STATEMENT TO THE COMMITTEE ON GOVERNMENT REFORM OF THE UNITED STATES HOUSE OF REPRESENTATIVES

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> *If Congress uses its oversight powers effectively and judiciously, the nation will be stronger and the Congress will be more successful. And that will be regardless of whether it is Republicans or Democrats in control. After three decades in office, I know that good congressional oversight is not easy. But I also know how essential it is to the health of the nation. Congress cannot continue to allow its oversight agenda to be set by partisan considerations, and we must not repeat the mistakes of the past decade.*[1]
>
> Representative Henry Waxman (D-CA), 2006
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> *Rather than resolving political debate, science often becomes ammunition in partisan squabbling, mobilized selectively by contending sides to bolster their positions. Because science is highly valued as a source of reliable information, disputants look to science to help legitimate their interests. In such cases, the scientific experts on each side of the controversy effectively cancel each other out, and the more powerful political or economic interests prevail, just as they would have without the science.*[2]
>
> Daniel Sarewitz, 2000

Introduction

I thank the Chairman and the Committee for the opportunity to offer testimony this morning on "Political Interference in Science: Global Warming." I am a Professor of Environmental Studies at the University of Colorado and also director of the university's Center for Science and Technology Policy Research.[3] My research focuses on the connections of science and decision making. I also have been studying climate change science and policy for about 15 years. A short biography can be found at the end of my written testimony, including links to my publications. My testimony draws on my

[1] 18 September 2006, http://oversight.house.gov/Documents/20060918165855-55473.pdf
[2] D. Sarewitz, 2000. Science and Environmental Policy: An Excess of Objectivity, Chapter in R. Frodeman (ed.). **Earth Matters: The Earth Sciences, Philosophy, and the Claims of Community**, Upper Saddle River, NJ: Prentice Hall, pp. 79-98. http://www.cspo.org/products/articles/excess.objectivity.html
[3] At the University of Colorado I am affiliated with CIRES, the Cooperative Institute for Research in Environmental Sciences, a joint institute of the University of Colorado and the National Oceanic and Atmospheric Administration (NOAA). The Center that I direct at CIRES has received research funding from a number of other federal research agencies, including NSF and NASA. The views presented here are my own.

forthcoming book, **The Honest Broker: Making Sense of Science in Policy and Politics** (Cambridge University Press, 2007).

My testimony today makes the case that politics and science cannot in practice be separated. Consequently, policies for the production, promotion, and use of information in decision making should be based on the realities of science in politics, and not on the mistaken impression that science and politics can somehow be kept separate.

There is no Bright Line that Separates Science from Politics

The title of this hearing indicates that when politics and science interact it somehow represents interference. In recent years policy makers and scientists alike have reinforced this view when they have suggested that we need to identify a demarcation between science and politics in order to keep them separate. Such suggestions have come from both Republicans and Democrats. For example:

> "There should be a clear line between the work of scientists, which is to assemble and analyze the best available evidence, and that of policymakers, which is to decide what the nation's response to the science should be."[4]
>
> Representative Henry Waxman (D-CA), 2004
>
> "The issue is where does science end and policy begin,"[5]
>
> David Goldston, chief of staff to Representative Sherwood Boehlert (R-NY), chairman of the House Science Committee, 2006

Many decades of study of the role of science in decision making indicates that efforts to keep separate science and politics are not only doomed to fail, but they are likely to create conditions that are likely to enhance the pathological politicization of science.

Both Mr. Waxman's various reports in recent years on science and politics and those of the Union of Concerned Scientists (UCS) give a strong impression that the politicization of science refers exclusively to their criticisms of the use of science by the present administration. From another perspective, based on the analysis found in a 2004 book published by the conservative-leaning Hoover Institute at Stanford one might be led to think that the politicization of science is really a problem unique to the political left,[6] This sorry state of affairs indicates that the issue of the "politicization of science" has itself become politicized.

