ORAL ARGUMENTS JUNE 2, 2016

No. 15-1363 (Lead) and Consolidated Cases (Complex)

IN THE

UNITED STATES COURT OF APPEALS FOR

THE DISTRICT OF COLUMBIA CIRCUIT

STATE OF WEST VIRGINIA, ET AL.,

Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY AND REGINA A. MCCARTHY ADMINISTRATOR, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Respondents.

On Petition for Review of a Final Agency Action of the United States Environmental Protection Agency 80 Fed. Reg. 64,662 (Oct. 23, 2015)

BRIEF OF AMICI CURIAE SCIENTISTS IN SUPPORT OF PETITIONERS SUPPORTING REVERSAL

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to Circuit Rule 28(a)(1), counsel for amici curiae scientists in support of petitioners certifies as follows:

A. PARTIES AND AMICI

Except for the following, all parties, intervenors, and amici appearing before this Court are listed in the Brief of Petitioners.

A separate motion for leave to file an amicus brief has been filed by the Southeastern Legal Foundation, Inc., which is not listed by the petitioners

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B. RULINGS UNDER REVIEW

References to the rulings at issue appear in the Brief of Petitioners.

C. RELATED CASES

References to related cases appear in the Brief of Petitioners.

/s/Harry W. MacDougald
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GLOSSARY

AR4	IPCC Fourth Assessment Report
AR5	IPCC Fifth Assessment Report
CPP	Clean Power Plan
CRU	Climate Research Unit
EGU	Electric Generating Unit
EPA	Environmental Protection Agency
GAST	Global Average Surface Temperature
IPCC	Intergovernmental Panel on Climate Change
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
OMB	Office of Management and Budget
RIA	Regulatory Impact Analysis
RSS	Remote Sensing Systems (a satellite global temperature data group)
SCC	Social Cost of Carbon
UAH	University of Alabama, Huntsville (a satellite global temperature data group)

CERTIFICATE OF COUNSEL PURSUANT TO CIRCUIT RULE 29(d)

Counsel for amici curiae scientists hereby certifies, pursuant to D.C. Circuit Rule 29(d), that it is not practicable for these scientists to file a joint amicus brief with the other amici supporting petitioners and that it is thus necessary for the scientists to file a separate brief to state their views. These scientists wish to address different issues than the other amici intend to address in their briefs. These scientists have expertise in a diverse number of fields implicated by this rulemaking, including climate research, weather modeling, physics, geology, statistical analysis, engineering and economics. In light of this expertise, these scientists' primary interest is to provide the Court with scientific data bearing directly on this rulemaking. Because the Clean Power Plan relies explicitly on EPA's 2009 Endangerment Finding with respect to Greenhouse Gases (GHGs), 74 Fed. Reg. 66495, and on a pyramid of climate and economic models to project the alleged "Social Cost of Carbon," Amici wish to address data that conclusively invalidate the Endangerment Finding's attribution of observed warming to human emissions of greenhouse gases, and to point out ensuing fatal logical flaws in the SCC analysis. Because these scientists wish to address these separate issues, it is necessary for them to file a separate brief.

/s/Harry W. MacDougald
Harry W. MacDougald

STATUTES AND REGULATIONS

All applicable provisions are contained in the Brief of Petitioners.

INTEREST OF AMICI CURIAE

Amici are thirteen well-qualified climate scientists. *See* Circuit Rule 28(a)(1) Certificate. Amici include respected professors, scientists and economists who have worked for government agencies, universities, and businesses. They have expertise in a wide array of fields implicated by this rulemaking, including climate research, weather modeling, physics, geology, statistical analysis, engineering and economics, have many publications in peer-reviewed journals, and are acclaimed in their respective fields. Amici wish to present the Court scientific data that bear directly on the underlying rulemaking.

Pursuant to F.R.A.P. 29(c)(5), no party's counsel authored any part of this brief. No party, party's counsel, or other person contributed any money that was intended to fund preparing or submitting this brief. All work on this brief was *pro bono*.

SUMMARY OF THE ARGUMENT

The purpose of the Clean Power Plan is to reduce global warming. The arguments of the Petitioners primarily contend that EPA has no legal authority under §§ 111(d) and 112 of the Clean Air Act, (42 U.S.C. 7411(d) and 7412), to force a radical transformation of America's energy economy, and that the Clean Power Plan ("CPP"), 80 Fed.Reg. 64677, would cause massive and irreparable harm. Despite the considerable force of these arguments, they leave unaddressed two issues fundamental

to any consideration of the CPP. First, EPA's proposed actions *are entirely based on scientific propositions that have been shown to be invalidated by highly credible empirical data.* Second, EPA's Social Cost of Carbon ("SCC") analysis is embarrassing nonsense that no rational person would use for public policy. *Amici* Scientists submit this brief to point out the relevant empirical evidence on these fundamental issues.

EPA explicitly states in the CPP that its plan to radically restructure America's means of generating electricity derives from the agency's GHG Endangerment Finding[1]. *See* 80 Fed.Reg. 64677, 64682-4. As EPA explained in its Regulatory Impact Analysis for the CPP,

> In 2009, the EPA Administrator found that elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare. It is these adverse impacts that make it necessary for the EPA to regulate GHGs from EGU[2] sources.

Regulatory Impact Analysis for the Proposed Carbon Pollution Guidelines for Existing Power Plants and Emission Standards for Modified and Reconstructed Power Plants ("RIA"), p. 4-2 (http://www.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule-ria.pdf), last visited February 16, 2016).

[1] *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 Fed. Reg. 66,495 (Dec. 15, 2009) ("Endangerment Finding").
[2] Electric Generating Unit.

The Endangerment Finding in turn lays out each of the scientific bases upon which EPA relied in reaching its conclusions. At 74 Fed. Reg. 66518:3, EPA states that "attribution of observed climate change to anthropogenic activities is based on multiple lines of evidence." EPA then describes the three (and only three) lines of evidence supporting its conclusion that the evidence is "compelling that elevated concentrations of heat-trapping greenhouses gases are the root cause of recently observed climate change." 74 Fed.Reg. at 66518:1. Adopting for these purposes EPA's "lines of evidence" terminology, each of the three has been definitively invalidated by real world empirical temperature data.

Amici recognize that this Court is reluctant to delve into an area of science in which it has little or no expertise. Yet in this instance no actual scientific knowledge or expertise is needed to understand why each of EPA's three lines of evidence has been invalidated. *Amici* rely on one and only one principle of science, which is the single most fundamental principle of the scientific method, known to every high school student, namely that any hypothesis that is inconsistent with the empirical evidence of the real world must be rejected. The famous Nobel Prize-winning physicist Richard Feynman gave perhaps the single most elegant (and entertaining) statement of this principle:

> If it [the theory] disagrees with experiment, it's wrong. In that simple statement is the key to science. It doesn't make any difference how beautiful your guess is, it doesn't matter how smart you are, who

> made the guess, or what his name is. If it disagrees with experiment, it's wrong. That's all there is to it.[3]

Amici also recognize that the D.C. Circuit affirmed the Endangerment Finding in *Coalition for Responsible Regulation v. EPA*, 684 F.3d 102 (D.C. Cir. 2012). As a matter of science, however, the weak imprimatur of favorable "super-deferential" judicial review of agency scientific conclusions cannot lend to such conclusions any scientific validity they otherwise lack – nature is indifferent to administrative law. The scientific method does not operate by super-deferential judicial review, and is not bound by *stare decisis*.

ARGUMENT

A. EPA'S CO_2 ENDANGERMENT FINDING HAS BEEN SHOWN TO BE INVALIDATED BY THE MOST CREDIBLE, RELEVANT EMPIRICAL DATA

EPA based its GHG Endangerment Finding on what it called three "lines of evidence," all derived from work of the Intergovernmental Panel on Climate Change ("IPCC"). *See* 74 Fed. Reg. at 66523:1. However, each of these three lines of evidence has been shown to be invalidated by highly credible, empirical temperature data cited in a certiorari stage Amicus brief submitted to the Supreme Court in *UARG v. EPA,*

[3] Feynman Cornell lecture, https://www.youtube.com/watch?v=EYPapE-3FRw, last visited February 15, 2016.

134 S.Ct. 2427 (2014).[4]

Three quotes from the Scientists' *UARG* Cert. Brief regarding each of the three Lines of Evidence are:

> There is no longer any doubt that the purported tropical "hot spot" simply does not exist. Thus, EPA's theory as to how CO_2 affects GAST[5]—EPA's first line of evidence—must be rejected.

See Scientists' *UARG* Cert. Brief, p. 13; *See also* Appendix I.

> Those [empirical temperature] data thus demonstrate that EPA's second line of evidence—the claim that there has been unusual warming on a global, that is, worldwide, basis over the past several decades—is invalid.

See Scientists' *UARG* Cert. Brief, p. 16; *See also* Appendix II.

> [T]he models EPA relied on as its third line of evidence are invalid. That is not surprising because EPA never carried out any published forecast reliability tests. And, as discussed above, EPA's assumed Greenhouse Gas Fingerprint Theory simply does not comport with the real world. Thus, models based on that theory should never have

[4] This certiorari stage amicus brief can be found at http://www.edf.org/sites/default/files/Climate%20Scientists%20Amicus%20Brief%20in%20Support%20of%20Petitioners.pdf)(hereinafter "Scientists' *UARG* Cert. Brief") last visited February 16, 2016.

[5] Global Average Surface Temperature.

