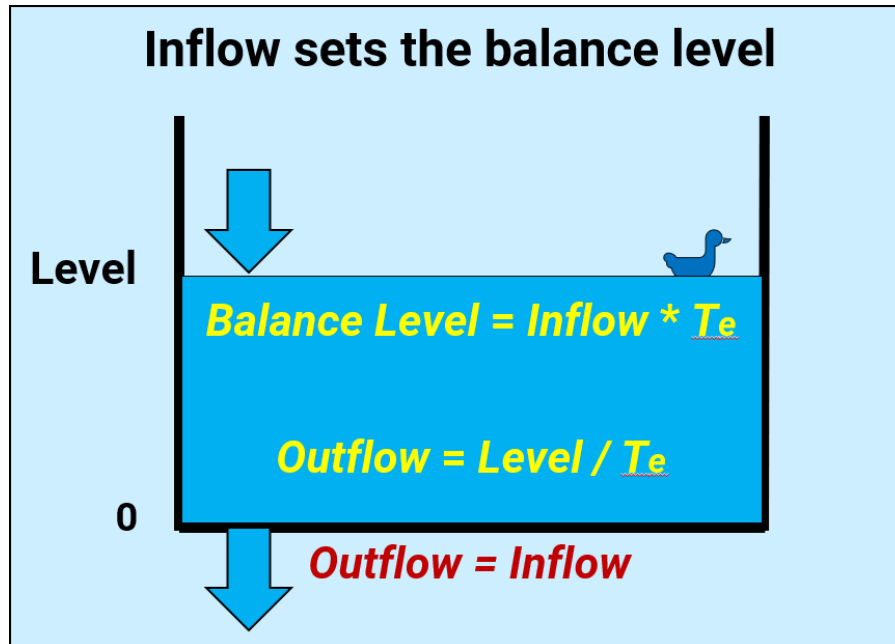


Figure 4. How CO₂ flows through the atmosphere. The level always moves to its balance level.

It is important to assign a term to define “how long” CO₂ stays in the atmosphere.

IPCC (2007, p. 948) defines “turnover time,” T_e as,

“Turnover time (T_e) is the Level or mass in a reservoir divided by the Outflow of the mass from the reservoir: (T_e) = Level/Outflow.”

In simple math, IPCC’s definition of T_e defines the outflow,

$$\text{Outflow} = \text{Level} / T_e \quad (1)$$

where T_e is a time that describes how fast the level approaches its balance level.

The balance level is a level, set by inflow, where outflow equals inflow. When the level is at its balance level, we can substitute Inflow for Outflow and Balance Level for Level in (1) to get,

$$\text{Inflow} = \text{Balance Level} / T_e \quad (2)$$

Solving (2) for balance level, we get

$$\text{Balance Level} = \text{Inflow} * T_e \quad (3)$$

Equation (3) shows that inflow sets the balance level. When outflow equals inflow, no water “accumulates” in the lake, or CO₂ in the atmosphere. Equations (1), (2), and (3) are necessary to explain IPCC’s H1, how natural CO₂ could have stayed at 280 ppm, as IPCC and Plaintiffs claim (H1).

IPCC (2007, p. 948) says the “turnover time” T_e for natural CO₂ is only four years,

“Carbon dioxide (CO₂) is an extreme example. Its turnover time is only about four years...”

IPCC’s data in Figure 2 show natural T_e is 3.5 years, or about 4 years.

The Climate Equivalence Principle

The T_e for human and natural CO₂ are identical because their carbon-12 atoms and CO₂ molecules are identical.

The *Climate Equivalence Principle* and (1) make human and natural carbon cycles independent. Simply write (1) for human and for natural flows and add the up to get the total outflows and total levels. We can add them up because human and natural T_e are identical according to the *Climate Equivalence Principle*.

IPCC agrees because its Figure 2 shows human and natural carbon cycles are independent and add up.

11. Human 5% inflow causes 5% of the total level.

According to (3), if the human inflow is 5% of the total inflow, the human balance level is 5% of the total balance level at equilibrium.

Figure 5 shows the natural balance level of 280 ppm is now 95% and the human balance level is 5% of the total level. The human 5% is only 14 ppm, making the total level equal to 294 ppm.

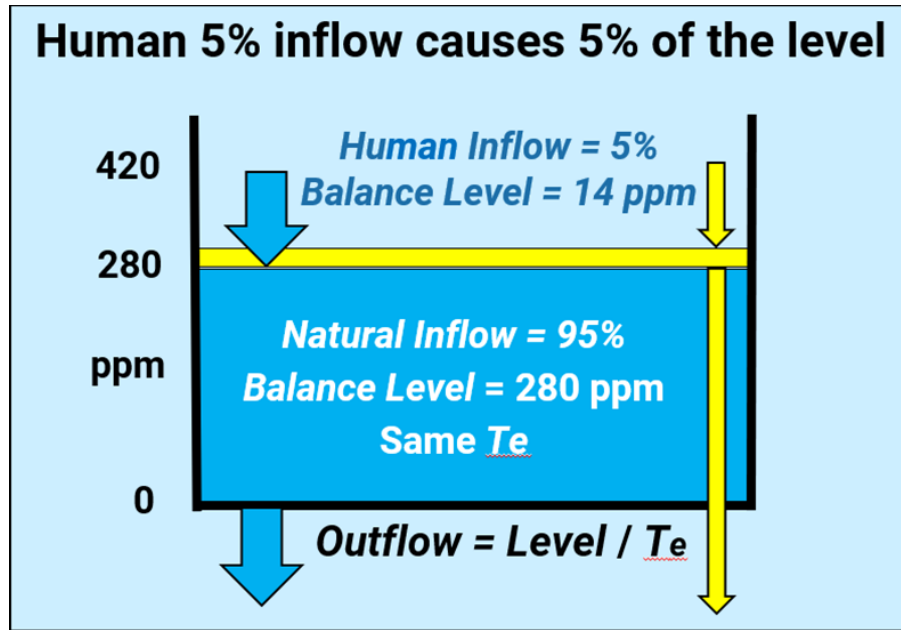


Figure 5. The 5% human balance level is 14 ppm.

12. Human 5% inflow cannot cause 33% of the total level.

Hypotheses H1 says human carbon causes all the CO₂ increase, which would make human CO₂ 33% of atmospheric CO₂.

