

Center for the Study of Carbon Dioxide and Global Change

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The Greening of Planet Earth Confirmed: Repealing the 2009 EPA CO₂ Endangerment Finding

A proposal designed to generate public support and political will in repealing the 2009 U.S. Environmental Protection Agency's CO₂ Endangerment Finding

By:

Center for the Study of Carbon Dioxide and Global Change,
A 501 (c)3 U.S. nonprofit organization

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The Greening of Planet Earth Confirmed: Repealing the 2009 EPA CO₂ Endangerment Finding

Background

In recent years, governments and elected officials at all levels have proposed or enacted regulations and laws designed to restrict the use of fossil fuels via tax, caps or fiat limits on CO₂ emissions. Such efforts are based upon the false notion that CO₂ emissions are polluting the atmosphere and causing dangerous global warming. However, nothing could be further from the truth. CO₂ emissions and fossil fuel use have actually *enhanced* life and *improved* the standard of living, and will continue to do so as more fossil fuels are used.

Nevertheless, forces opposing fossil fuel use have grown in both number and political power. Their efforts enabled President Obama's EPA to declare in late 2009 that CO₂ emissions resulting from the combustion of carbon-based fossil fuels are a "current threat" to human health and welfare. This so-called *Endangerment Finding*, however, was not the result of rigorous scientific study and debate; EPA relied too heavily on flawed computer model *projections* of possible harms that might occur in the distant future, and in the process they chose to ignore real-world *observations* that invalidated the conclusions reached from computer models projections. The EPA also failed to analyze and account for critical (and very significant) direct and indirect *benefits* to both humanity and the natural world that result from CO₂ emissions and fossil energy use in reaching their Endangerment Finding, benefits of which, if included, would have likely *reversed* their decision.

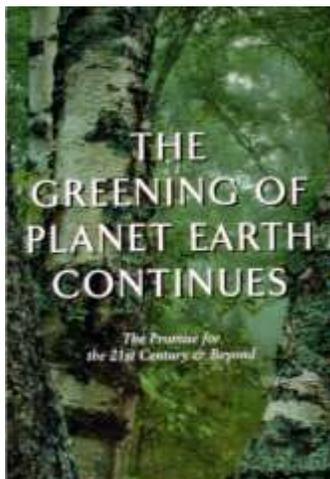
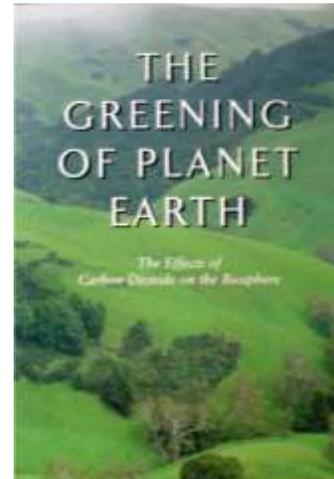
It is undeniable that fossil energy initiated (and continues to sustain) the Industrial Revolution and the many human and environmental benefits that have emerged therefrom. Without adequate supplies of low-cost centralized energy, few, if any, of the major technological and innovative advancements of the past two centuries that have enhanced and prolonged human life could have occurred. Additionally, without the increased CO₂ emissions from fossil fuel use over the past two centuries, Earth's terrestrial biosphere would be nowhere near as vigorous or productive as it is today. Rather, it would be devoid of the growth-enhancing, water-saving and stress-alleviating benefits it has reaped in managed and unmanaged ecosystems from rising levels of atmospheric CO₂ since the Industrial Revolution began.

When considering and accounting for such *positive* improvements, it becomes scientifically and morally indefensible to demonize fossil fuel use and declare CO₂ emissions a current (or long-term) threat to human health and welfare. Consequently, *more*, not less, fossil fuel use is needed to enhance human progress and sustain the natural world.

We propose to bring these important facts to light so as to build public support and political will as part of a master plan to reverse the 2009 Endangerment Finding and other Federal,

State or local established or emerging policies aimed at eliminating CO₂ emissions and fossil fuel use. To accomplish this objective we are seeking funding to produce a series of videos to promote the benefits of CO₂ and fossil fuel use. The videos will lay the groundwork and set forth the legal argument for a court filing we will thereafter submit, demanding the removal of the CO₂ Endangerment Finding on the grounds that the EPA incorrectly concluded CO₂ emissions pose a current threat to human health and welfare of society.