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[4] H Waxman, 2003. Politics and Science in the Bush Administration, UNITED STATES HOUSE OF REPRESENTATIVES COMMITTEE ON GOVERNMENT REFORM — MINORITY STAFF SPECIAL INVESTIGATIONS DIVISION AUGUST 2003, p. 1. http://oversight.house.gov/features/politics_and_science/pdfs/pdf_politics_and_science_rep.pdf

[5] A. Revkin, 2006. Call for Openness at NASA Adds to Reports of Pressure, *The New York Times* 16 February http://www.nytimes.com/2006/02/16/science/16nasa.htm

[6] 5 Gough (Ed.), Politicizing Science, Hoover Institute Press. Stanford http://www.hoover.org/publications/books/3003781.html

Issues related to the politicization of science are important to the nation as a whole. In the end what is most important is that the government has the capability to well-use expertise in decision making, because such expertise is absolutely critical to developing, understanding, and implementing policy alternatives in the face of the complex challenges of the modern world. In my written testimony that follows I hope to make these thoughts a bit more concrete.

Politics and Science Have Always Mixed

Here are just a very few examples of political issues that involved science under the past six presidential administrations[7]:

- President Richard Nixon had NASA move the timing of the launch of Apollo 17 in order to better serve his 1972 reelection campaign, against the wishes of NASA scientists and engineers. President Nixon also asked his science advisor to cut all research funding for the Massachusetts Institute of Technology due to a political conflict with its president (his science advisor ignored the request).[8]
- During President Ford's administration the *Los Angeles Times* alleged that the Environmental Protection Agency had falsified data in support of its regulatory position on sulfur oxides. A subsequent investigation by the U.S. Congress found serious issues with EPA's peer review and that some of its epidemiological research provided an unsuitable basis for regulation.[9]
- President Jimmy Carter went against the wishes of his scientific advisors when he committed the United States to drawing 20% of its energy from renewable sources by 2000. President Carter explained that he accepted his advisors technical conclusions that the goal would be impossible, but that he had put forward the proposal for political reasons.[10]
- President Ronald Reagan (prior to being elected) questioned the science of evolution, calling it a theory that was being increasingly challenged by scientists. He suggested that if evolution was to be taught in schools, "then I think that also the biblical theory of creation, which is not a theory but the biblical story of creation, should also be taught."[11]
- The administration of President George H. W. Bush proposed redefining "wetlands" in such as way so as to exclude millions of acres of land from federal

[7] See also, D. Greenberg, 2001. **Science, Money, and Politics: Political Triumph and Ethical Erosion** (University of Chicago Press).
[8] http://sciencepolicy.colorado.edu/scienceadvisors/david_transcript.html
[9] Report on Joint Hearings on the Conduct of the Environmental Protection Agency's "Community Health and Environmental Surveillance System" (CHESS) Studies, Joint Report of the Committee on Science and Technology and the Committee on Interstate and Foreign Commerce, April 9, 1976
[10] F. Press and P. Smith, (in press) Science and Technology in the Carter Presidency, Chapter 6 in R. Pielke, jr. and B. Bklein (eds.) **Presidential Science Advisors: Perspectives and Reflections on Science, Policy, and Politics** (in prep.).
[11] Anon. 1980. "Republican Candidate picks Fight with Evolution," *Science* **209**:1214.

protection and open them up for development. The proposal was eventually withdrawn as lacking a scientific basis.[12]

- President Bill Clinton ordered a strike on the Al Shifa pharmaceutical factory in Sudan in 1998 in retaliation for bombings of the U.S. embassies in Kenya and Tanzania. The target of the attack was justified, in part, based on scientific evidence gathered at the factory site. It was later revealed that the scientific evidence had in fact been inconclusive.[13]

If science and politics have always been interrelated, then what, if anything, is different about today?