Figure 6 shows the only way that could happen is for human T_e to be 35 years rather than 3.5 years, or ten times the T_e for natural CO₂. This would contradict the *Climate Equivalence Principle*.

Plaintiffs need a fictitious “magic demon” in the atmosphere to separate human CO₂ from natural CO₂ and hold human CO₂ in the atmosphere while letting natural CO₂ flow freely out of the atmosphere.

IPCC claimed the T_e human CO₂ is greater than the T_e for natural CO₂ to explain how 5% human inflow can become 33% of the total level as illustrated on Figure 6.

IPCC (2013, p. 469) says,

“The removal of human-emitted CO₂ from the atmosphere by natural processes will take a few hundred thousand years (high confidence).”

Similarly, Plaintiffs 71(H1) and 2 (H1) say the removal time for human CO₂ is hundreds to thousands of years, in their futile attempt to support H1 (Section 7).

This claim by the IPCC and Plaintiffs conflicts with the *Climate Equivalence Principle* and IPCC’s T_e of 3.5 years for natural CO₂. So, this claim and H1 are false.

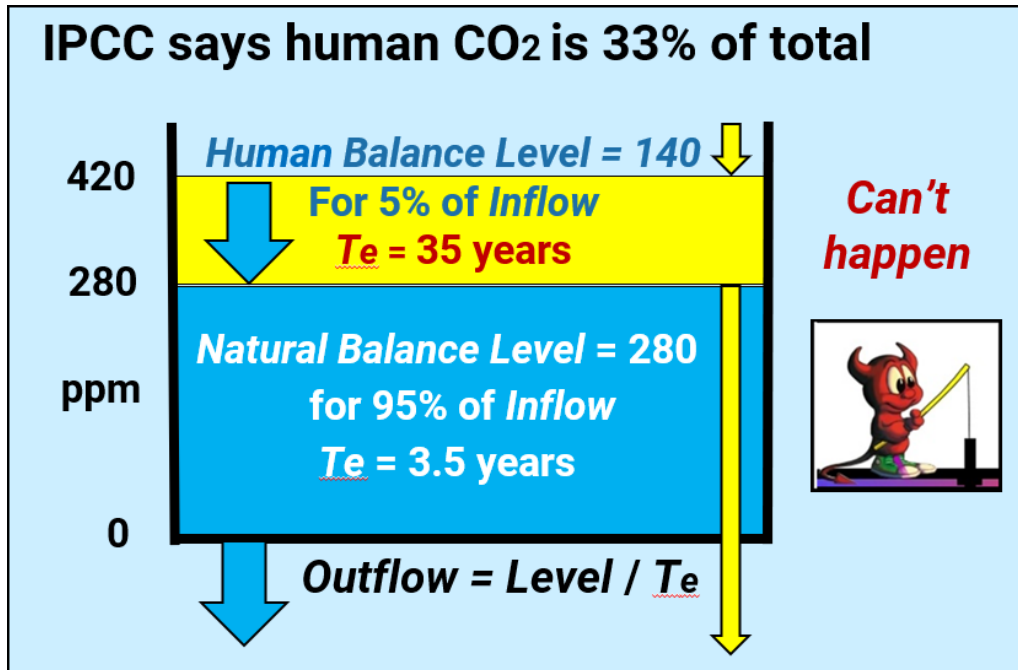


Figure 6. H1 says the human 5% inflow is 33% of the total level.

13. Natural CO₂ inflow increases to cause the level to be 420 ppm.

Figure 7 shows the only way the atmospheric CO₂ level can be 420 ppm, given that human CO₂ inflow is about 5% of the total inflow, is for natural CO₂ inflow to increase its level from 280 ppm to 400 ppm.

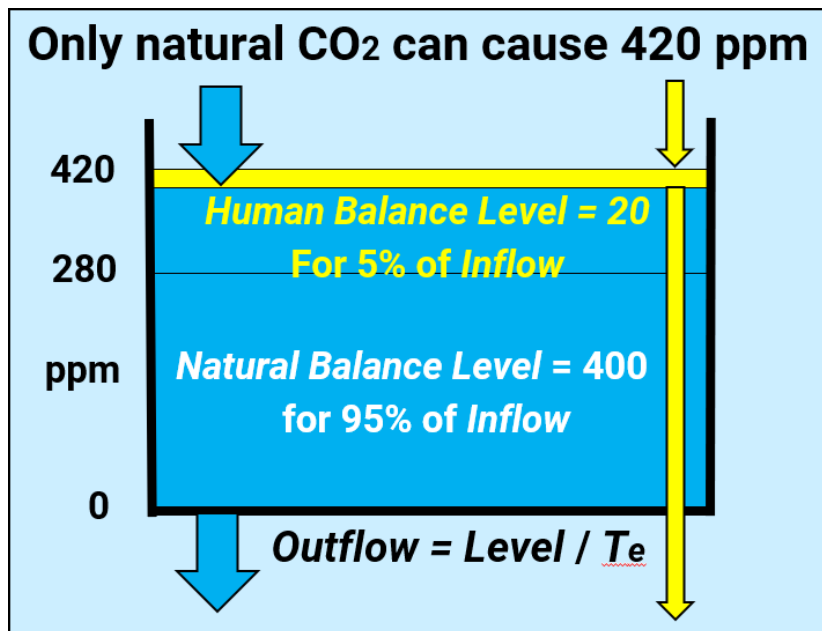


Figure 7. Only natural CO₂ can increase the CO₂ level to 420 ppm.

This natural CO₂ level of 400 ppm makes it impossible for the Plaintiffs to achieve their 350-ppm goal by reducing human emissions.

14. Human CO₂ is not a climate emergency.

Figure 8 shows IPCC's percentages of carbon in each reservoir at equilibrium. The natural carbon cycle is in blue boxes and the human carbon cycle is in red boxes.

IPCC's natural carbon cycle has 1.4% of its carbon in the atmosphere at equilibrium. Therefore, the human carbon cycle will also have 1.4% of its carbon in the atmosphere at equilibrium, according to the *Climate Equivalence Principle*.