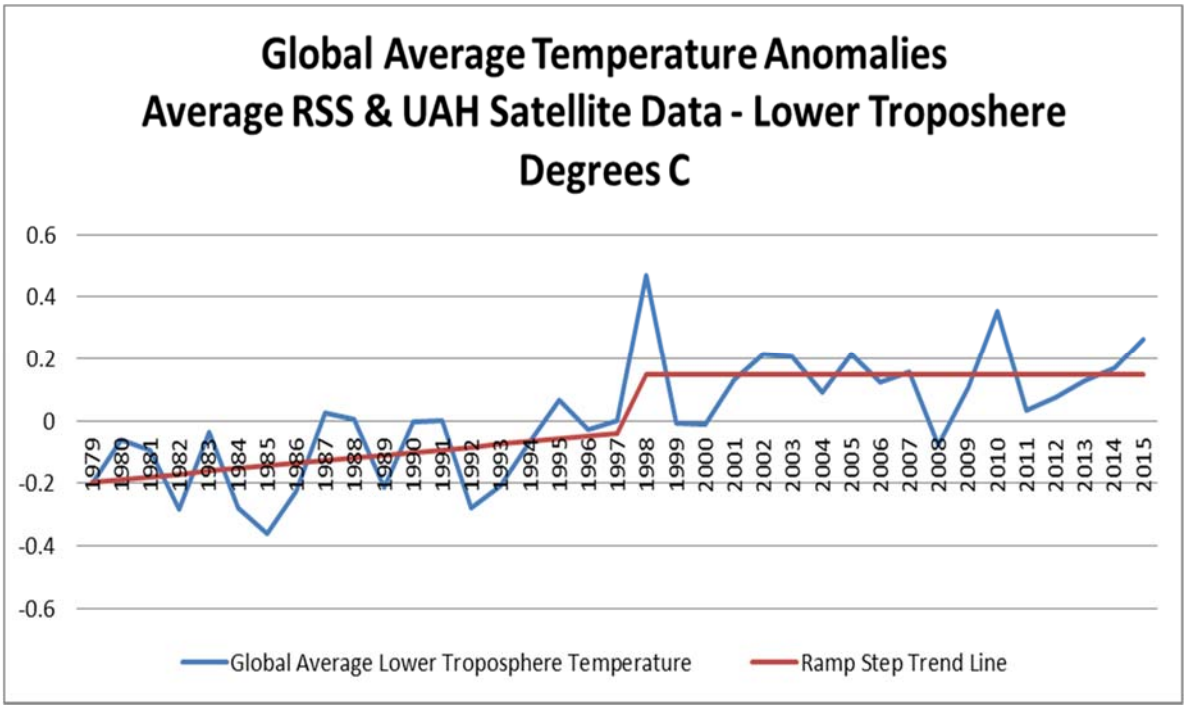
> been expected to be valuable for policy analysis involving an Endangerment Finding that so critically affects American energy, economic, and national security.

See Scientists' *UARG* Cert. Brief, p. 20*; See also* Appendix III.

Moreover, the historical record of the GAST data (1850 to date) has been undergoing continual manipulation. (*See* Appendix IV regarding the ongoing and biased manipulation of GAST data.) As a result, claims of recent record-setting global average temperatures based on this data are simply invalid. The highly credible satellite data, from 1979 to date, show regional, not "global" warming. Moreover, multiple independent data sets (satellite, balloon, and buoy) show very little or no warming at the Equator where the greenhouse gas impact on temperature is supposed to be most evident. (*See* Appendix I).

Figure 1 below shows that, for the past 18 years, the satellite data trend line in Global Average Temperatures has been flat. The Pause is real.

Figure 1



Source: Remote Sensing Systems ("RSS") Temperature Lower Troposphere ("TLT") data:
http://data.remss.com/msu/monthly_time_series/RSS_Monthly_MSU_AMSU_Channel_TLT_Anomalies_Land_and_Ocean_v03_3.txt
University of Alabama ("UAH") TLT data:
http://vortex.nsstc.uah.edu/data/msu/v6.0beta/tlt/uahncdc_lt_6.0beta5.txt

With each of EPA's three Lines of Evidence purporting to support their Endangerment Finding shown to be invalid, EPA has no proof whatsoever that CO_2 has a statistically significant impact on global temperatures. In fact, many scientists feel no such proof exists. The Scientists' *UARG* Cert. Brief stated as follows at pp. 20-21:

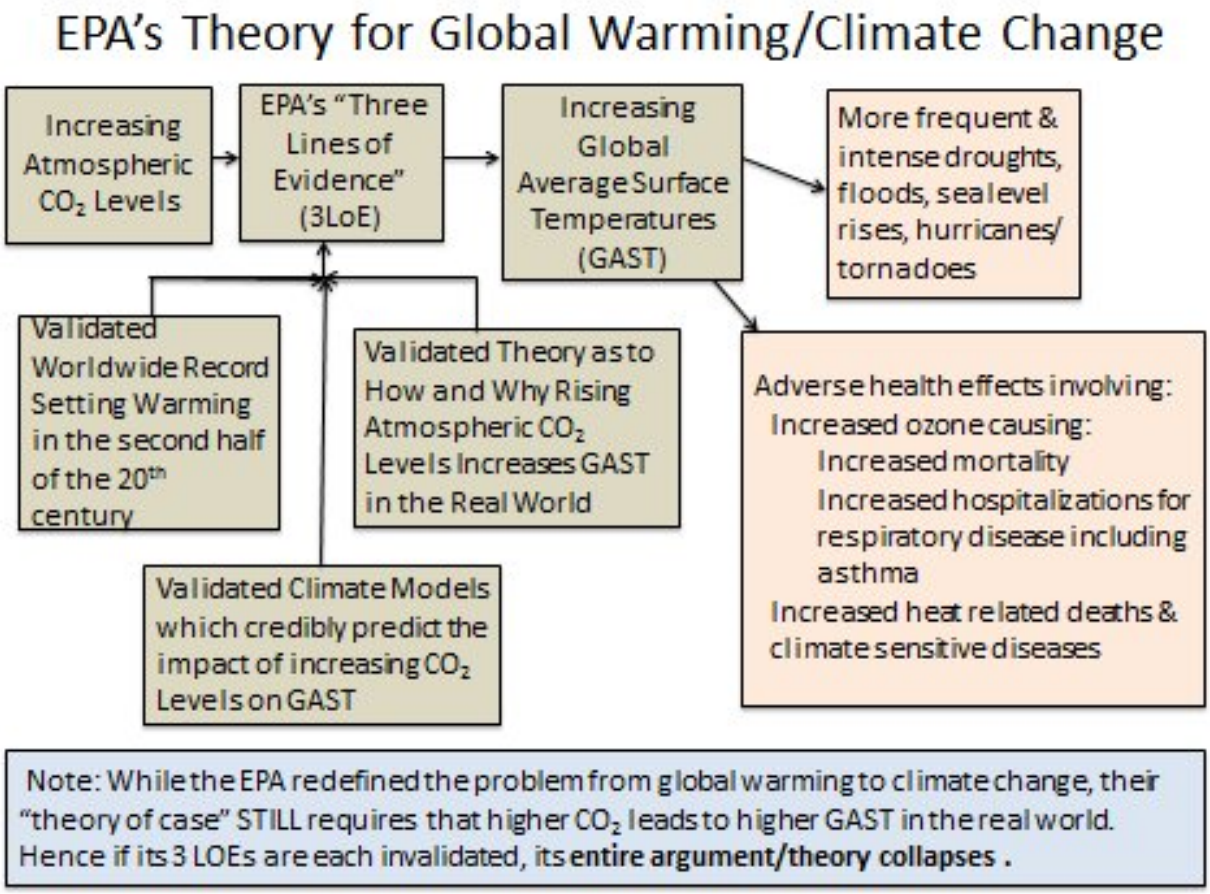
> Amici believe that no scientists have devised an empirically validated theory proving that higher atmospheric CO_2 levels will lead to higher

GAST. Moreover, if the causal link between higher atmospheric CO_2 concentrations and higher GAST is broken by invalidating each of EPA's three lines of evidence, then EPA's assertions that higher CO_2 concentrations also cause sea-level increases and more frequent and severe storms, floods, and droughts are also disproved. Such causality assertions require a validated theory that higher atmospheric CO_2 concentrations cause increases in GAST[(2)]. Lacking such a validated theory, EPA's conclusions cannot stand. In science, credible empirical data always trumps proposed theories, even if those theories are claimed to (or actually do) represent the current consensus.

[2] Indeed, empirical data also shows that the claim that there have been such phenomena is itself invalid. Brief of Amici Curiae Scientists in Support of Petitioners Supporting Reversal, at 28-29, *Coalition for Responsible Regulation, Inc.* v. *Environmental Protection Agency*, No. 09-1322 (CADC June 8, 2011), ECF No. 1312291[6] at 22-26.

[6] Hereinafter "Scientists' D.C. Circuit Amicus Brief".

EPA's faulty chain of reasoning is depicted in Figure 2:



In fact, EPA has ignored this and earlier warnings that its Endangerment Finding could be flawed. On October 7, 2009, thirty-five well-regarded scientists filed a comment in the Endangerment Finding administrative docket. Their recommendation in part was a follows:

> **Recommendation**
>
> We feel strongly that the EPA must not only rigorously address all four of the additional questions outlined at the outset, but also deal with at least the 18 supporting issues. As can be clearly seen by

an analysis of the different fields of knowledge and academic skills required to answer the 18 detailed questions listed above, no one scientist should feel comfortable answering each and every question. And yet, without thoughtful, fully-informed judgments on all of the questions by the scientists who are expert in the particular issue area, the EPA should not feel comfortable issuing an Endangerment Finding in support of CO_2 regulation. Because of the need to have only those highly qualified to provide answers to each of the questions outlined above, we strongly suggest that the EPA … use … an on-the-record hearing conducted pursuant to 5 U.S.C. §§ 556-57.

While following such an analysis process may well be more arduous than planned, the implications of ill-founded CO_2 regulation could be truly catastrophic. …

The EPA has the authority to hold on-the-record hearings under the Clean Air Act using procedures based on 5 U.S.C. §§ 556-57. As the Administrative Conference of the United States said, such authority should be exercised whenever (a) the scientific, technical, or other data relevant to the proposed rule are complex, (b) the problem posed is so open-ended that diverse views should be heard,

> and (c) the costs that errors may impose are significant. *See* 1 C.F.R. § 305.76-3(1) (1993). The Chamber noted in its petition that "it is hard to imagine a situation where each part of this test is more easily met."

See Comment, EPA-HQ-OAR-2009-0171-11465.1, *available at* http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0171-11465.

EPA never responded to this Comment.

B. THE SOCIAL COST OF CARBON ESTIMATE EPA USED TO JUSTIFY ITS CLEAN POWER PLAN REGULATION IS NOT BASED ON VALIDATED SCIENTIFIC EVIDENCE.