Our new video series represents an addition and update to two prior works, *The Greening of Planet Earth* and *The Greening of Planet Earth Continues*, which were inspired and based upon two books (*Carbon Dioxide: Friend or Foe?* and *Carbon Dioxide: Earth in Transition*) authored by our organization's President in the 1980s. These seminal works examined the role that CO₂ plays as one of nature's basic building blocks of life in the process of photosynthesis and the evolution of the Earth's biosphere. In the first video (the video can be [viewed online here](#)), evidence was presented to show how CO₂ levels in the atmosphere, which at the time of the film were about 30 percent higher than in the pre-industrial era, had greatly enhanced the growth of trees and other plants. Results from controlled studies were further cited to predict how a doubling of CO₂ in the atmosphere, which is expected to occur before the end of the present century, would increase crop yields, improve water-use efficiency of most of the earth's vegetation and greatly enhance the productivity of forests.



By the time of the second video, the controversy over the effects of increasing levels of carbon dioxide on nature—and the fossil fuel combustion that contributes to it—had continued to intensify. Despite solid evidence to the contrary, many were speculating that increasing CO₂ levels would result in apocalyptic global warming and eventual environmental disaster. In *The Greening of Planet Earth Continues* ([view the video online here](#)), expert scientists asserted otherwise; CO₂ is not a pollutant, but a nutrient to life on earth that provides a multitude of benefits to humanity and the natural world. The video also explored other key facts about climate history and the problems with computer simulations used to predict the impact of increasing CO₂ levels on future climate and it presented a vision for the future that was in stark contrast to the alarmist forecasts of climate catastrophe that permeated the day.

Nearly 30 years have passed since the first greening video was produced, allowing more than enough time to properly evaluate the accuracy of the two opposing viewpoints

surrounding the potential human and environmental impacts of rising CO₂ and fossil fuel use. In our new *Greening of Planet Earth Confirmed* video series we will offer just such an assessment. Based upon original research and evaluations of literally thousands of peer-reviewed scientific studies conducted and analyzed on our [CO₂ Science website](#), we will present evidence demonstrating that our world is a greener world and a better world, confirming the positive hypothesis set forth in the two Greening of Planet Earth videos.

Specific examples of such greening are shown in Figures 1 and 2 below. Figure 1 portrays the incredible increase in global net primary production that has occurred over the past half-century (green line), the vast majority of which increase is due to rising levels of atmospheric CO₂ (black line). Figure 2 presents a spatial view of such trends in terms of gross primary productivity over the shorter period 1982-2015, making it abundantly clear that nature has experienced widespread benefits from this most important atmospheric trace gas. And what makes these observations even more incredible is the fact that the positive, growth-enhancing, trends have occurred despite the many real (and some imagined) assaults on Earth's vegetation that have occurred over the past several decades, including wildfires, disease, pest outbreaks, deforestation, and supposedly unprecedented climatic changes in temperature and precipitation. Such data leave no doubt that the alarmist vision of climate apocalypse is not occurring, nor likely to occur in the future.