Total human carbon in the human carbon cycle as of 2020 is about 450 GtC, or 213 ppm if it had all stayed in the atmosphere. At equilibrium, only 1.4%, or 3 ppm of human carbon would remain in the atmosphere. This shows human emissions are not an emergency.

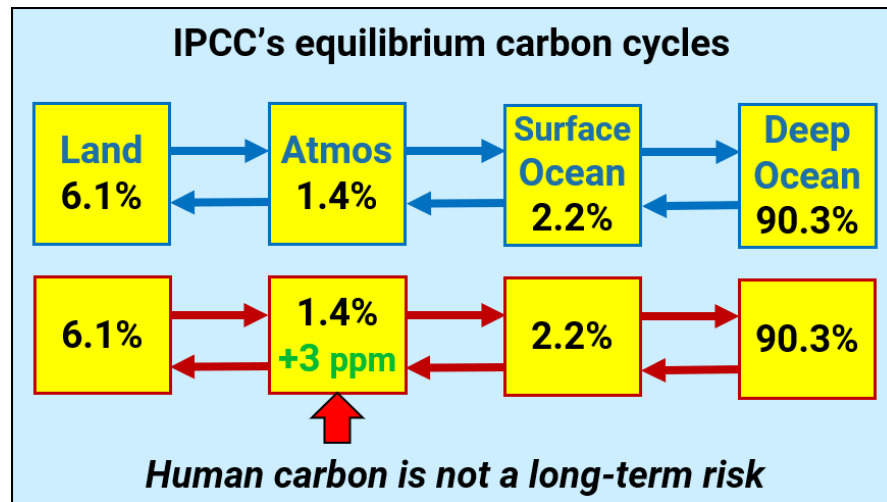


Figure 8. Natural (top) and human (bottom) carbon cycles at their equilibrium percentages.

15. Human burning causes only 2% of total carbon inflow.

Figure 9 shows approximate carbon inflows from human breathing and animal and fungal sources that the IPCC does not include in its carbon cycle. Estimated human breathing by 8 billion people causes more CO₂ inflow than human carbon burning.

Estimated carbon inflow from animal breathing and fungal matter cause more CO₂ inflow than IPCC's natural inflows from land and ocean.

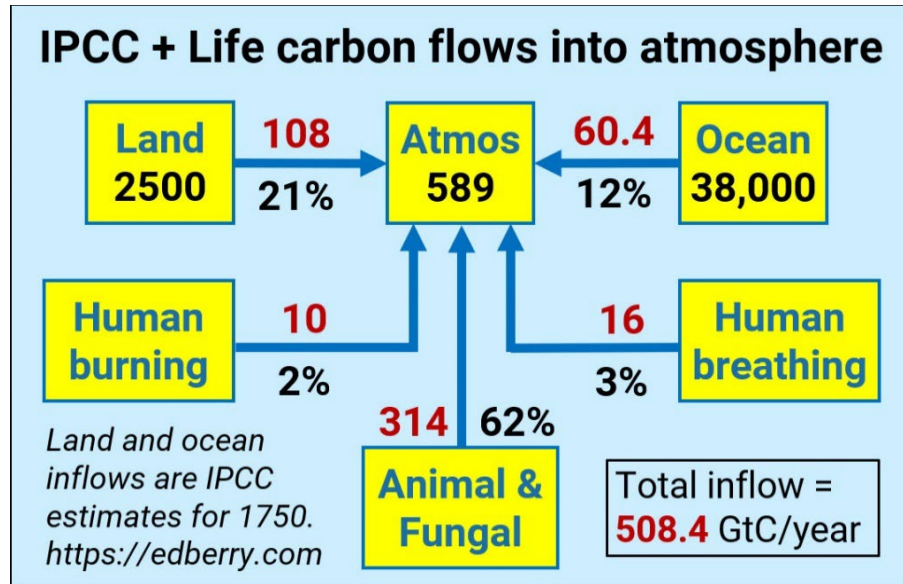


Figure 9. Estimated human breathing and animal carbon inflows.

Since, from (3), inflows produce balance levels proportional to their inflows, to the first approximation, human carbon (10 GtC per year) has caused about 2% (8 ppm), and nature about 98% (412 ppm) of today's 420 ppm.

Human carbon emissions are insignificant to climate change. Nature causes climate change.

16. IPCC's true human carbon cycle proves H1 is false.

Figure 10 shows how Berry's (2021) carbon cycle model replicated IPCC's natural carbon cycle to prove his model is correct. Then his model calculated IPCC's true human carbon cycle using IPCC's data for human CO₂ emissions. The difference proves IPCC's H1 is false.

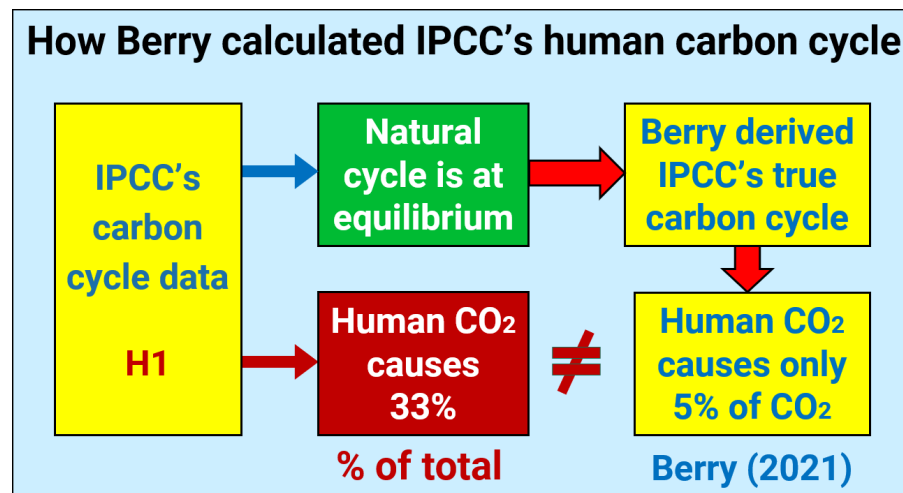


Figure 10. Shows how Berry proved IPCC's H1 is false.

Berry was the first to derive a complete model of IPCC's carbon cycle. He derived his carbon cycle model from IPCC's (1) (Section 10).