Amici ask this court to step back from its past approach of reliance on IPCC, EPA and other clearly biased parties and take a hard look at whether there is truly any credible proof that, in the real world, rising atmospheric CO_2 concentrations impact global temperatures to a measurable degree. At this point, there certainly seems to be no such proof. **Obviously, if no such proof exists, this has major implications for the credibility of the SCC estimates used to justify the CPP since they would actually show a benefit because higher CO_2 emissions would yield only benefits (e.g., associated with increased plant growth and drought tolerance) and no "costs" from CO_2-related warming.**

To demonstrate, below are quotes drawn from the OMB request for public comments ("Request for Comments"), 78 Fed. Reg. 70568, *Technical Update of the Social*

Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866, (November 26, 2013), and a relevant responsive Comment. These quotes demonstrate the logical dependence of the SCC analysis on EPA's invalidated Three Lines of Evidence, and, in turn, the resulting incoherence of the SCC analysis.

OMB's Request for Comments particularly sought comments on:

> The selection of the three IAMs [Integrated Assessment Models] for use in the analysis and the synthesis of the resulting SCC estimates, as outlined in the 2010 TSD [Technical Support Document], the model inputs used to develop the SCC estimates, including economic growth, emissions trajectories, **climate sensitivity** and intergenerational discounting; . . . .

78 Fed. Reg. 70586:3 (Emphasis added). The aforementioned Comment[7] stated:

> The present Comment focuses solely on Climate Sensitivity, which is obviously the most important parameter in the SCC analysis process as currently defined, and about which there has been much debate. In the Request for Comments, OMB makes several statements describing how its SCC estimates were derived, and that

[7] This Comment is found in in Docket ID OMB–OMB– 2013–0007 at http://www.regulations.gov/#!documentDetail;D=OMB-2013-0007-0138, last visited February 14, 2016.

therefore inform this Comment. Among those statements are the following:

> The current estimate of the social cost of CO_2 emissions (SCC) has been developed over many years, using the best science available, and with input from the public. . . .
>
> Recognizing that the models underlying the SCC estimates would evolve and improve over time as scientific and economic understanding increased, the Administration committed in 2010 to regular updates of these estimates. . . .

The TSD (Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866, Interagency Working Group on Social Cost of Carbon, United States Government, February 2010), at page 4, gives information on the key assumptions from which the SCC estimates were derived. It states that:

> III. Approach and Key Assumptions
>
> . . .
>
> It is important to recognize that a number of key uncertainties remain, and that current SCC estimates should be treated as provisional and revisable since they will evolve with improved scientific and economic understanding. The interagency group also recognizes that the existing models are imperfect and incomplete. . . .
>
> The U.S. Government will periodically review and reconsider estimates of the SCC used for cost-benefit analyses to reflect increasing knowledge of the science and economics of climate impacts, as well as improvements in modeling. In this context, statements recognizing the limitations of the analysis and calling for further research take on exceptional significance. The interagency group offers the new SCC values

> with all due humility about the uncertainties embedded in them and with a sincere promise to continue work to improve them.

At page 5, the TSD then describes the methodology by which the SCC estimates were derived:

> A. Integrated Assessment Models
>
> We rely on three integrated assessment models (IAMs) commonly used to estimate the SCC: the FUND, DICE, and PAGE models (1). . . .
>
> These models are useful because they combine climate processes, economic growth, and feedbacks between the climate and the global economy into a single modeling framework. … There is currently a limited amount of research linking climate impacts to economic damages, which makes this exercise even more difficult. Underlying the three IAMs selected for this exercise are a number of simplifying assumptions and judgments reflecting the various modelers' best attempts to synthesize the available scientific and economic research characterizing these relationships. . . .
>
> The three IAMs translate emissions into changes in atmospheric greenhouse concentrations, **atmospheric concentrations into changes in temperature** [emphasis added], and changes in temperature into economic damages. . . . **These emissions are translated into concentrations using the carbon cycle built into each model, and concentrations are translated into warming based on each model's simplified representation of the climate and a key parameter, climate sensitivity.** [Emphasis added.] Each model uses a different approach to translate warming into damages. Finally, transforming the stream of economic damages over time into a single value requires judgments about how to discount them."

From the direct quotes above, it is clear that the SCC values that are derived from this process are critically dependent on "a key

> parameter, climate sensitivity," the value of which in turn is completely unknown. To illustrate, uncertainty about even the expected value of this parameter was still so high that, in late 2013, no "best estimate" could even be made. In fact, the current Request for Comments [… refers to the Revised TSD][8]:
>
> > The revised Technical Support Document that was issued in November, 2013 is based on *the best available scientific information on the impacts of climate change*. We will continue to refine the SCC estimates to ensure that agencies are appropriately measuring the social cost of carbon emissions as they evaluate the costs and benefits of rules. […]

(Emphasis added). The Revised TSD for the SCC RIA[9] relies on the IPCC's Fourth Assessment Report ("AR4"). However, the most recent IPCC report was actually the Fifth Assessment Report ("AR5"),[10] which was available to OMB in November, 2013. As the Comment explains, AR5 contains a critically important admission:

> However, the […][AR5][11] concedes at footnote 16 on page 14 that "No best estimate for equilibrium climate sensitivity can now be given . . . ." From page 14 of Climate Change 2013, The Physical

[8] The bracketed material corrects a reference in the Comment.
[9] Available at https://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf, last visited 2/19/16.
[10] The IPCC's Fifth Assessment Report ("AR5") is available at www.ipcc.ch and website *www.climatechange2013.org*. or *http://www.climatechange2013.org/images/uploads/WGI_AR5_SPM_brochure.pdf*
[11] The bracketed material corrects a reference in the Comment.

Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policymakers:

> The equilibrium climate sensitivity quantifies the response of the climate system to constant radiative forcing on multi-century time scales. . . .Equilibrium climate sensitivity is likely in the range 1.5°C to 4.5°C (high confidence), extremely unlikely less than 1°C (high confidence), and very unlikely greater than 6°C (medium confidence)[16]. . . .
>
> [16] **No best estimate for equilibrium climate sensitivity can now be given because of a lack of agreement on values across assessed lines of evidence and studies.** (Emphasis added.)

This footnote 16 literally means that as recently as late last year, given the scientific information available, the IPCC did not deem it possible to develop a credible "best estimate for equilibrium climate sensitivity." This statement is extremely relevant in that this climate sensitivity parameter is obviously the most important parameter to the entire SCC analysis. Mathematically speaking, what does not being able to provide a Best Estimate for the equilibrium climate sensitivity imply? First, it means that [the] IPCC is clear that it has not been able to develop a credible subjective probability density function for the equilibrium climate sensitivity parameter. Second, it means that the IPCC admits that it does not have a credible mean, mode or median value of the equilibrium climate sensitivity

> parameter. In the mathematics of Decision Theory, this situation is called Complete Ignorance Uncertainty.
>
> It should be obvious that no SCC estimates should be published until a credible climate sensitivity probability distribution is developed. This multi-agency effort has relied on the IPCC work, but IPCC's own results imply that the U.S. government should stop publishing any estimates of SCC until such a credible [probability] distribution exists.

The inescapable conclusion is that the SCC estimates EPA used to justify the CPP are not based on validated models. In fact, there is no validated proof that the critical equilibrium climate sensitivity parameter in such models is statistically significant, i.e., is other than 0. The SCC models, which have not themselves been validated, use the output of invalidated climate models to produce their forecast results. This is fairly characterized as "garbage in, garbage out."

C. EPA'S JUDGMENT ON CLIMATE SCIENCE MATTERS SHOULD NO LONGER BE TRUSTED BY THE COURTS.

The abovementioned Comment to OMB offers relevant information on EPA's procedural violations in reaching the Endangerment Finding:

> Regarding the importance of using unbiased parties in this effort, the September 26, 2011 EPA Inspector General's Procedural Review of EPA's Greenhouse Gases Endangerment Finding Data Quality

Processes,[12] …, is highly relevant. This document catalogues the procedural deficiencies found by the EPA Inspector General regarding the EPA's peer review and data review methodologies used in promulgating EPA's December 15, 2009 Endangerment Finding on greenhouse gases including CO2 emissions. Like the October 7, 2009 scientists' letter quoted above, this review suggested that the EPA could have used a Science Advisory Board mechanism to avoid such deficiencies. Specifically, it stated that:

> EPA did not conduct a peer review of the TSD that met all recommended steps in the Peer Review Handbook for peer reviews of influential scientific information or highly influential scientific assessments. EPA's peer review policy states that 'for influential scientific information intended to support important decisions, or for work products that have special importance in their own right, external peer review is the approach of choice' and that 'for highly influential scientific assessments, external peer review is the expected procedure.' According to the policy, external peer review involves reviewers who are 'independent experts from outside EPA.' The handbook provides examples of 'independent experts from outside EPA,' that include NAS, an established Federal Advisory Committee Act mechanism (e.g., Science Advisory Board), and an ad hoc panel of independent experts outside the Agency. The handbook lays out a number of procedural steps involved in an external peer review. *Id.* at 44.

It would certainly seem that this multi-agency effort should not proceed without delving into the facts involving climate sensitivity

[12] This report is available at http://www.epa.gov/office-inspector-general/report-procedural-review-epas-greenhouse-gases-endangerment-finding-data.

estimates and EPA's Endangerment Finding. Over-reliance on the IPCC analysis must stop due to obvious inherent bias in keeping this wealth transfer mechanism alive.

To illustrate [this bias problem], at Climate Day at the recent World Economic Forum in Davos, Switzerland, … a highlight was a panel focused on the link between climate change, economic growth and poverty reduction….

Not a single panelist noted that attempts at climate change mitigation through governments' forcing curtailed use of fossil fuels could conflict with their poverty reduction efforts. To quote from the Scientists' Merits Stage Amicus brief[13] …:

> Meanwhile the United States is on the cusp of an energy revolution of hydrocarbons from unconventional oil and natural gas sources that is having the effect of rapidly increasing the supply and decreasing the price of carbon-based energy. *See*, e.g., IHS, American's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy, Volumes I, II, and III, September 2013. IHS sees the energy revolution as adding millions of jobs and hundreds of billions of dollars annually to the U.S. economy, all based on burning carbon fuels and emitting CO_2 into the atmosphere. EPA looks upon this prospect with horror, and

[13] This merits stage amicus brief can be found at http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs-v2/12-1146_amicus_pet_scientists.authcheckdam.pdf, ("Scientists' UARG Merits Brief"), p. 30.