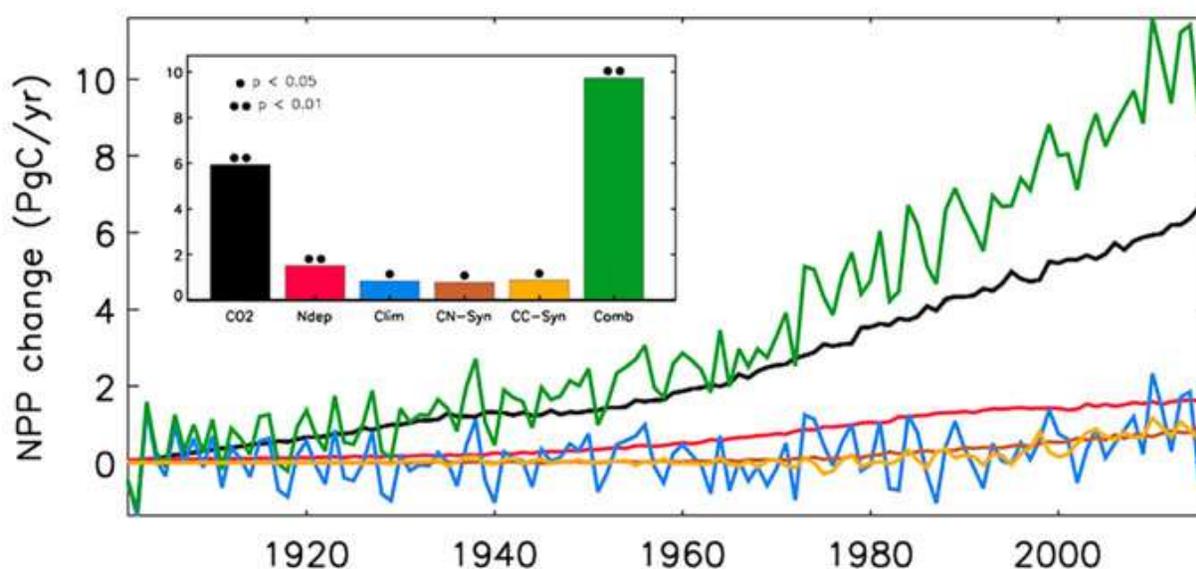


Figure 1. Annual mean change in global net primary production (NPP) over the period 1901-2016 due to CO₂ fertilization (CO₂), nitrogen deposition (Ndep), climate change (Clim), carbon-nitrogen synergy (CN-Syn), carbon-climate synergy (CC-Syn), and the combined effects (Comb) of each of these parameters. Inset shows the change in NPP from 1901-1910 to 2007-2016. Statistically significant (• $p < 0.05$, •• $p < 0.01$; Mann-Whitney U test)

changes are highlighted. Source: O'Sullivan et al. (2019) *Global Biogeochemical Cycles* **33**: <https://doi.org/10.1029/2018GB005922>.