17. CO₂ data prove H1 is false.

Figure 11 shows carbon levels above 280 ppm. The sum of annual human carbon inflow (red dotted line to 213 ppm) crosses the measured total carbon level (black line to 137 ppm).

Before 1950, the sum of human inflow (red) was less than the measured carbon level (black), showing it is impossible for human CO₂ inflow to have caused the measured carbon level, which proves H1 is false.

The blue line to 33 ppm shows IPCC's true human carbon cycle from Figure 10, calculated by Berry (2021), which also proves H1 is false.

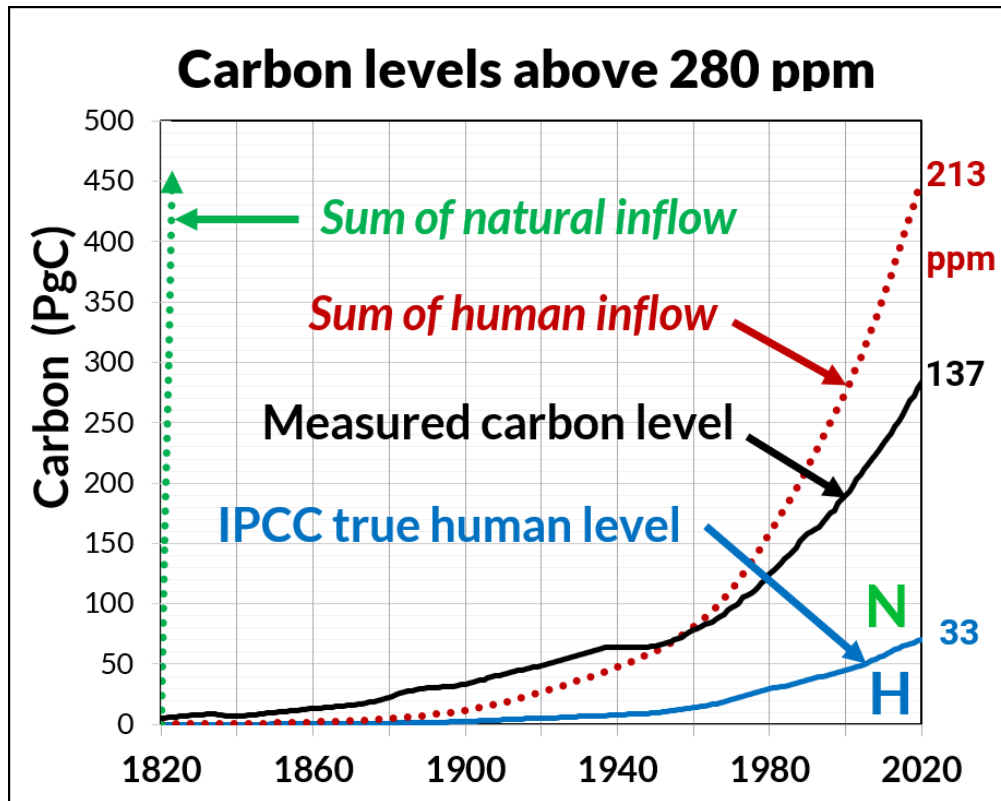


Figure 11. IPCC's data prove H1 is false.

18. Carbon-14 data prove human CO₂ is insignificant.

Figure 12 plots D14C from 1955 to 2015. D14C measures the amount of carbon-14 in a sample of carbon-12. D14C is independent proof that human CO₂ does not cause climate change.

Notice: the definition of D14C subtracts 1000 from its base data to make the natural D14C balance level equal to zero. So, mentally add 1000 to the vertical scale to measure carbon-14 content.

The upper curve in Figure 12 is the D14C level. The bomb tests increased carbon-14 after 1955. After the bomb tests stopped, D14C gradually decreased toward its balance level of zero. The blue dots show a mathematical curve fit to the D14C data after 1970. The fit uses $T_e = 16.5$ years and balance level = zero. This fit shows the D14C balance level remained at zero.

You may think of carbon-14 as grape juice in water. Imagine adding grape juice to an empty glass until it is 70% full. Now add water to the remaining 30%. The water dilutes your 70% grape juice. Similarly, human CO_2 has no carbon-14, so it dilutes D14C.

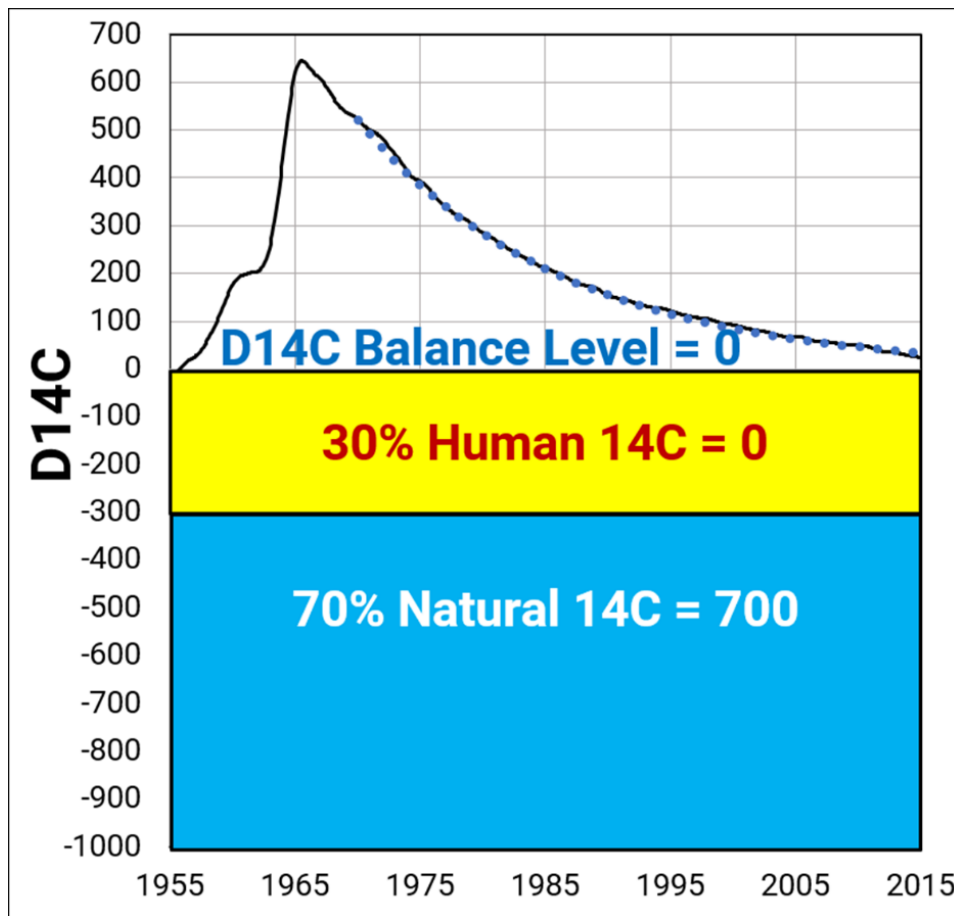


Figure 12. D14C from 1955 to 2015. Mentally add 1000 to the D14C vertical scale to measure carbon-14 content (Berry, 2023).