> the stationary source PSD permitting program is precisely the means it sees available to stop it before it can get too far.
>
> Arbitrarily raising the price of energy is the same thing as purposely impoverishing the American people. It is shocking and disgusting that our government would intentionally pursue such a goal, particularly without any scientific basis whatsoever to do so . . . .

Finally, the currently calculated SCC estimates are being used to justify proposed EPA regulations, and also as input regarding proper carbon tax levels should a future Congress elect to move in this direction. Even assuming that the proposed climate sensitivity estimates were scientifically validated -- which has been shown above not to be the case – an appropriate U.S. carbon tax trajectory should not be based solely on what economists call externalities, even while ignoring direct effects on jobs and wealth generation. …

Clearly, America's initial conditions in terms of its fossil fuel resources, its economic growth prospects, its debt levels, and so forth, matter, if the government is going to arbitrarily increase U.S. energy prices via such carbon taxes. … In short, for many reasons, the current SCC estimates are not only worthless; they are extremely dangerous to put forward by this task force as credible input to U.S. energy, economic and national security-related policy analyses.

Such considerations are even more critical given the outlook for continued geo-political tensions.

D. THE PRECAUTIONARY PRINCIPLE

The precautionary principle is often invoked to justify regulation in the face of very high levels of scientific uncertainty. In such circumstances, it is argued that the safe thing to do is regulate anyway. Using the precautionary principle to support the CPP assumes that the CPP would do little or no harm relative to the potential very significant benefits from avoided climate catastrophe. This assumption is emphatically false in this case because the CPP would cause, with certainty, massive and regressive economic harm from dramatically increased electricity prices. (Doubters should look to Germany and UK impacts of CO_2 regulation.) These certain, massive costs must be weighed against alleged benefits that so far have been literally undetectable. Each of EPA's Three Lines of Evidence has been conclusively shown to be invalid. Moreover, as shown in Figure 1 above, the Earth is now experiencing an 18 year *Pause*. Let us **pause** all CO_2 related regulations until temperatures start rising for a few years. And, even then, hold off on regulation until an unbiased scientific proof exists that the rising atmospheric CO_2 levels might have played a significant role in that rise.

CONCLUSION

The Endangerment Finding and associated SCC estimates used to justify EPA's Clean Power Plan Regulation have absolutely no properly validated scientific basis.

Therefore, *vacatur* on science grounds alone is warranted.

Respectfully submitted, this ____ day of February, 2016.

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CERTIFICATE OF COMPLIANCE

1. This brief complies with the type-volume limitations of Fed. R. App. P. 32(a)(7)(B) because this brief, including the appendices, contains 6,968 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

2. This brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type-style requirements of Fed. R. App. P. 32(a)(6) because this brief has been prepared in a proportionally spaced typeface using Microsoft® Word in the Garamond font, 14-point size.

This 22nd day of February, 2016.

/s/Harry W. MacDougald
Harry W. MacDougald

CERTIFICATE OF SERVICE

I hereby certify I hereby certify that on this 22nd day of February, 2016 I will cause to be served electronically the foregoing through the ECF system, which shall cause electronic service to be made upon all registered parties, and will serve by U.S. Mail any parties not registered with the ECF system.

This 22nd day of February, 2016.

/s Harry W. MacDougald
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ORAL ARGUMENTS JUNE 2, 2016

No. 15-1363 (Lead) and Consolidated Cases (Complex)

IN THE

UNITED STATES COURT OF APPEALS FOR THE

DISTRICT OF COLUMBIA CIRCUIT

STATE OF WEST VIRGINIA, ET AL.,

Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY AND
REGINA A. MCCARTHY ADMINISTRATOR,
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY

Respondents.

On Petition for Review of a Final Agency Action of the United States Environmental Protection Agency 80 Fed. Reg. 64,662 (Oct. 23, 2015)

APPENDICES

APPENDIX I: EMPIRICAL DATA SHOW EPA'S TROPICAL HOT SPOT THEORY TO BE INVALID

From Scientists' *UARG* Cert. Amicus Brief, pp. 9-13:[14]

A. First Line of Evidence: EPA's GHG Fingerprint (Or Hot Spot) Theory

In fact, however, highly credible empirical temperature data facts, readily available to EPA prior to its Endangerment Finding invalidate each line of evidence. And temperature data that is now available for the years 2009-2012 further confirms that each line of evidence was invalid.

The GHG Fingerprint (or Hot Spot) Theory is that in the Tropics, the upper troposphere is warming faster than the lower troposphere, and the lower troposphere is warming faster than the surface, all due to rising atmospheric CO_2 concentrations. *See* 74 Fed. Reg. 66522 (2009); [Scientists' D.C. Circuit Amicus Brief]; *see also* U.S. Climate Change Science Program and the Subcommittee on Global Change Research, Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences, at 112-116 (Apr. 2006), *available at* http://www.climatescience.gov/Library/sap/sap1-1/finalreport/sap1-1-final-all.pdf. That theory is totally at odds with multiple robust, consistent, independently derived empirical data sets that show no statistically significant positive (or negative) trend in temperature and thus no statistically significant differences in trend line slopes by

[14] *See* footnote 4, supra.

altitude. [Scientists' D.C. Circuit Amicus Brief pp.] 30-34.

For example, balloon data from the Met Office Hadley Centre (Figure 1a), satellite data regarding temperature in the tropical troposphere from the University of Alabama in Huntsville (UAH) (Figure 1b), and central Pacific Ocean tropical temperature data from the National Oceanic and Atmospheric Administration (NOAA) (Figure 2) are shown below. None of the three has a statistically significant trend line slope. That is, their trend lines are all flat. All temperature data are shown as "anomalies," where anomalies are computed by subtracting a base period average from actual annual temperature values, both measured in degrees Celsius.

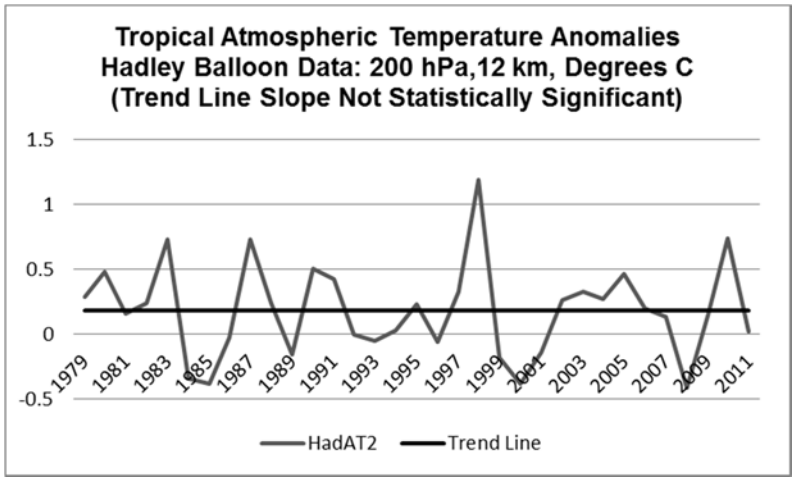

Figure 1a, *see* Met Office, Global Means Anomaly Series, *available at* http://www.metoffice.gov.uk/hadobs/hadat/hadat2/hadat2_monthly_global_mean.txt (last visited May 17, 2013) (Tropical Atmospheric Temperature Anomalies Hadley Balloon Data: 200 hPa, 12 km, Degrees C).

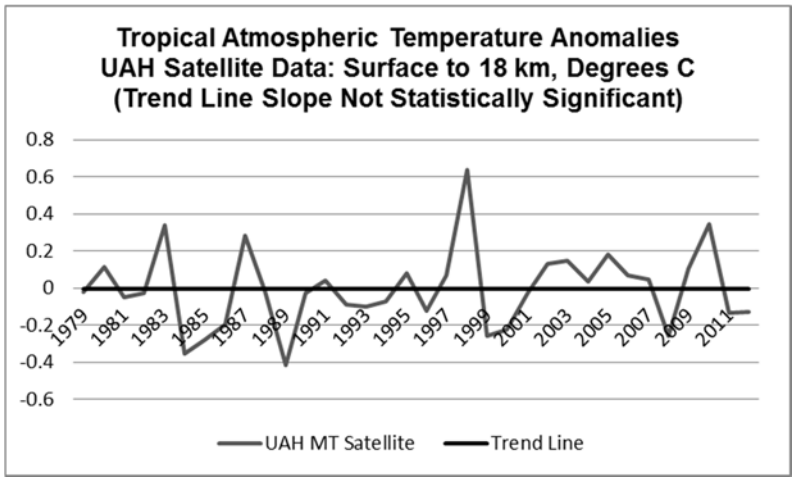

Figure 1b, *see* National Space Sci. & Tech. Ctr., Monthly Means of Mid-Troposphere MT5.5, *available at* http://vortex.nsstc.uah.edu/data/msu/ t2/tmtglhmam_5.5.txt (last visited May 17, 2013) (Tropical Atmospheric Temperature Anomalies UAH Satellite Data: Surface to 18 km, Degrees C).