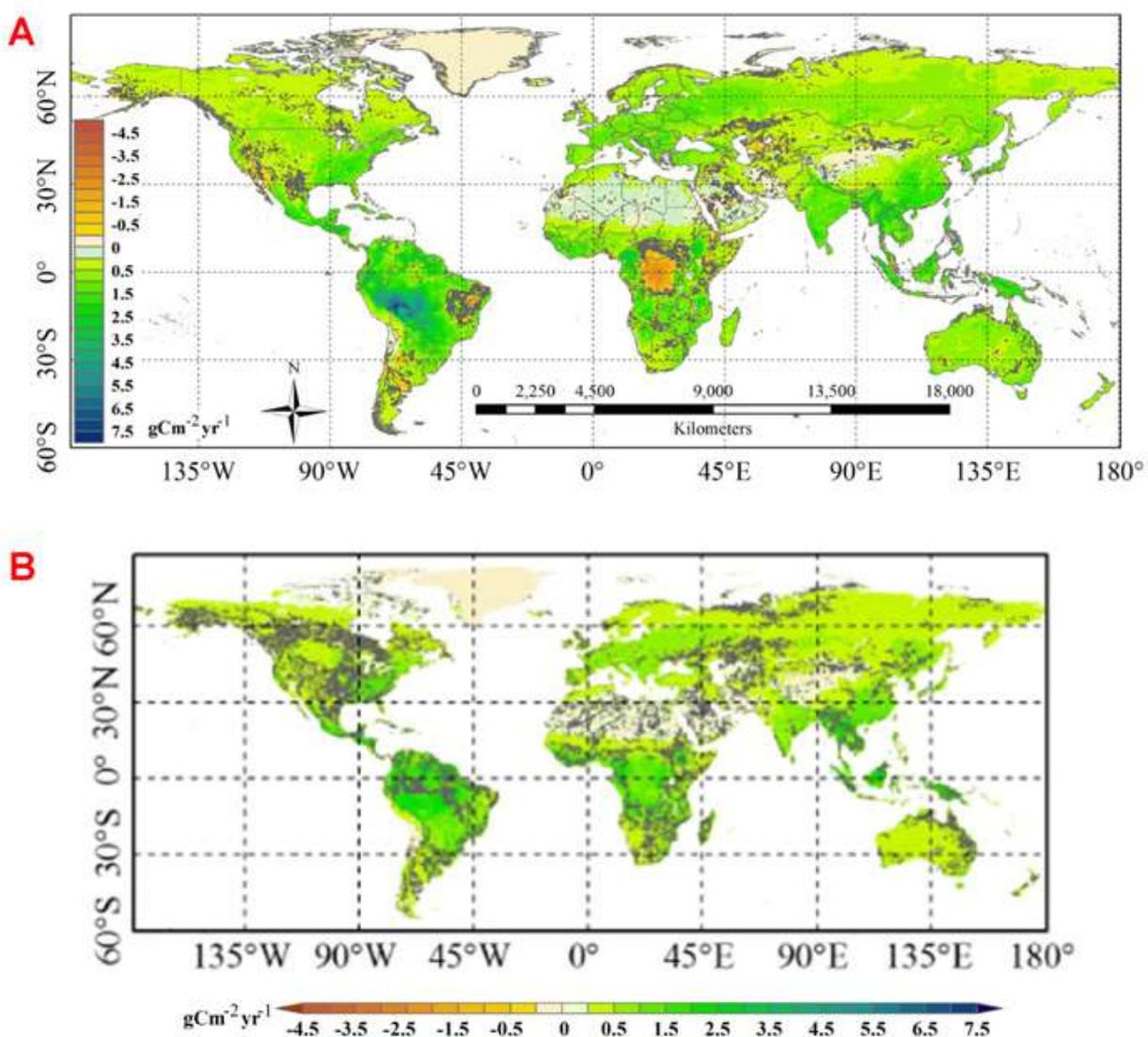


Figure 2. Panel A: the spatial distribution of linear trends in global gross primary productivity (GPP) for the period 1982-2015. Panel B: The spatial distribution of the trends in GPP over this period that are attributed to increases in atmospheric CO_2 concentration. Pixels that are not satisfied at p value < 0.1 are drawn in gray. Source: Sun et al. (2018) *Ecological Informatics* **46**: 156-165.

Other key findings we intend to explore and highlight in our new *Greening of Planet Earth Confirmed* video series include:

- There is absolutely no observational evidence that provides any compelling support for the contention that there is something unusual, unnatural or unprecedented about Earth's current warmth.
- There is no real-world data confirming that floods, droughts, wildfires, hurricanes or other extreme weather events are becoming either more frequent or more severe as a result of global warming.
- There is no indication that the total mass of Earth's polar ice sheets is on the verge of declining any faster than the proverbial *snail's pace* at which it has done so in the recent past.
- There is no evidence that sea levels are about to rise precipitously and inundate the world's coastal lowlands.
- Likewise, evidence is lacking in support of claims that searing heat waves are killing the poor and elderly and drying up precious farmland, that devastating diseases are spreading to regions previously considered immune to them, that migrating plants and animals will be unable to move to cooler locations fast enough to avoid extinction, that coral reefs will dissolve into oblivion as the oceans warm and turn acidic, or that anarchy will spread within and among nations as fighting erupts over dwindling water and food supplies.

Additionally, our evaluation of existing data will confirm that:

- It is undeniable that fossil energy initiated (and continues to sustain) the Industrial Revolution and the many human and environmental benefits that have emerged therefrom.
- Without adequate supplies of low-cost centralized energy, few, if any, of the major technological and innovative advancements of the past two centuries that have spurred economic growth, reduced poverty, increased literacy and enhanced and prolonged human life could have occurred.
- Without the increased CO₂ emissions from fossil fuel use over the past two centuries, Earth's terrestrial biosphere would be nowhere near as vigorous or productive as it is today. Rather, it would be devoid of the growth-enhancing, water-saving and stress-alleviating benefits it has reaped in managed and unmanaged ecosystems from rising levels of atmospheric CO₂ since the Industrial Revolution began.

When considering and accounting for these and other *positive* improvements to humanity and the natural world, in conjunction with the *absence of evidence* of an impending climate catastrophe, it becomes scientifically and morally indefensible to demonize fossil fuel use and declare CO₂ emissions a current (or long-term) threat to human health and welfare as the EPA has incorrectly done in their Endangerment Finding.

The forces opposing CO₂ emissions and fossil fuel use continue to grow in both number and political power. Our *Greening of Planet Earth Confirmed* video series provides the antidote to their nonsensical policy proposals. It provides a clear and powerful evaluation of the two opposing hypotheses predicting the impacts of rising CO₂ and fossil fuel use on humanity and the natural world, which evaluation is sorely needed and warranted. The reality is that our world needs more, not less, CO₂ emissions and fossil fuel use to enhance the future human environment.

The forces opposing CO₂ emissions and fossil fuel use continue to grow in both number and political power. A clear and powerful presentation evaluating the two opposing hypotheses regarding the impacts of rising CO₂ and fossil fuel use on humanity and the natural world is sorely needed and warranted. And, it is *necessary* in order to create an effective legal framework by which we will challenge the EPA in court to repeal the Endangerment Finding. This legal filing will occur near the end of our proposal timeline and coordinate with the posting of our final video explaining why the EPA must abandon its CO₂ Endangerment Finding.