Figure 12 shows what would happen to the D14C balance level IF human CO_2 were 30% of atmospheric CO_2 . It would reduce the D14C balance level from zero to -300. But the D14C balance level remained near zero, proving human CO_2 is not a significant part of the CO_2 in the atmosphere, and H1 is false.

19. Plaintiffs’ radiation calculations are invalid.

Physicist Howard Hayden (2022, 2023a, 2023b) shows Plaintiffs’ and IPCC’s temperature calculations overstate the warming effect of CO₂.

In 1896, Swedish scientist and Nobel Prize winner (for studying the conductivity of electrolytes) Svante Arrhenius (1896) calculated that doubling the level of CO₂ in the atmosphere would raise the global mean surface temperature by 5-6°C.

IPCC (2021) has numerous references to Arrhenius (1896) but none — repeat, **none** — to Arrhenius (1906) that corrected his 1896 estimates to conclude doubling CO₂ “would cause a temperature change of + 1.6 degrees C.”

Modern calculations of the greenhouse effect.

The Stefan-Boltzmann (SB) law links the Earth’s surface temperature to its surface radiation *I*,

$$I \text{ (W/m}^2\text{)} = 5.67 \text{ (K/100)}^4 \tag{7}$$

where K is the absolute temperature. Table 1 shows calculations of (7) in our temperature range.

Table 1. Temperature vs Radiation for Stefan-Boltzmann Law.

Temperature			W/m2		
K	C	F	W/m2	Change / K	Change Total
287	14	57.2	384.7	0	0
288	15	59.0	390.1	5.4	5.4
289	16	60.8	395.5	5.4	10.8
290	17	62.6	401.0	5.5	16.3
291	18	64.4	406.6	5.6	21.9
292	19	66.2	412.2	5.6	27.5
293	20	68.0	417.9	5.7	33.2
294	21	69.8	423.6	5.7	38.9
295	22	71.6	429.4	5.8	44.7
296	23	73.4	435.3	5.9	50.6

Here’s the problem.

IPCC (2021) calculates that doubling CO₂ would increase the greenhouse effect by 3.7 W/m² and this will increase surface temperature 3.0°K, or twice that calculated by Arrhenius (1906). But Table 1 shows a 3.0°K temperature rise, from 287°K to 290°K, would increase radiation by 16.3 W/m², not 3.7 W/m².

Table 1 also shows a 1.0°K temperature rise, from 287°K to 288°K, would increase radiation by 5.4 W/m². This means a 3.7 W/m² radiation increase corresponds to a temperature increase of **0.67°K** (= 3.7 W/m² divided by 5.4 W/m² per °K).

A 0.67°K temperature increase is much smaller than the 3.0°K temperature increase claimed by IPCC and Plaintiffs.

So, Plaintiffs' and IPCC's global warming is overstated and contradicts physics.

Plaintiffs ignore the Stefan-Boltzmann law.

The Stefan-Boltzmann law is taught in elementary college physics — calculus and non-calculus versions — elementary non-calculus astronomy, and in thermodynamics classes in chemistry, physics, and all branches of engineering. It is the principle on which now ubiquitous infrared thermometers work. However, IPCC's very first mention of Stefan-Boltzmann in 31 years occurs in IPCC (2021) where the Stefan-Boltzmann constant is mentioned but not given.

20. Wiese proves H2 is false.

Meteorologist Chuck Wiese (2023) shows how the change in the Earth's albedo from 1984 to 2023 explains the measured global warming.

Occam's razor says the simplest explanation prevails over more complex explanations. This simple explanation by Wiese explains the measured temperature increase more simply than IPCC's invalid and complicated H1 and H2.

Albedo is the percentage of incoming solar radiation that the Earth reflects before the radiation can warm the Earth. Decreased cloud cover or aerosols decrease the Earth's albedo, which lets in more solar radiation that heats the Earth.

NASA satellite data show the Earth's albedo decreased by 1.3% from 1984 to 2023. This albedo decrease added 1.3% of the incoming 340 W/m² or 4.42 W/m² (on average) to the solar energy that heats the Earth's surface.

Table 1 (Section 19) shows a temperature increase of 0.81°C would balance the added heat inflow of 4.42 W/m². This is close to the measured increase in land temperature of 0.76°C since 1984.

21. Humlum et al. prove H1 and H2 are false.

Cause precedes effect.

Humlum et al. (2012) performed a major study of temperature and CO₂ changes since 1980. They conclude:

4. The overall global temperature change is from 1) the ocean surface to 2) the land surface to 3) the lower troposphere.

5. Changes in global atmospheric CO₂ **lag** about 11–12 months behind changes in global **sea** surface temperature; 9.5–10 months behind changes in global **air** surface temperature; and 9 months behind changes in global lower troposphere temperature.
6. Changes in ocean temperatures explain a substantial part of the observed changes in atmospheric CO₂ since January 1980.
7. CO₂ released from anthropogenic sources has little influence on the observed changes in atmospheric CO₂.
8. Since at least 1980, changes in global temperature represent a major control on changes in atmospheric CO₂.

22. Koutsoyiannis et al. prove H1 and H2 are false.

Koutsoyiannis et al. (2023) certify the conclusion of Humlum et al (2012). Koutsoyiannis et al. use a new statistical method that separates cause and effect and proves temperature changes precede CO₂ changes. Figure 13 (Koutsoyiannis' Figure 2) shows changes in the logarithm of CO₂ **follow** temperature changes with a dominant delay from 2 to 15 months, the same delays found by Humlum et al (2012).