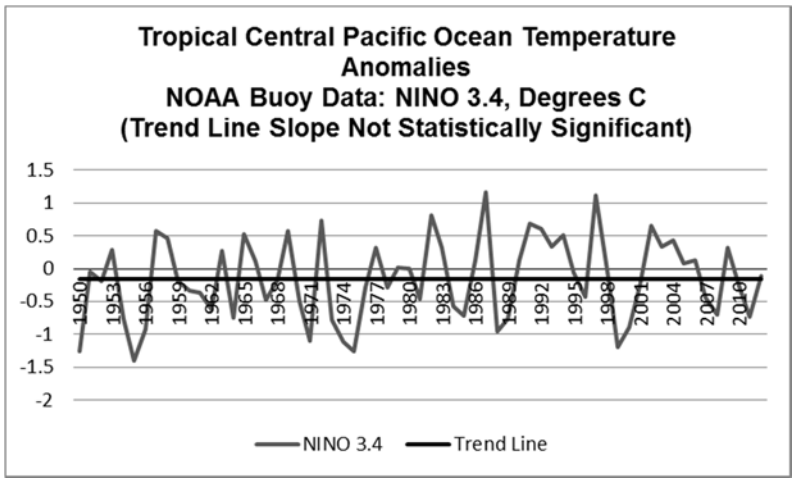

Figure 2, *see* National Weather Ctr. Climate Prediction Ctr., Tropical Center Pacific Ocean Temperature Anomalies NOAA Buoy Data: NINO 3.4, Degrees C, *available at* http://www.cpc.ncep. noaa.gov/data/indices/ersst3b.nino.mth.81-10.ascii (last visited May 17, 2013).

All three figures above show data through the most recent period available, 2012. In December 2009, when EPA issued its Endangerment Finding, the trends in all three were also flat based on annual data through 2008. The more recent data

simply reconfirms those three flat trend facts. For EPA's assumed theory to be valid, all three temperature trend lines would have to be upward sloping, but with the Upper Troposphere Trend Line (Figure 1a) steeper than the Mid-troposphere Trend Line (Figure 1b), and that trend line steeper than the Pacific Ocean Temperature Trend Line (Figure 2).

There is no longer any doubt that the purported tropical "hot spot" simply does not exist. Thus, EPA's theory as to how CO_2 affects GAST—EPA's first line of evidence—must be rejected.

APPENDIX II: EMPIRICAL DATA SHOW EPA'S RECORD SETTING, GLOBAL WARMING CLAIM TO BE INVALID

From Scientists' *UARG* Cert. Brief, pp. 13-16:[15]

B. EPA's Second Line of Evidence: Purported Unusual Rise In Global Average Surface Temperature.

EPA's second line of evidence is its claim that GAST has been rising in a dangerous fashion over the last fifty years. 74 Fed. Reg. 66518 (2009). EPA goes on to conclude that the alleged rise was in large part due to human-caused increases in atmospheric CO_2 concentrations. But the purported "global warming" has not been global and has not set records in the regions where the most significant warming has occurred. For example, over the relevant time period, while the Arctic has warmed, tropical oceans had a flat trend, … [Scientists' D.C. Circuit Amicus Brief], at 17-19, … and the Antarctic was slightly cooling, *id.*, at 14-15. The most significant warming during this period occurred in the Northern Hemisphere, north of the Tropics (i.e., north of 20° north). Figure 3 depicts UAH satellite data showing that warming:

[15] *See* note 4, *supra*.

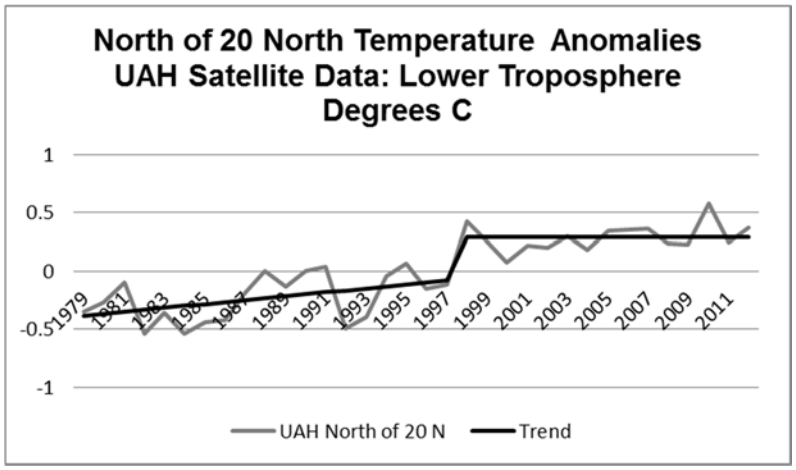

Figure 3, *see* National Space Sci. & Tech. Ctr., North of 20 North Temperature Anomalies UAH Satellite Data: Lower Troposphere Degrees C, *available at* http://vortex.nsstc.uah.edu/data/msu/ t2lt/uahncdc.lt (last visited May 17, 2013).

As is obvious in Figure 3, however, even though the Northern Hemisphere north of the Tropics has warmed, temperatures have leveled off since [1998]. That leveling off should have been obvious to EPA prior to its Endangerment Finding in late 2009.

Further, over the last 130 years, the decade of the 1930s still has the most currently held high-temperature records for States within the United States, as shown in Figure 4 below. Fully 70 percent of the current high-temperature records remain before 1940. And, in every decade from 1960 to 2010, there were considerably more cold records set than hot records.

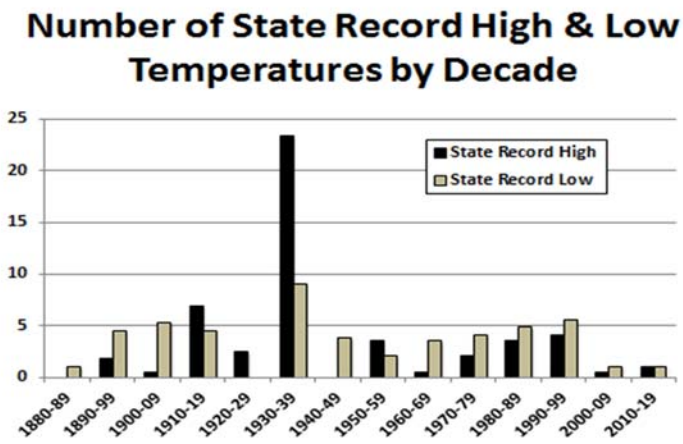

Figure 4, *see* NOAA National Climatic Data Ctr., State Climate Extremes Committee, Records, *available at* https://www.ncdc.noaa.gov/extremes/scec/records (last visited May 17, 2013).

Those data thus demonstrate that EPA's second line of evidence—the claim that there has been unusual warming on a global, that is, worldwide, basis over the past several decades—is invalid.

APPENDIX III: EMPIRICAL DATA INVALIDATE EPA'S CLAIM THAT CITED CLIMATE MODELS MAY BE RELIED UPON FOR ITS POLICY ANALYSIS PURPOSES.

From Scientists' *UARG* Cert. Brief, pp. 16-20:[16]

C. Third Line of Evidence: Climate Models

EPA's third line of evidence relies on claims that climate-forecasting models that assume CO_2 is a key determinant of climate change can be trusted to provide forecasts of future conditions that are adequate for policy analysis. EPA relied entirely on IPCC climate models predicated on the (as discussed above [*see* Appendix I]) invalid Greenhouse Gas Fingerprint Theory. […][17] Those models fail standard model-validation and forecast-reliability tests. [Scientists' D.C. Circuit Amicus Brief], at 34-37.

The models on which EPA relied all forecast rising temperatures assuming continued increases in CO_2 emissions. EPA, Climate Change, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, at ES 3 (Dec. 7, 2009), *available at* http://www.epa.gov/climatechange/endangerment/index.html#tsd. In 2007, IPCC provided four different model forecast scenarios. IPCC AR4 WG1 TS Figure TS.26, p. 69 […] *available at* [https://www.ipcc.ch/publications_and_data/ar4/wg1/en/figure-ts-26.html][18]

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[16] *See* note 4, *supra*.
[17] Citations omitted, available at pp. 16-17 of *UARG* Cert. Brief.
[18] Corrected hyperlink.

Figure 5 below shows those four forecast scenarios (in various shades of grey). Three of them call for a dramatic rise in GAST because they assume CO_2 levels will continue to rise rapidly. The "Commit-Stop CO_2" scenario portrayed in the chart (in the lightest grey) assumes a draconian curtailment of worldwide CO_2 emissions at the year 1992 level. All of these forecasts were based on the—still missing—greenhouse gas fingerprint or hot spot.

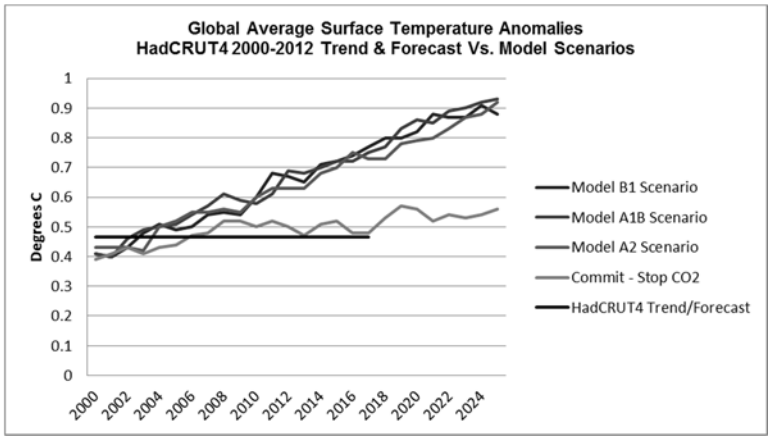


Figure 5. *see* Intergovernmental Panel on Climate Change, IPCC, Fourth Assessment Report: Climate Change 2007, Contribution of Working Group I: The Physical Science Basis, 9.2.2, at 674-676, http://www.ipcc.ch/publications_and_data/ ar4 /wg1/en/ch9s9-2-2.html; *see* also Met Office, Met Office Hadley Centre Observations Datasets, *available at* http://www.metoffice.gov.uk/hadobs/ hadcrut4/data/current/download.html (last visited May 17, 2013).

A model is only as good as the accuracy of its forecasts, and these models' forecasts have not been accurate. Figure 5 contrasts the forecasts through 2025 with the actual trend line of GAST data from the Hadley Centre and the Climactic Research Unit, University of East Anglia (CRU) for 2000-2012 (identified as "HadCRUT4 Trend/Forecast" on the chart). The actual Hadley Centre CRU trend

line is "flat" at 0.4646 °C; it is portrayed as a flat line from 2000 through 2012 because its regression line slope is not statistically significant.