The reality is that rising levels of atmospheric CO₂ pose no current or future threat to humanity or the natural world. Observational data collected since the 2009 Endangerment Finding confirm this truth. The world needs *more*, not less, CO₂ emissions and fossil fuel use to enhance the future human environment. Please join us in these efforts to bring these critical facts to light so as to provide the impetus for building public support and political will to reverse the 2009 Endangerment Finding and other State or municipal level policies aimed at eliminating fossil fuel use. We need your help and your financial support.

Logistics, Budget and Timeline

We intend to produce—at a minimum—the 24 video segments outlined in Appendix A and to prepare the legal filing seeking repeal of the 2009 CO₂ Endangerment Finding. The majority of our budget is assigned to the writing, editing, filming and post-processing of the video segments. Additional funds are targeted for marketing the video segments to key lawmakers, staff, media and industry professionals, as well as for work in preparing and following up with the legal filing we will submit requesting repeal of the EPA's CO₂ Endangerment Finding.

We have already laid the groundwork for this proposal, releasing an introductory video on our website explaining our objectives. The video and transcript [can be viewed and read here](#). Or, click on the image below to watch the video now.



We believe the timing is right to produce this video series and to challenge policies that attack fossil fuel use and we believe we are the only organization with the key personnel in place to effectively accomplish this agenda (see the attached short biographies of Dr. Craig Idso and Frederick Palmer, J.D. attached as Appendix B). We clearly have the scientific knowledge and experience to make this proposal a success. For further information, please contact us at the email addresses or telephone numbers listed on the cover page of this proposal.

With kind regards,

Handwritten signature of Dr. Craig D. Idso in black ink.

Dr. Craig D. Idso
Chairman

Handwritten signature of Fred Palmer, J.D. in black ink.

Fred Palmer, J.D.
Senior Fellow

Appendix A: Future Video Topics

Over a 7 to 9 month period, we will release multiple 3-7 minute video segments at a rate of about one per week. The segments will present clear and convincing evidence that rising atmospheric CO₂ emissions are neither a current nor future threat to the biosphere. In contrast, CO₂ emissions and fossil fuel use are providing great benefits to humanity and the natural world. We have organized 24 such video segments we envision producing into the four categories below, with brief descriptions of the content to be covered in each of them.

Introduction. This initial video introduces the series, explaining how we will bring to light the faulty science upon which the U.S. Environmental Protection Agency's 2009 CO₂ Endangerment Finding was enacted. It explains how the EPA failed to analyze and account for critical (and very significant) direct and indirect benefits to both humanity and the natural world that result from CO₂ emissions and fossil energy use, benefits of which, if included, would likely have reversed their decision. The segment is already completed and posted live [here](#).

Benefits of CO₂ Emissions and Fossil Fuel Use to Nature

Plant Productivity and Yield Increases. This video will discuss the basic properties of CO₂ and how plants need CO₂ to grow. It uncovers the benefits and necessity of increasing atmospheric CO₂ to raise crop yields and ensure future food security in a world of increasing human population. This video segment was uploaded on November 6 and it [posted here](#).

Water Use Efficiency. Another one of the key benefits plants experience from rising levels of atmospheric CO₂ is that they need less water to produce the same or an even greater amount of biomass. Thus, as CO₂ concentrations rise, farmers will need *less* water per acre to produce the same or higher yields than they are presently. And in unmanaged ecosystems, plants will be able to better withstand the ravages of drought and also grow in areas where it was previously too dry for them to exist.

Amelioration of Environmental Stresses. Higher levels of atmospheric CO₂ have been shown to mitigate or fully ameliorate the negative impacts of multiple resource limitation and environmental stresses, including high air temperature, low light levels, soil infertility, salinity stress, etc.

Global Greening of the Planet Confirmed. This video segment will demonstrate that the predictions offered in our first Greening of Planet Earth video some three decades ago of a vigorous greening of the planet's vegetation have proven true. Multiple satellite observations have confirmed this greening—or increasing robustness—of the world's vegetation despite all the negative real (and imagined) influences fighting against it.

Human Health-Related Benefits. This segment will highlight the findings of multiple research studies showing that elevated levels of CO₂ often improve the amounts of various health-promoting substances found in the plants that we commonly eat.