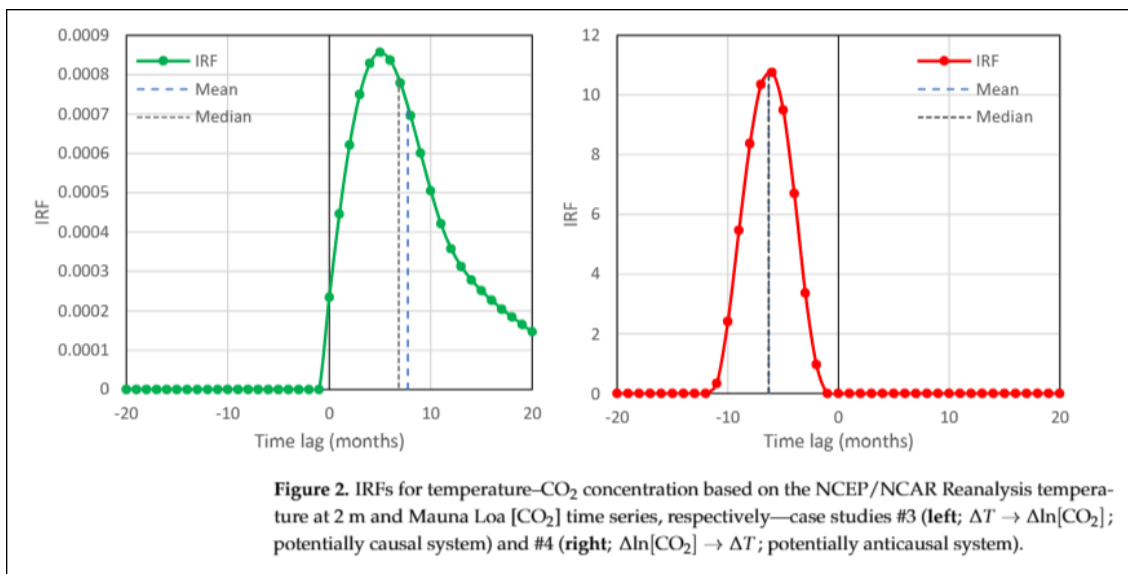


Figure 13. Temperature changes precede CO₂ changes.

Koutsoyiannis et al. show global temperature changes **lead** changes in the logarithm of CO₂ by 2 to 15 months (green), and that changes in the logarithm of CO₂ **do not lead** changes in temperature (red). This proves H2 is false, and also H1 is false because temperature does not drive human CO₂ emissions.

23. Miskolczi proves H2 is false.

Ferenc Miskolczi (2023) works at the frontier of theoretical climate physics. He looks at the big picture of how the atmosphere keeps the Earth's surface temperature.

He shows the long-time average of the observed all-sky Earth-atmosphere system is in radiative equilibrium with the Sun. This proves the Plaintiffs' claimed Earth energy imbalance (EEI) of $\sim 0.6 \text{ W/m}^2$ does not exist.

He shows global mean cloud cover fully explains changes in the observed global mean surface temperature, which shows the Plaintiffs' claimed Arrhenius CO_2 greenhouse effect is impossible.

He shows theoretical surface temperatures are independent of non-condensing GHGs, like CO_2 . This does not mean these GHG's have no instantaneous effect on temperature. Rather, this means the rest of the atmosphere system changes their overall effect on temperature.

Miskolczi shows the Earth's hydrological cycle adjusts cloud cover, precipitation, surface temperature, and water vapor to keep radiative equilibrium with the sun.

This natural adjustment negates the warming effect of non-condensing GHGs, like CO_2 and CH_4 .

His theoretical formula for surface temperatures depends only on intercepted available solar radiation and cloud-top emission.

His equations accurately reproduce the observed surface temperature of 12.91°C without any involvement of the non-condensing GHGs.

Miskolczi shows IPCC's assumption of positive water vapor feedback is unphysical and leads to an unphysical runaway greenhouse effect.

Finally, he shows the errors in IPCC's surface temperature estimates make GCMs useless for climate change predictions.

Conclusions

All Plaintiffs' damage claims assume H1 and H2 are true.

We have proved H1 and H2 are false. So, Plaintiffs' damage claims are not caused by human CO_2 , and restricting human CO_2 will not reduce their claimed damages.

The scientific method says "evidence" cannot prove a hypothesis is true, but one wrong prediction or physics contradiction proves a hypothesis is false.

Plaintiffs' 2011 climate prediction failed, so their science is false (Section 5).

Plaintiffs incorrectly use "consensus" and "climate model projections" as "evidence."

Plaintiffs claim a “consensus of scientists” and “climate models” prove human CO₂ causes their described climate changes. But “consensus” is not “evidence” and climate models assume H1 and H2 are true (Section 8).

Sections 10 through 17 prove H1 is false.

CO₂ flows through the atmosphere as water flows through a lake. Inflows set balance levels proportional to their inflows (Section 10).

The *Climate Equivalence Principle* says T_e is the same for human and natural CO₂ because their carbon atoms and CO₂ molecules are identical (Section 10).

When human inflow is 5% of the total inflow, the human balance level will be 5% of the total balance level at equilibrium (Section 11).

Human 5% inflow can increase the CO₂ balance level by only 5%, not 33% as Plaintiffs claim. The 5% human CO₂ balance level would be only 14 ppm if the natural CO₂ inflow balance level stayed at 280 ppm (Section 12).

Plaintiffs argue that human CO₂ is 33% of CO₂ in the atmosphere by claiming human CO₂ flows out of the atmosphere slower than natural CO₂. Their claim violates the *Climate Equivalence Principle* and requires a fictitious magic demon in the atmosphere. The 5% human CO₂ inflow cannot cause 33% of the total CO₂ level (Section 13).

The only way the total CO₂ level can be 420 ppm, while human CO₂ inflow is only 5%, is for natural CO₂ inflow to be 95%, which proves H1 is false (Section 14).

At equilibrium, human CO₂ emissions have added only 3 ppm to the atmosphere, proving there is no climate emergency (Section 15).