The GAST data up to 2008 (which also had a flat trend line) was, of course, available to EPA, and in fact both EPA and IPCC heavily relied on the Hadley Centre CRU's temperature data, analysis, and forecasts. EPA, Climate Change, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, at pp. 28-29 (Dec. 7, 2009), *available at* http://www.epa.gov/climatechange/endangerment/index.html#tsd. Notably, the Hadley Centre recently announced a forecast that this trend line will remain flat for another five years. Met Office, Research, *available at* http://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/long-range/decadal-fc (last visited May 17, 2013) ("Global average temperature is expected to remain between 0.28 °C and 0.59 °C (90% confidence range) above the long-term (1971-2000) average during the period 2013-2017, with values most likely to be about 0.43 °C higher than average"). Thus, in Figure 5, the Trend/Forecast trend line is shown as flat through 2017.

Critically, the Hadley Centre CRU GAST Trend/Forecast line lies below even the Commit-Stop CO_2 scenario, in which worldwide CO_2 emissions are assumed to be held to 1992 levels. Since 1970, atmospheric CO_2 concentrations are up 21 percent. Mona Loa CO_2 Annual Mean Growth Rates, Earth System Research Laboratory, Global Monitoring Division, *available at*

ftp://ftp.cmdl.noaa.gov/ccg/co2/trends/co2_annmean_mlo.txt (last visited May 17, 2013).

As Figure 5 plainly demonstrates, the models EPA relied on as its third line of evidence are invalid.

APPENDIX IV: ONGOING AND BIASED DATA MANIPULATION HAVE MADE THE INSTRUMENTAL SURFACE DATA (1850 TO DATE) NO LONGER CREDIBLE

This ongoing and biased manipulation of GAST Data was pointed out at pp. 6-19 & 21-22 of the DC Circuit Scientists' Amicus Brief.

Relevant passages are quoted below:

A. Recent Changes in the Earth's Air Temperature Are Not Unusual.

Had the EPA carefully examined satellite data measuring the Earth's air temperature, it would have been forced to conclude that the Earth's air temperature increase had been almost entirely north of 20° North and was hardly changing in an erratic fashion. Instead, the EPA relied on data depicting the Global Average Surface Temperature (GAST) that was conspicuously adjusted to show an alarming recent increase in the Earth's air temperature.[4] In fact, EPA relied on GAST data created by the Climate Research Unit of the University of East Anglia (Hadley CRU),[5] which has been severely tarnished—at the very least—by "Climategate," in which researchers' private e-mails were made public. *See, e.g.*, Andrew C. Revkin, *Hacked E-Mail is New Fodder for Climate Dispute*, N.Y. TIMES,

[4] Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,517 (Dec. 15, 2009) (Endangerment Finding).
[5] *See id.*

Nov. 20, 2009, http://www.nytimes.com/2009/11/21/science/earth/21climate.html ("In one e-mail exchange, a scientist writes of using a statistical 'trick' in a chart illustrating a recent sharp warming trend."); *A Climate Absolution?*, WALL ST. J., July 16, 2010, http://online.wsj.com/article/SB10001424052748703394204575367483847033948.html?mod=WSJ_Opinion_LEADTop (adjusted data "were 'misleading' because the attempt, in the words of CRU director Phil Jones, to 'hide the decline' in some of the data had not been made clear to readers").

1. The EPA Relied on "Adjusted" Instrumental GAST Data.

The EPA—and the United Nations Intergovernmental Panel on Climate Change (IPCC)—relied heavily on instrumental GAST data[6] to conclude that CO_2 emissions were causing the Earth's temperature to rise.[7] This GAST data, though, was adjusted in the past [years] to

[6] *See id.*

[7] *See* NOAA Satellite and Info. Serv., Global Surface Temperature Anomalies: National Oceanic and Atmospheric Administration, National Climate Data Center, www.ncdc.noaa.gov/cmb-faq/anomalies.php (NOAA GNCH data); *see* also NASA, Goddard Inst. for Space Studies, Global Land-Ocean Temperature Index in 0.01 Degrees Celsius, Base Period: 1951-1980, http://data.giss.nasa.gov/gistemp/tabledata/GLB.Ts+dSST.txt (NASA

show a substantial increasing trend in the Earth's air temperature that correlates—remarkably well—with the rise in atmospheric CO_2 levels.[8] Specifically, both Hadley CRU and NASA adjusted the GAST data for the years 1920 to 1980 in a manner purporting to show that the Earth was actually cooler during those 60 years than what Hadley CRU and NASA had previously represented. The Hadley CRU adjustment can be seen below in Figure 1; the NASA adjustment can be seen in Figure 2.[9]

GISS data); Met. Office Hadley Ctr., HadCRUT3 Diagnostics, ttp://www.metoffice.gov.uk/hadobs/hadcrut3/diagnostics/global/nh%2Bsh/monthly (Hadley CRU data).

[8] *See* Scripps Inst. of Oceanography, *Mauna Loa Observatory, Hawaii, Monthly Average Carbon Dioxide Concentration (Data from Scripps CO2 Program*), http://scrippsco2.ucsd.edu/images/graphics_gallery/original/mlo_record.pdf (CO2 concentration data compiled by the Climate Research Unit of the University of East Anglia (Hadley CRU)); Climate Research Unit, Univ. of East Anglia, Global Temperature Record, http://www.cru.uea.ac.uk/cru/info/warming/ (global surface air temperatures).

[9] The data is shown as monthly "anomalies," where anomalies are constructed by subtracting some base period average from actual temperature values, here all in degrees C.

Figure 1

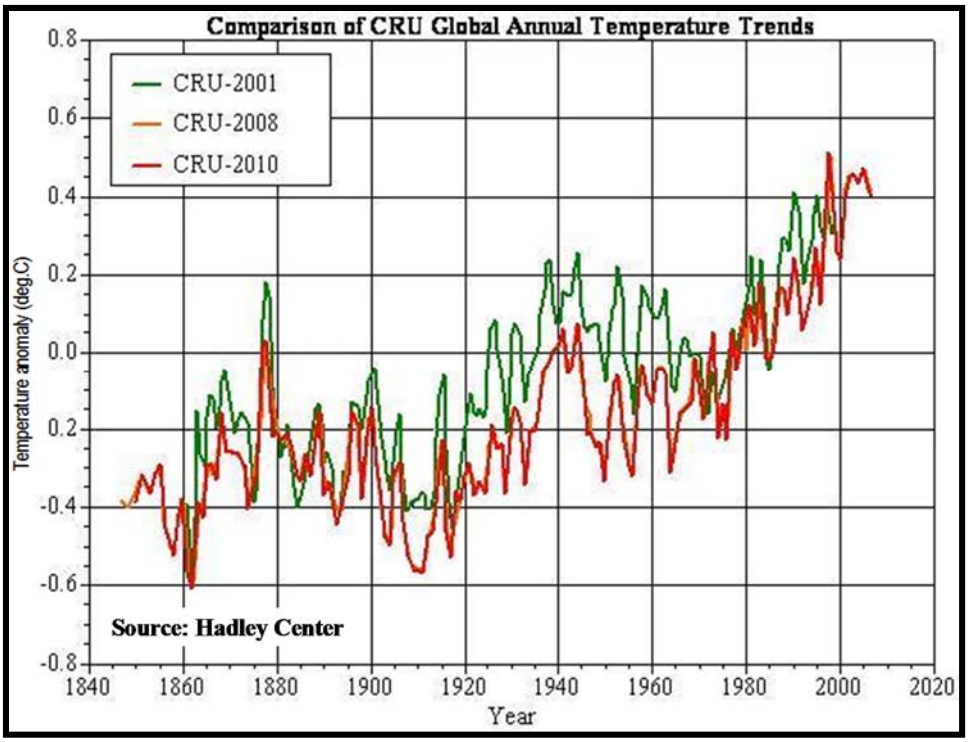
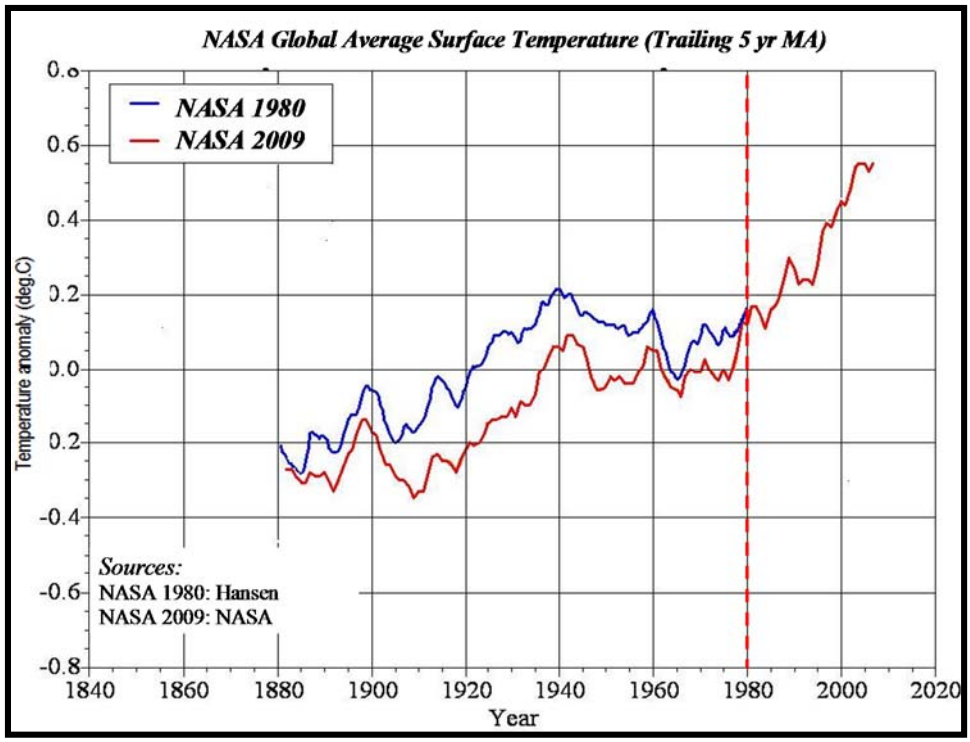

Comparison of CRU Global Annual Temperature Trends
CRU-2001
CRU-2008
CRU-2010
Source: Hadley Center
Temperature anomaly (deg.C)
Year
0.8
0.6
0.4
0.2
0.0
0.2
-0.4
-0.6
-0.8
1840
1860
1880
1900
1920
1940
1960
1980
2000
2020

Figure 2



By adjusting these older (mostly pre-1980) temperatures downward, this, of course, increased the disparity between temperatures before and after 1980—suggesting an alarming upward trend in the Earth's air temperatures correlated with increasing CO_2 levels.