Reduced Propensity for Plant and Animal Extinctions. Because of the many benefits of atmospheric CO₂ enrichment, plants and animals will be less likely to undergo extinction. Rather, there will be improvements in biodiversity.

Benefits of CO₂ Emissions and Fossil Fuel Use to Humanity

CO₂ Emissions and Economic Growth. This video segment will demonstrate the proven link between CO₂ emissions and a country's economic growth. Countries with lower per capita CO₂ emissions have lower values of per capita GDP, whereas countries with higher per capita CO₂ emissions have higher per capita GDP. Such data indicate that fossil energy use is fundamentally linked to economic growth. As countries have embraced and increased their production of fossil energy, their citizens have been amply rewarded with increased economic development and growth.

CO₂ Emissions and Poverty Reductions. Higher CO₂ emissions are associated with lower levels of extreme poverty. Nations enjoying the lowest percentages of their citizens living in extreme poverty are those that use the highest amounts of fossil energy. Consequently, abundant access to energy is an essential component to improving a nation's living standards and alleviating its poverty.

CO₂ Emissions and Increased Literacy. As nations have utilized fossil energy to industrialize, their populations have spent less time performing labors required of sustenance living and more time in the classroom becoming literate and gaining an education. Two centuries of annual fossil fuel consumption and global literacy data reveal illiteracy declines as a function of fossil fuel consumption.

CO₂ Emissions and Improved Life Expectancy. In the past 100 years, global life expectancy has *doubled* in value, reaching 72 years today. The real significance of this monumental accomplishment in human achievement, however, is *not* in the doubling of life expectancy in and of itself, but in *the number of persons who are experiencing it*. Thanks in large measure to benefits from enhanced fossil energy use, our planet now supports an increase in total human life years that is *17-fold larger* than it was just two centuries ago!

The Absence of a Climate Catastrophe

Placing Modern Temperatures within the Proper Historical Perspective. Is CO₂ the all-important driver of temperature that climate alarmists make it out to be? This video segment places Earth's present level of warmth and rate of warming within the proper historical perspective, examining historical records of both temperature and CO₂. Those records confirm there is absolutely nothing unusual, unnatural or unprecedented about modern temperatures. Rising levels of atmospheric CO₂ are having little, if any, impact on global temperature. Atmospheric CO₂ cannot be the control knob of temperature that climate alarmists make it out to be.

Mild, Not Dangerous, Warming is Occurring. Climate models have been predicting warming now for four decades now. That is more than enough time to validate their predictions. So are they validated? No! Predictions of dangerous warming are unsupported by observational data. Climate models over-predict warming (cite the Christy and Spencer tropical troposphere hot spot example), thus they over predict every other concern that requires that warming to occur.

Heat-related Human Mortality. Climate alarmists contend that CO₂-induced global warming will harm human health by increasing the number of heat-related maladies and deaths from hot temperature events. However, a thorough examination of the peer-reviewed scientific literature reveals that more lives are *saved* by global warming via the amelioration of *cold-related* deaths than those lost under excessive heat at the upper end of the temperature spectrum to which humans are adapted.

Extreme Weather Events: Floods. Are extreme weather events increasing because of rising atmospheric CO₂? According to observational data, the answer is a resounding no! This video segment examines observational data confirming that floods are *not* becoming either more frequent or more severe as a result of global warming.

Extreme Weather Events: Droughts. This video segment examines observational data confirming that droughts are *not* becoming either more frequent or more severe as a result of global warming.

Extreme Weather Events: Wildfires. This video segment examines observational data confirming that wildfires are *not* becoming either more frequent or more severe as a result of global warming.

Extreme Weather Events: Hurricanes and storms. This video segment examines observational data confirming that hurricanes and storms are *not* becoming either more frequent or more severe as a result of global warming.

The Cryosphere. There is no indication that the total mass of Earth's polar ice sheets is on the verge of declining any faster than the proverbial *snail's pace* at which it has done so in the recent past.

Sea Level Rise. There is no compelling reason to believe that sea levels are about to rise precipitously and inundate the world's coastal lowlands. Long-term data reveal the rate of sea level rise is not increasing as climate models predict.

Ocean Acidification. Predictions of coral reefs dissolving into oblivion as the oceans warm and turn acidic are based upon flawed laboratory and model-based experiments that neglect to account for the inherent ability of organisms to adapt and evolve, which when included, reveal this concern to be a non-problem.