1. There are an increasing number of important issues which are related to science and technology in some way. Some issues are the result of advances in science and technology (e.g., the ethics of cloning), in others science and technologies are central to their resolution.
2. Policy makers increasingly invoke expertise to justify a course of action that they advocate.
3. Advocacy groups increasingly rely on experts to justify their favored course of action.
4. Congress, at least for the past six years, and perhaps longer has been derelict in its oversight duties, particularly related to issues of science and technology.
5. Many scientists are increasingly engaging in political advocacy.
6. Some issues of science have become increasingly partisan as some politicians sense that there is political gain to be found on issues like stem cells, teaching of evolution, climate change, and so on.
7. The Bush Administration has engaged in hyper-controlling strategies for the management of information.

Science in Policy is Unavoidably Political

The notion that science and politics can be somehow separated in policy making survives in spite of an enormous and sophisticated literature providing evidence to the contrary in the area of Science and Technology Studies. Harvard's Sheila Jasanoff, a leading scholar who has studied the inter-relationship of science and politics, has written:

> "Although pleas for maintaining a strict separation between science and politics continue to run like a leitmotif through the policy literature, the artificiality of this position can no longer be doubted. Studies of scientific advising leave in tatters the notion that it is possible, in practice, to restrict the advisory practice to

[12] Pielke, Jr., R. A. (ed.), 2004. Report on the Misuse of Science in the Administrations of George H.W. Bush (1989-1993) and William J. Clinton (1993-2001). By the Students in ENVS 4800, Maymester 2004, University of Colorado, June.
http://sciencepolicy.colorado.edu/admin/publication_files/resource-1935-2004.27.pdf

[13] Pielke, Jr., R. A. (ed.), 2004. Report on the Misuse of Science in the Administrations of George H.W. Bush (1989-1993) and William J. Clinton (1993-2001). By the Students in ENVS 4800, Maymester 2004, University of Colorado, June.
http://sciencepolicy.colorado.edu/admin/publication_files/resource-1935-2004.27.pdf

> technical issues or that the subjective values of scientists are irrelevant to decision making. . . .The notion that scientific advisors can or do limit themselves to addressing purely scientific issues, in particular, seems fundamentally misconceived ... the advisory process seems increasingly important as a locus for negotiating scientific differences that have political weight."[14]

The very language of science in public discussions lends itself to politicization. For instance, The New York Times reported in February, 2006 that scientists at NASA's Jet Propulsion Laboratory had complained because they had been instructed to use the phrase "climate change" rather than the phrase "global warming."[15] The reason for this complaint is that the language of climate science has become politicized. A Republican strategy memo recommended use of the phrase "climate change" over "global warming" and environmental groups have long had the opposite preference. Another federal scientist, at NOAA, described how he was instructed by superiors not to use the word "Kyoto" or "climate change."[16]

To cite another example, several years ago the Union of Concerned Scientists, as part of its advocacy campaign on reducing greenhouse gas emissions, recommended the use of the word "harbinger" to describe current climate events that may become more frequent with future global warming.[17] Subsequently scientists at NOAA, the National Center for Atmospheric Research, Harvard Medical Center's Center for Health and the Global Environment, Stanford, and the Fish and Wildlife Service's Polar Bear Project began to use the phrase in their public communication in concert with advocacy groups like Greenpeace.[18] The term has also appeared in official government press releases.[19] The use of language to convey political meaning is of course well understood in politics and has gained some greater prominence in recent years through the work of George Lakoff.[20] Policy makers and their staff are of course intimately familiar with these dynamics : we have just recently seen them in practice as Republicans and Democrats have battled over framing President Bush's proposed troop increases in Iraq as a "surge" or as an "escalation."

If the choice of language to use in discussing matters of science is inherently political then so too is selection of topics to issue press releases and statements made in

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[14] S. Jasanoff, 1990. **The Fifth Branch: Science advisors as policy** makers, (Harvard University Press) pp. 230-231, 249.