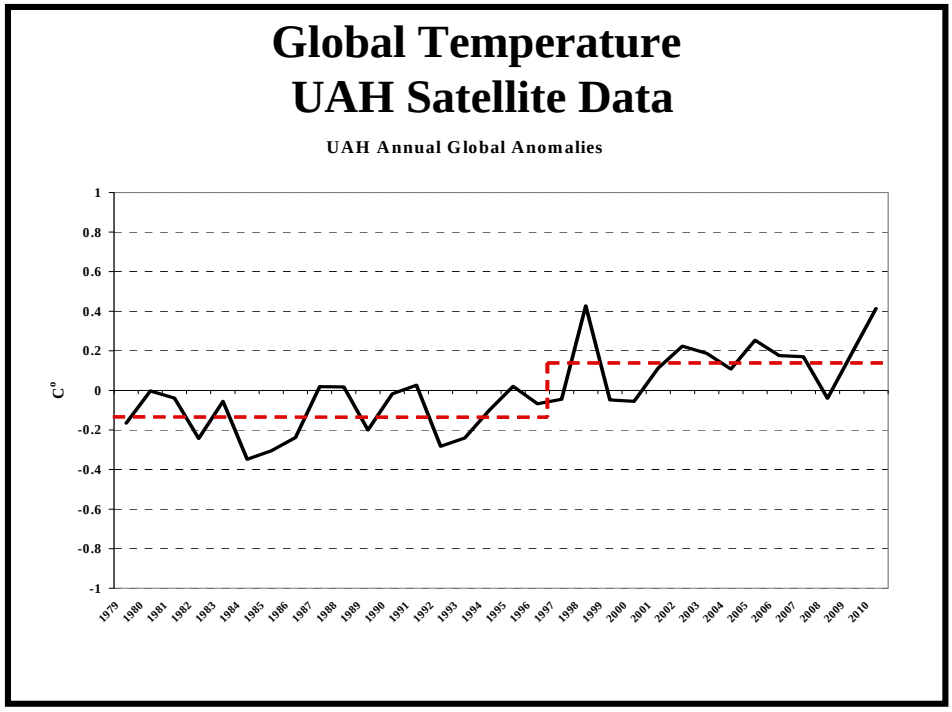
2. Satellite Temperature Data Do Not Show a "Global" increase in the Earth's Air Temperature.

In 1979, satellite-based temperature data became available, and this data does not show a "global" increase in the Earth's air temperature. Satellite data provides a cross check on global warming claims by NOAA, NASA, and the Hadley CRU, both in terms of its regional nature and overall extent. Since no credible scientists

contend that the satellite data has been manipulated, it is thus the most reliable data for exploring regional temperature trends.

The National Space Science and Technology Center's satellite data is depicted in Figure 3.[10] It shows that temperatures have increased since 19[79]. While the trend line would be upward sloping, a statistically more accurate depiction would be a step function in 1998 (the recent two upward spikes are strong El Niños).

Figure 3



[10] See Nat'l Space Science & Tech. Ctr., http://www.nsstc.uah.edu/public/msu/t2lt/uahncdc.lt.

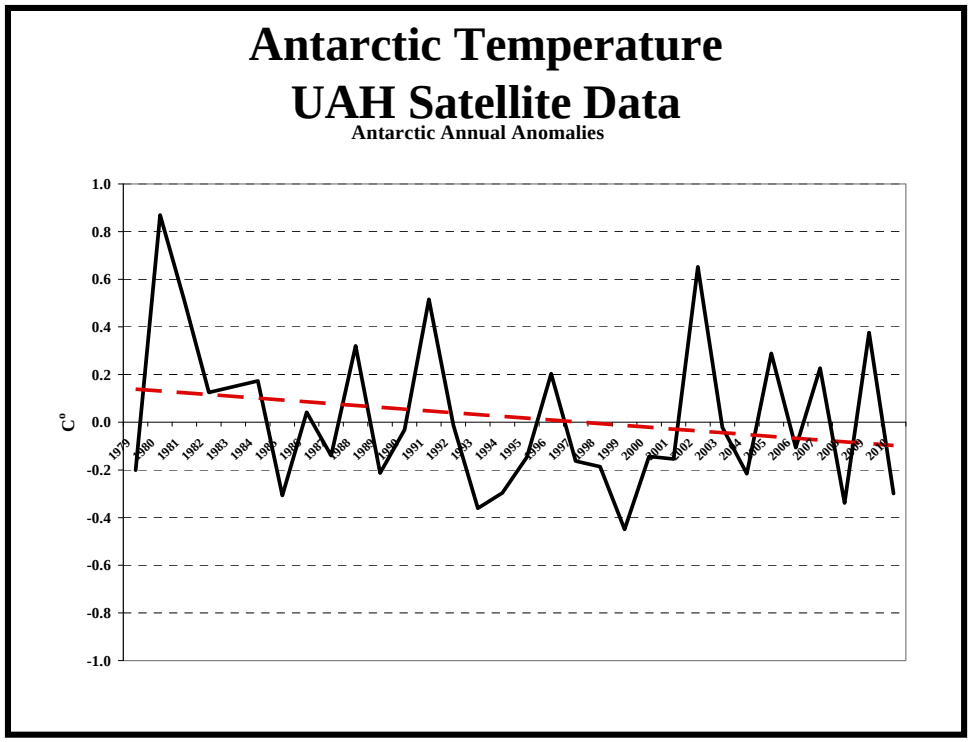
As will be shown below, when one considers satellite temperature data, since 1979 when the satellite data first became available, regional temperature trends have been very different, with no action in the tropics and all the warming really concentrated north of 20º North. In other words, since all regions did not warm, there has been *no global warming since at least 1979*. And, as will be shown, even the warming in the Northern Hemisphere is not anomalous, as 100-year record high temperatures are not being broken.

Tropics. There has been no change in temperature trend in the tropics … [*See* Appendix I].

…

Southern Hemisphere South of 20º South. Antarctic temperatures show no warming, as seen in Figure 7.

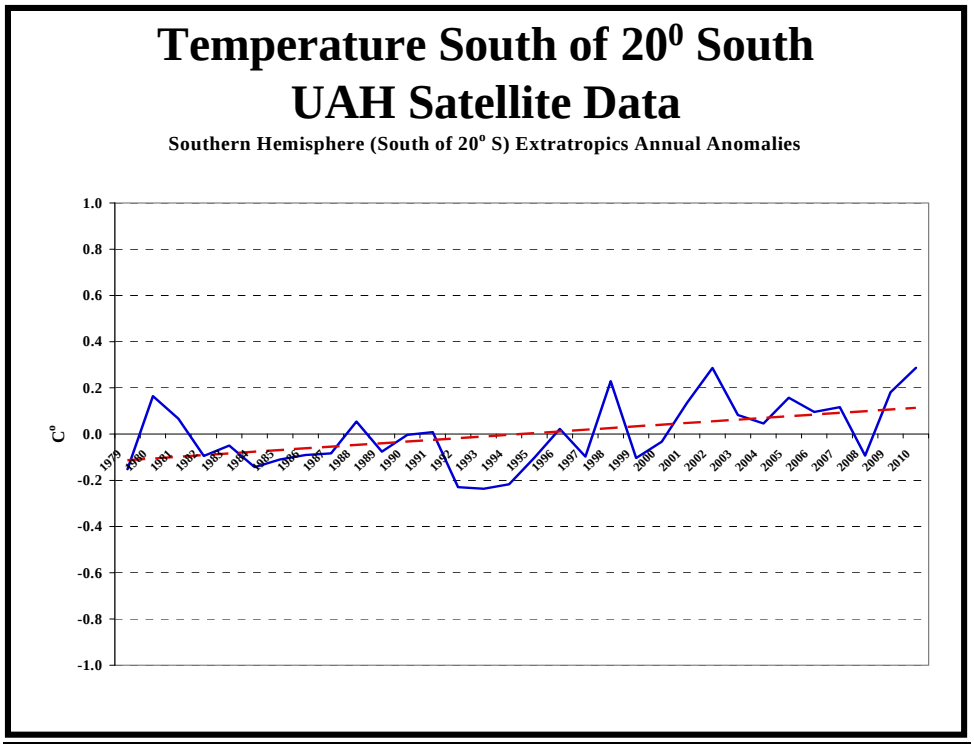
Figure 7



And the temperature data for the entire region south of 20º South, represented in Figure 8, shows very little warming.[13]

[13] *See* note 10, *supra*.

Figure 8

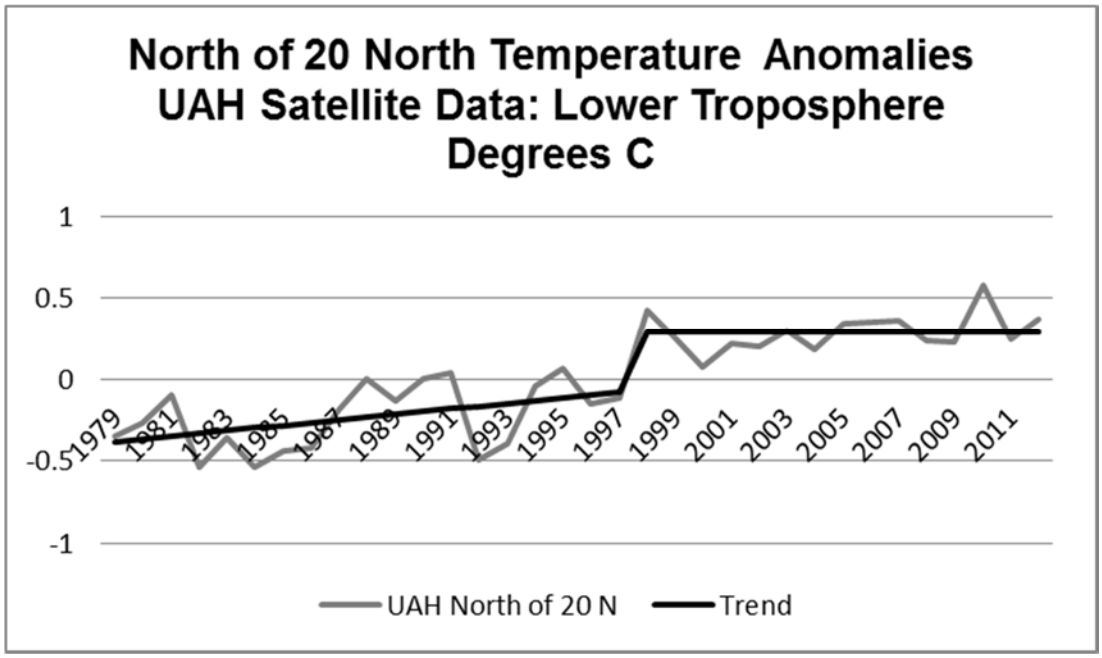


Northern Hemisphere North of 20° North.