CO₂ Policy

The Proven Monetary Benefits of CO₂ Far Outweigh any Claims of Costs. A properly conducted cost-benefit analysis reveals that the net benefits of CO₂ emissions and fossil fuel use outweigh the small and highly uncertain costs of man-made climate change and the very high cost of regulations aimed at reducing greenhouse gas emissions relative to the benefits they produce by a factor of ten to 100.

The Policy Fraud. Although governments and elected officials may claim to be unbiased and to have based their assessment on the best available science, such is not the case. In many instances conclusions have been seriously exaggerated, relevant facts have been distorted, and key scientific studies have been omitted or ignored, particularly so with respect to performing a proper evaluation of the costs and benefits of fossil fuel use. Literally *thousands* of peer-reviewed scientific journal articles do **not** support a catastrophic – or even problematic – view of global warming. Yet, climate *alarmism* has become the *modus operandi* of multiple governments and elected officials who are purposely blind to views and supporting data that ran counter to their narrative. Policy leaders must wise up to these facts and save themselves from pursuing and implementing legislation that will do far more harm to their constituents than good.

It is Time to Remove the CO₂ Endangerment Finding. Without adequate supplies of low-cost centralized energy, few, if any, of the major technological and innovative advancements of the past two centuries that have enhanced and prolonged human life could have occurred. Additionally, without the increased CO₂ emissions from fossil fuel use over the past two centuries, Earth's terrestrial biosphere would be nowhere near as vigorous or productive as it is today. Rather, it would be devoid of the growth-enhancing,

water-saving and stress-alleviating benefits it has reaped in managed and unmanaged ecosystems from rising levels of atmospheric CO₂ since the Industrial Revolution began. When considering and accounting for such positive improvements, plus the fact that *none* of the apocalyptic predictions of climate catastrophe are coming true, it becomes scientifically and morally indefensible to demonize fossil energy and claim CO₂ emissions are a current threat to human health and welfare. *More*, not less, fossil energy is needed to enhance the future human environment, and that is the critical message that must be shared from the rooftops to scientists, activists, policy makers, educators and the general public. Thus, the EPA's CO₂ Endangerment Finding *must be repealed*.

Highlighting US Presidential Candidate CO₂ Policy Positions. This segment will compare and contrast the policy difference between the two major candidates for President of the United States in the 2020 election.

Appendix B: Key Institute Personnel

The following key personnel of the Center for the Study of Carbon Dioxide and Global Change have been internationally recognized for decades. Beginning in the 1980s, Dr. Idso and Mr. Palmer, respectively, performed foundational research and communicated key concepts regarding the effects (and non-effects) of atmospheric CO₂ on the biosphere. Their work has been widely quoted and adopted by independent thought leaders, influential think-tanks, distinguished scholars and academicians, the general media, imminently persuasive advocates, and generations of elected officials and appointed policy-makers. They are among the very first and most vocal defenders of CO₂ emissions and fossil fuel use, having acknowledged and promoted their numerous benefits to humanity and nature for decades.

CRAIG D. IDSO is the Chairman of the Center for the Study of Carbon Dioxide and Global Change, which organization he founded in 1998.

Throughout his career, Dr. Idso has discovered and disseminated scientific information pertaining to the effects of atmospheric carbon dioxide enrichment on climate and the biosphere. For over two decades he has been the lead editor and producer of [CO₂ Science](#), an online resource that publishes and maintains a massive collection of editorials and reviews of peer-reviewed scientific journal articles relating to global climate change.

Dr. Idso is a world-renowned scientist whose research has appeared many times in peer-reviewed journals, including *Geophysical Research Letters*, *Environmental and Experimental Botany*, *Forest Ecology and Management*, *Journal of Climate*, *Physical*

Geography, Atmospheric Environment, Technology, The Quarterly Review of Biology, Energy & Environment, and the Journal of the Arizona-Nevada Academy of Science.