IPCC’s true human carbon cycle proves H1 is false. (Section 16).

The sum of human CO₂ before 1950 was not enough to cause the increase in atmospheric CO₂. This proves H1 is false (Section 17).

Sections 18 through 23 prove H2 is false.

The D14C balance level has not changed since 1950. This proves natural CO₂ caused the CO₂ increase, human CO₂ is insignificant, and H1 is false (Section 18).

Plaintiffs’ radiation calculations contradict the Stefan-Boltzmann Law, proving H2 is false (Hayden, Section 19).

Albedo changes explain all the warming since 1984 more simply than Plaintiffs’ H2 arguments and win by Occam’s Razor (Wiese, Section 20)

CO₂ changes follow temperature changes (Humlum, Section 21).

CO₂ changes follow temperature changes (Koutsoyiannis, Section 22).

There is no Arrhenius greenhouse effect, no Earth energy imbalance (EEI), no water vapor added by warming, and climate models are biased (Miskolczi, Section 23).

In summary

Plaintiffs have not proved their claimed injuries are caused by human CO₂.

Plaintiffs must prove all our proofs are wrong or they lose the science argument.

It is not sufficient for Plaintiffs to show papers that disagree with the proofs shown here because Plaintiffs' papers incorrectly assume H1 and H2 are true.

Plaintiffs must prove our arguments are wrong.

Plaintiffs have not done this, so Plaintiffs lose their climate arguments.

The climate has not been stable.

1. They came to America before the last ice age ended.

They migrated here near the end of the last 90,000-year long ice age. The ocean level was 200 meters (660 feet) lower than today. The lower ocean level opened a 600-mile-wide Bering land bridge (USGS, 2013). The Earth's climate changed 15,000 years ago.

They came here from East Asia before human recorded history (Wikipedia, 2016a). Plants and animals joined them in their long, slow, historic migration. They gradually moved south following their food. They may have migrated on the ice-free corridor that formed east of the Rocky Mountain front as glaciers melted. They hunted big game, mammoths, mastodons (Phys Org, 2014).

If we had their written history, it would be the greatest story on Earth.

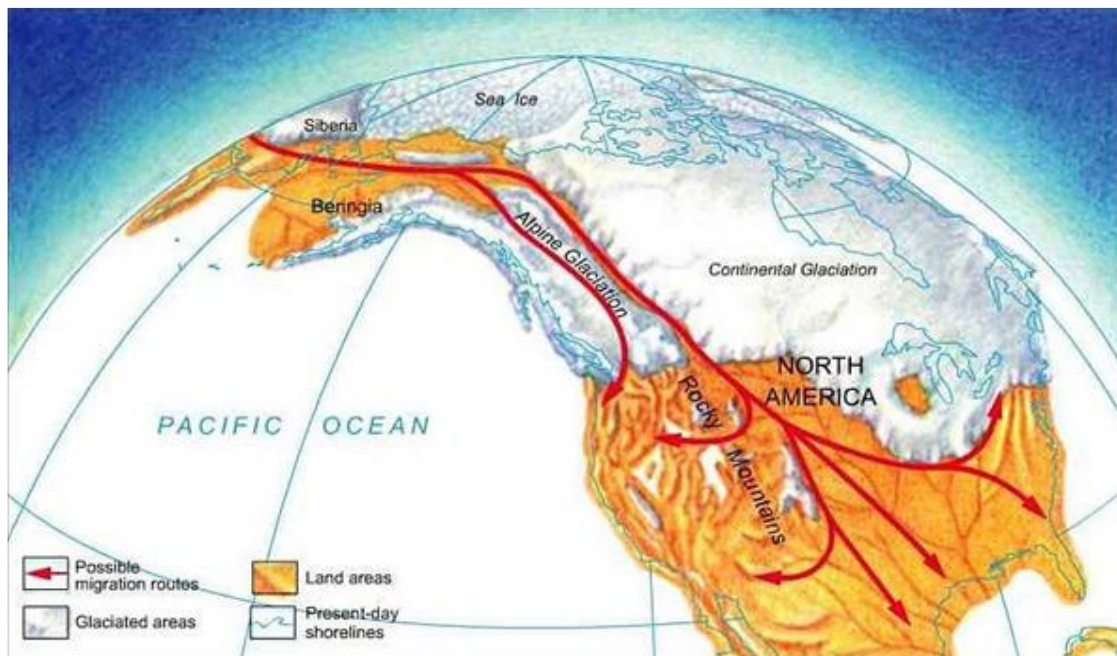


Figure 1. Routes of the Clovis Americans. (White, 2016)

They were here when the Earth warmed dramatically over a 200-year span that began about 12,400 BC. They were here when the Earth cooled again until about 10,800 BC, now called the Younger Dryas cooling.

They lived here when the Earth began to warm again about 9,700 BC. The warming caused ocean levels to rise and close the Bering land bridge about 10,000 BC.