…

The temperature pattern north of 20° North is shown in Figure 9 below, taken from the Scientists' UARG Merits Brief, p. 24 (whereas all other text and charts in this Appendix IV are from the Scientists' D.C. Circuit Amicus Brief).

Figure 9



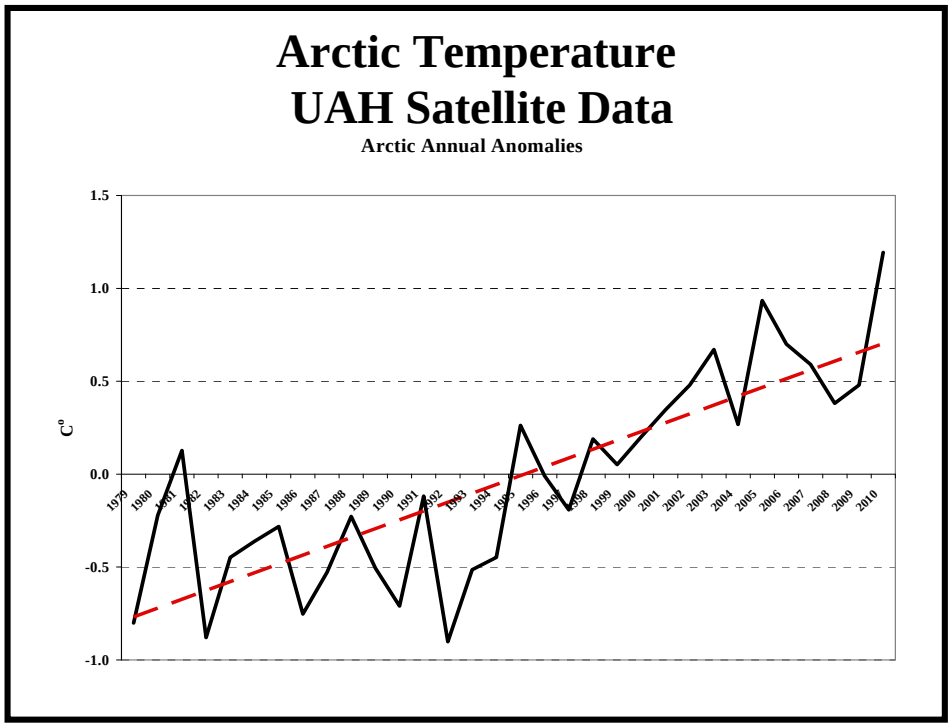
See National Space Sci. & Tech. Ctr., North of 20 North Temperature Anomalies UAH Satellite Data: Lower Troposphere Degrees C, available at http://vortex.nsstc.uah.edu/data/msu/ t2lt/uahncdc.lt (last visited May 17, 2013).

[From Scientists' D.C. Circuit Amicus Brief]:

> Admittedly, Arctic temperatures have continued to rise (*see* Figure 10).[15]

[15] *See id.*

Figure 10

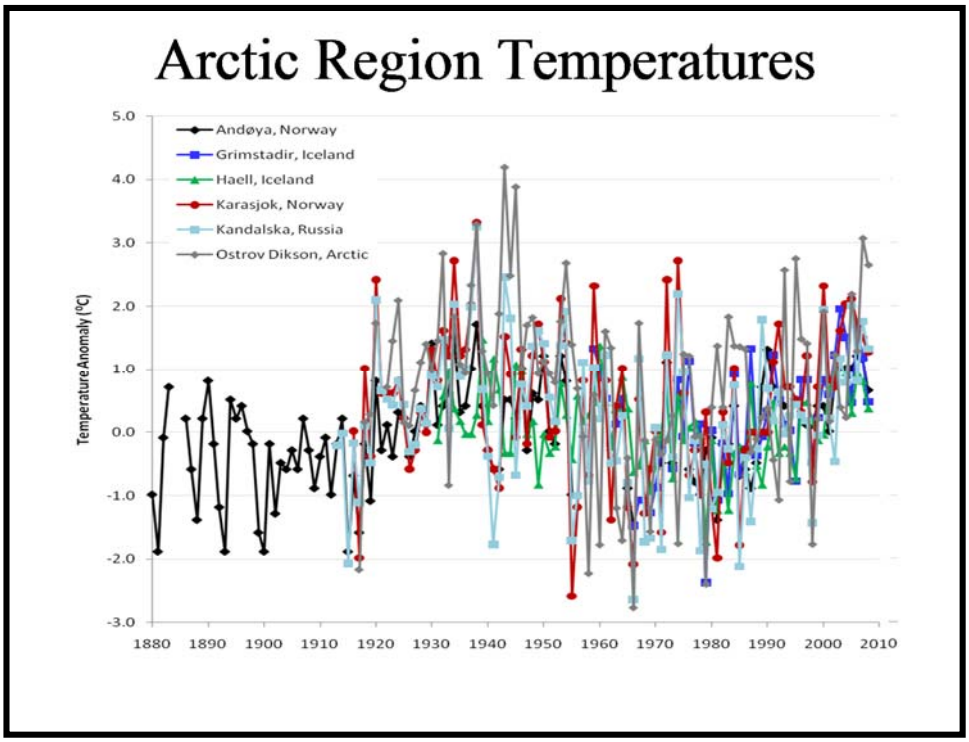


Despite the fact that temperatures recently have risen in the Arctic and the rest of the Northern Hemisphere outside the tropics, these temperatures are not anomalous as 100-year record-high temperatures are not being broken in the Arctic or, for example, the United States. In the Arctic, Figure 11 shows temperatures starting to rise in the late 1970s, but the peak temperatures were higher in the late 1930s.[16] Note that the reliability of these distinct city temperature records, taken as a whole, is beyond question because

[16] *See* Verity Jones, *Arctic Ice Rebound Predicated*, ICECAP: FROZEN IN TIME (Oct. 17, 2010), http://icecap.us/index.php/go/new-and-cool/arctic_ice_ rebound_predicted/ (plotted NOAA data).

these are six independent, separately maintained, temperature records having roughly the same pattern.

Figure 11



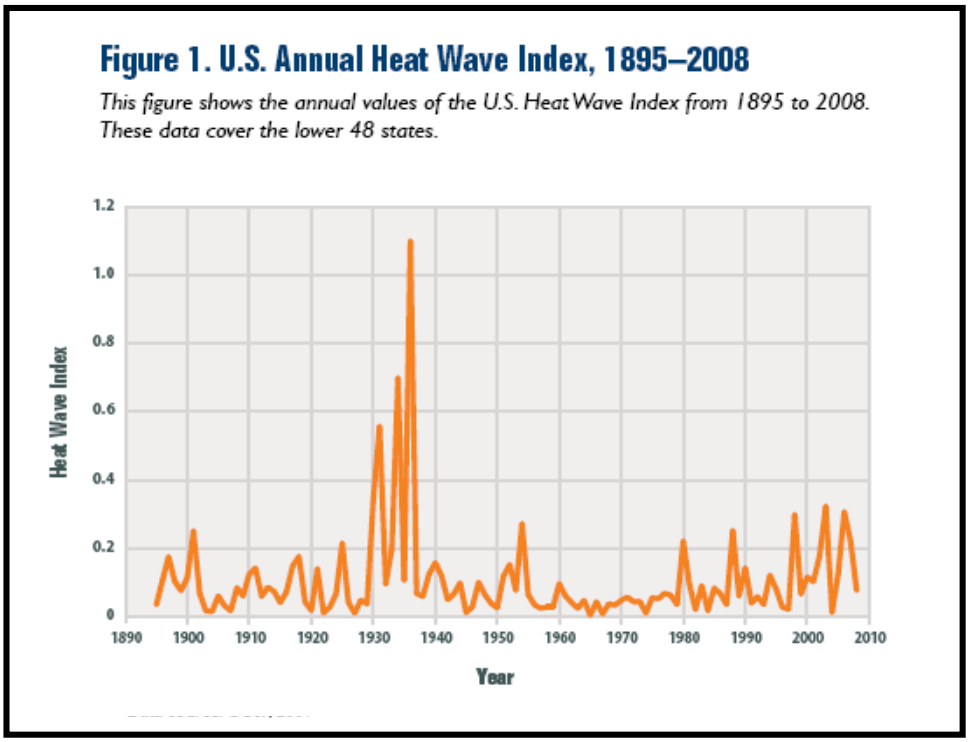
Nor are record-high temperatures being broken in the United States … [*See* Appendix II]

…

The U.S. Annual Heat Wave Index through 2009 shown in Figure 14 also clearly reconfirms that United States temperatures are not

anomalous and that the bulk of the current records were established in the 1930s.[20]

Figure 14



In short, the instrumental GAST (1850 to date) data are simply *not credible* in that claims of recent record setting temperatures are not valid. *The highly credible satellite data, from 1979 to date, do not show "global" warming.*

[20] *See* EPA, "Climate Change Indicators in the U.S", page 24, http://epa.gov/climatechange/indicators/pdfs/ClimateIndicators_full.pdf