Dr. Idso is the author or coauthor of several books, including [The Many Benefits of Atmospheric CO₂ Enrichment](#) (Vales Lake Publishing, LLC, 2011), *CO₂, Global Warming and Species Extinctions* ([Vales Lake Publishing, LLC](#), 2009), *CO₂, Global Warming and Coral Reefs* ([Vales Lake Publishing, LLC](#), 2009); [Enhanced or Impaired? Human Health in a CO₂-Enriched Warmer World](#) (Center for the Study of Carbon Dioxide and Global Change, 2003); and [The Specter of Species Extinction: Will Global Warming Decimate Earth's Biosphere?](#) (George C. Marshall Institute, 2003). He contributed chapters to McKittrick, R. (Ed.), *Critical Topics in Global Warming* (Fraser Institute, 2009) and *Encyclopedia of Soil Science* (Marcel Dekker, 2002). Dr. Idso has also produced several [short video works](#) and three [feature-length documentaries](#), *Carbon Dioxide and the Climate Crisis: Reality or Illusion?* (2008), *Carbon Dioxide and the Climate Crisis: Avoiding Plant and Animal Extinctions* (2008), and *Carbon Dioxide and the Climate Crisis: Doing the Right Thing* (2008).

In 2009, Dr. Idso became the lead author and editor for the [Nongovernmental International Panel on Climate Change \(NIPCC\)](#), overseeing a team of internationally renowned scientists in the production of several major reports on climate change. Those reports include *Climate Change Reconsidered: The 2009 Report of the Nongovernmental International Panel on Climate Change (NIPCC)*, *Climate Change Reconsidered: 2011 Interim Report*, *Climate Change Reconsidered II: Physical Science*, and *Climate Change Reconsidered II: Biological Impacts*. His most recent work with NIPCC is encapsulated in its 2019 report, *Climate Change Reconsidered II: Fossil Fuels*, where he contributed as a lead or contributing author on several chapters.

Dr. Idso received a B.S. in Geography from Arizona State University, an M.S. in Agronomy from the University of Nebraska - Lincoln, and a Ph.D. in Geography from Arizona State University, where he also studied as one of a small group of University Graduate Scholars. Prior work positions have included Director of Environmental Science at Peabody Energy in St. Louis, Missouri, faculty researcher in the Office of Climatology at Arizona State University, and lecturer in Meteorology at Arizona State University.

Dr. Idso is a member of the American Association for the Advancement of Science, American Geophysical Union, American Meteorological Society, Arizona-Nevada Academy of Sciences, Association of American Geographers, Ecological Society of America, Geological Society of America, and The Honor Society of Phi Kappa Phi. Dr. Idso also serves as a policy advisor for the CO₂ Coalition and the Heartland Institute. Previously, he served as an adjunct scholar for the Cato Institute and a policy advisor for the Committee For A Constructive Tomorrow.

FREDERICK D. PALMER is a Senior Fellow at the *Center for the Study of Carbon Dioxide and Global Change*. Fred brings years of industry experience working on issues related to the human environment. Previously, he served from 2001 through June 2015 as Peabody Energy's senior vice president of Government Relations, which included service on the Executive Leadership Team. Most recently he served as a special advisor to the office of Peabody's executive chairman.

Prior to joining Peabody Energy, Palmer served for five years as General Counsel and 15 years as chief executive officer of Western Fuels Association, Inc. While at Western Fuels, Palmer served on the Board of Directors of the National Mining Association and in that capacity served as chair of the NMA Legal Committee with a focus on coal and climate policies during the Clinton/Gore years in the 1990s. In his capacity as CEO of Western Fuels, Palmer led the effort to create the Greening Earth Society and the production of two videos, the Greening of Planet Earth and the Greening of Planet Earth continues. In his capacity as Chairman the Greening Earth Society, Palmer appeared on national television numerous times to defend coal based electric generation and fossil fuels, always in resistance to the agenda of Vice President Al Gore and his demonizing of CO₂, which continues to this day.

Palmer began his career in 1969 in Washington, D.C., on the staff of Arizona Congressman Morris K. Udall, where he served for two years. He was a partner in Duncan, Brown, Weinberg & Palmer, a Washington, D.C.-based law firm, for eight years where he specialized in utility, environmental, and resource law.

He was the 2004 recipient of the Erskine Ramsay Medal Award from the Society for Mining, Metallurgy and Exploration. He is a member of the National Coal Council where he is chairman of the New Markets For Coal Subcommittee, Coal Policy Committee. During his service to Peabody Energy, he was Peabody's representative on the Board of Directors of the World Coal Association and served as its chairman from November 2010 to November 2012. He also represented Peabody on the Board of the FutureGen Alliance from its formation until June 2015. Additionally, he is a member of the California and D.C. Bar Associations.

Palmer attended the University of Arizona, where he earned a Bachelor of Arts degree in 1966 and Juris Doctorate with honors in 1969. He was inducted into the Order of the Coif honor society there in 1969 and served as Symposium Editor of the *Arizona Law Review*.

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