

January 28, 2011

To the Members of the U.S. House of Representatives and the U.S. Senate:

The Importance of Science in Addressing Climate Change

As you begin your deliberations in the new 112th Congress, we urge you to take a fresh look at climate change. Climate change is not just an environmental threat but, as we describe below, also poses challenges to the U.S. economy, national security and public health.

Some view climate change as a futuristic abstraction. Others are unsure about the science, or uncertain about the policy responses. We want to assure you that the science is strong and that there is nothing abstract about the risks facing our Nation. Our coastal areas are now facing increasing dangers from rising sea levels and storm surges; the southwest and southeast are increasingly vulnerable to drought; other regions will need to prepare for massive flooding from the extreme storms of the sort being experienced with increasing frequency. These and other consequences of climate change all require that we plan and prepare. Our military recognizes that the consequences of climate change have direct security implications for the country that will only become more acute with time, and it has begun the sort of planning required across the board.

The health of Americans is also at risk. The U.S. Climate Impacts Report, commissioned by the George W. Bush administration, states: "Climate change poses unique challenges to human health. Unlike health threats caused by a particular toxin or disease pathogen, there are many ways that climate change can lead to potentially harmful health effects. There are direct health impacts from heat waves and severe storms, ailments caused or exacerbated by air pollution and airborne allergens, and many climate-sensitive infectious diseases."

As with the fiscal deficit, the changing climate is the kind of daunting problem that we, as a nation, would like to wish away. However, as with our growing debt, the longer we wait to address climate change, the worse it gets. Heat-trapping carbon dioxide is building up in the atmosphere because burning coal, oil, and natural gas produces far more carbon dioxide than is absorbed by oceans and forests. No scientist disagrees with that. Our carbon debt increases each year, just as our national debt increases each year that spending exceeds revenue. And our carbon debt is even longer-lasting; carbon dioxide molecules can last hundreds of years in the atmosphere.

The Science of Climate Change

It is not our role as scientists to determine how to deal with problems like climate change. That is a policy matter and rightly must be left to our elected leaders in discussion with all Americans. But, as scientists, we have an obligation to evaluate, report, and explain the science behind climate change.

The debate about climate change has become increasingly ideological and partisan. But climate change is not the product of a belief system or ideology. Instead, it is based on scientific fact, and no amount of argument, coercion, or debate among talking heads in the media can alter the physics of climate change.

Political philosophy has a legitimate role in policy debates, but not in the underlying climate science. There are no Democratic or Republican carbon dioxide molecules; they are all invisible and they all trap heat.

The fruits of the scientific process are worthy of your trust. This was perhaps best summed up in recent testimony before Congress by Dr. Peter Gleick, co-founder and director of the Pacific Institute and member of the U.S. National Academy of Sciences. He testified that the scientific process “is inherently adversarial – scientists build reputations and gain recognition not only for supporting conventional wisdom, but even more so for demonstrating that the scientific consensus is wrong and that there is a better explanation. That’s what Galileo, Pasteur, Darwin, and Einstein did. But no one who argues against the science of climate change has ever provided an alternative scientific theory that adequately satisfies the observable evidence or conforms to our understanding of physics, chemistry, and climate dynamics.”

National Academy of Sciences

What we know today about human-induced climate change is the result of painstaking research and analysis, some of it going back more than a century. Major international scientific organizations in disciplines ranging from geophysics to geology, atmospheric sciences to biology, and physics to human health – as well as every one of the leading national scientific academies worldwide – have concluded that human activity is changing the climate. This is not a “belief.” Instead, it is an objective evaluation of the scientific evidence.

The U.S. National Academy of Sciences (NAS) was created by Abraham Lincoln and chartered by Congress in 1863 for the express purpose of obtaining objective expert advice on a range of complex scientific and technological issues. Its international reputation for integrity is unparalleled. This spring, at the request of Congress, the NAS issued a series of comprehensive reports on climate change that were unambiguous.

The NAS stated, “Climate change is occurring, is caused largely by human activities . . . and in many cases is already affecting a broad range of human and natural systems.” This conclusion comes as no surprise to the overwhelming majority of working climate scientists.

Climate Change Deniers

Climate change deniers cloak themselves in scientific language, selectively critiquing aspects of mainstream climate science. Sometimes they present alternative hypotheses as an explanation of a particular point, as if the body of evidence were a house of cards standing or falling on one detail; but the edifice of climate science instead rests on a concrete foundation. As an open letter from 255 NAS members noted in the May 2010 *Science* magazine, no research results have produced any evidence that challenges the overall scientific understanding of what is happening to our planet’s climate and why.

The assertions of climate deniers therefore should not be given scientific weight equal to the comprehensive, peer-reviewed research presented by the vast majority of climate scientists.

The determination of policy sits with you, the elected representatives of the people. But we urge you, as our elected representatives, to base your policy decisions on sound science, not sound bites. Congress needs to understand that scientists have concluded, based on a systematic review of all of the evidence, that climate change caused by human activities raises serious risks to our national and economic security and our health both here and around the world. It's time for Congress to move on to the policy debate.

How Can We Move Forward?

Congress should, we believe, hold hearings to understand climate science and what it says about the likely costs and benefits of action and inaction. It should not hold hearings to attempt to intimidate scientists or to substitute ideological judgments for scientific ones. We urge our elected leaders to work together to focus the nation on what the science is telling us, particularly with respect to impacts now occurring around the country.

Already, there is far more carbon in the air than at any time in human history, with more being generated every day. Climate change is underway and the severity of the risks we face is compounded by delay.

We look to you, our representatives, to address the challenge of climate change, and lead the national response. We and our colleagues are prepared to assist you as you work to develop a rational and practical national policy to address this important issue.

Thank you for your attention.

Sincerely,

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