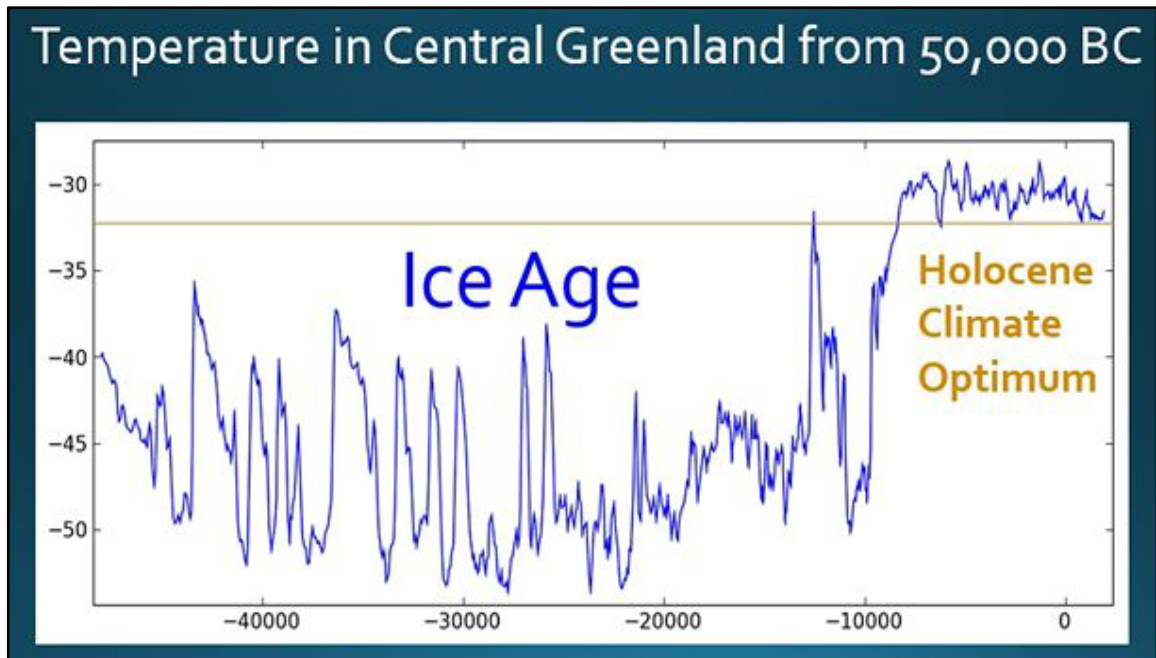


Figure 2. Reconstructed temperature from Greenland ice core shows significant warming from the ice age to our Holocene. Vertical temperature scale is in Degrees C. Horizontal scale is in Years before 2000.

2. The oldest known burial in North America

In 1968, construction workers in central Montana found the grave of a Clovis baby boy. Named the Anzick Child, he was born 12,600 years ago, and died when he was between 12 and 18 months old. His is the oldest known burial in North America.

The Native Americans who buried their Anzick Child covered his body with red-ocher pigment. They put in his grave a cache of 125 tools and heirlooms made of rare elk antler. Little did they know their baby's grave would become a time machine (CBS, 2014).

Eske Willerslev is an evolutionary geneticist at the University of Copenhagen. In 2013, he analyzed the baby's DNA (Watson, 2014). The DNA proved the baby's people came from the Eurasians in Siberia. All today's North and South American Indians are related to the Anzick Child's people (CBS News, 2014).

3. Glacial Lake Missoula

The Clovis Culture Native Americans lived in our Pacific Northwest when Glacial Lake Missoula stretched 200 miles across northwest Montana between 15,000 and 13,000 years ago.

They were here when Glacial Lake Missoula's ice dam gave way and then reformed again, 25 to 40 times (NOVA, 2005). Each time, it dumped its five hundred cubic miles of water across the Pacific Northwest in only a few days.

These were the greatest natural floods known to have occurred on the Earth. These unimaginable floods changed the landscape across 16,000 square miles of the Pacific Northwest.

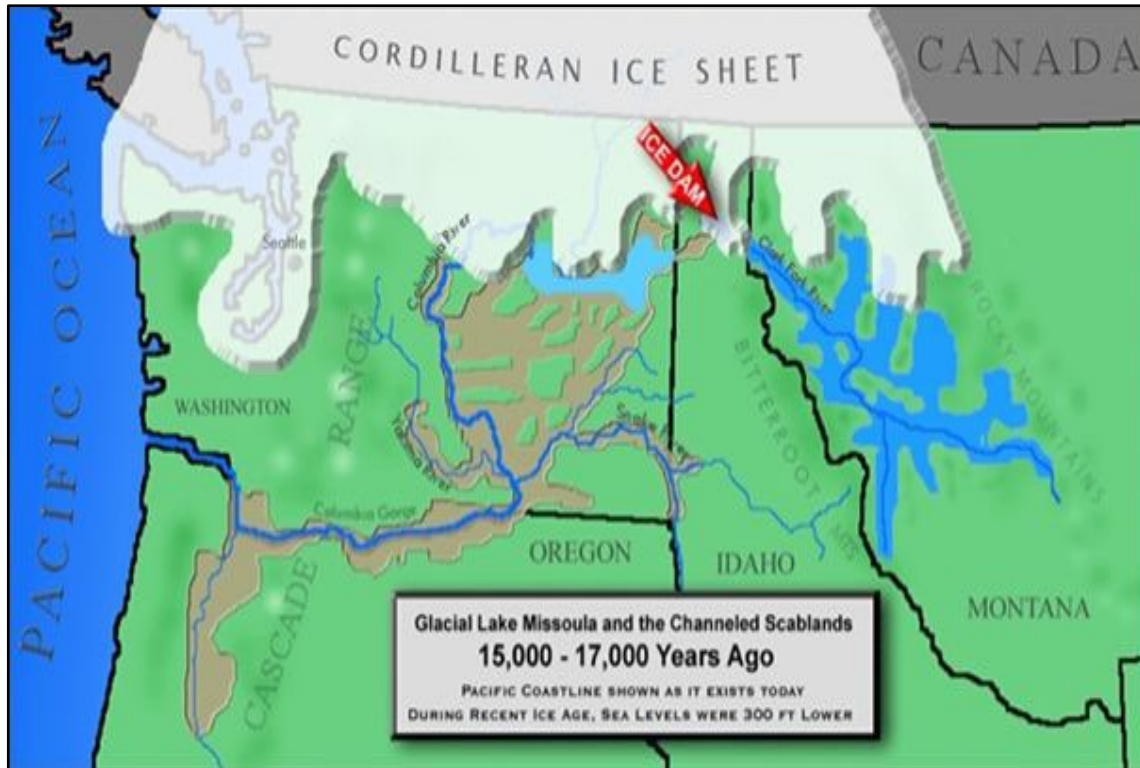


Figure 3. Glacial Lake Missoula in what is now northwest Montana.

They were here when the natural warming Holocene slowly melted the great glaciers in what is now Montana's Glacier National Park, Flathead Valley, Flathead Lake, and Flathead Indian Reservation.

Our present Holocene epoch has had several warm and cool periods. Native Americans were here for all of them.

They lived through the Minoan warm period 3400 years ago. The Roman warm period began about 200 BC. The Medieval Warm Period lasted from about 950 to 1220 AD. All these past warm periods were much warmer than our Earth's average temperature today.

They lived here through the Little Ice Age from about 1300 to 1800. They lived here as the climate warmed since 1850 when the glaciers began to shrink.

They formed their lives, legends, and religions on the land we call America.

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