[15] http://www.nytimes.com/2006/02/16/science/16nasa.html

[16] http://www.rockymountainnews.com/drmn/local/article/0,1299,DRMN_15_5205550,00.html

[17] http://www.ucsusa.org/global_warming/science/early-warning-signs-of-global-warming.html The word "harbinger" is suggestive of a linkage between today's weather events and projected climate change without definitively requiring a specific attribution.

[18] http://www.projectthinice.org/warming/science.php
http://sciencepolicy.colorado.edu/prometheus/archives/climate_change/000354harbingers_and_clima.html

[19] http://www.gsfc.nasa.gov/news-release/releases/2003/h03-340.htm

[20] G. Lakoff. 2004. **Don't Think of an Elephant: Know your values and frame the debate, the essential guide for progressives** (Chelsea Green Publishing). For instance, at p. 3: ". . . when you are arguing against the other side: Do not use their language. Their language picks out a frame – and it won't be the frame you want." See also S. Hilgartner, 2000. **Science on Stage: Expert advice as public drama** (Stanford University Press).

government reports describing science programs, and in the composition of government advisory committees. Consider each in turn:

Choices When Issuing Press Releases and Reports

Scientists in federal agencies author tens of thousands of research papers every year. For only a very small fraction of these do federal agencies issue press releases or media advisories. So some criteria must be applied to determine what press releases are put out by an agency. Consequently, the decision to issue a press release necessarily involves extra-scientific considerations such as the likelihood of making news, which itself can be a function of political conflict. Often the politics involved are not left-right issues but simply casting the agency in a positive public light as a resource in future political battles over agency budgets.

Agencies all must have some procedure for which subjects and which scientists are promoted to the public. Because of the recent controversies involving press access to scientists, NASA and NOAA have developed very different approaches to their media policies. NOAA's policy on public statements by its employees states that the employee speaks for the agency at all times:

> "Whether in person, on camera, or over the phone, when speaking to a reporter you represent and speak for the entire agency."[21]

NASA, by contrast, distinguishes between speaking for the agency and personal views:

> "NASA employees who present personal views outside their official area of expertise or responsibility must make clear that they are presenting their individual views – not the views of the Agency – and ask that they be sourced as such."[22]

Every government agency needs some sort of media policy. I suspect that every congressional office and committee also has guidelines for staff interacting with the media. It seems obvious that democracy would be impossible if every government employee sought to interpret or implement laws and policy according to their own personal preferences. And government employment carries with it professional responsibilities, which are proportionately greater the higher ranking the career official. Because the issue of agency media policies are not obvious or straightforward, they are an ideal subject for Congressional oversight, in order to evaluate and to share best practices.

The preparation of government reports has similar characteristics. Under the Climate Change Science Program more than 20 assessments of the state of various aspects of climate science are in various stages of preparation. The various reports are prepared

[21] http://www.corporateservices.noaa.gov/%7Eames/NAOs/Chap_219/naos_219_6.html
[22] http://www.nasa.gov/pdf/145687main_information_policy.pdf

under an exacting set of procedures for drafting, reviewing, and editing.[23] The Federal government has also sought to create guidelines to provide "guidance to agencies ensuring the quality, objectivity, utility, and integrity of information" under what is called the Data Quality Act.[24] Such policies represent experiments in the presentation of scientific information to policy makers, and as such they are worth close Congressional oversight. But for the reasons described above, no information management policy can ever hope to eliminate political considerations in the preparation of government reports with scientific content.

Advisory Committee Empanelment

A November, 2004 report of the nation's leading nongovernmental science advisory body – the National Research Council (NRC) -- recommended that presidential nominees to science and technology advisory panels not be asked about their political and policy perspectives. The NRC describes the political and policy views of prospective panelists as "immaterial information" because such perspectives "do not necessarily predict their position on particular policies."[25] This "don't ask, don't tell" approach has been subsequently passed into law under the so-called Durbin Amendment to the FY 2006 Health and Human Services Appropriations Bill.[26] The "don't ask, don't tell" approach to politics in advisory committee empanelment is meaningless in practice.

Considerations of politics are unavoidable in the empanelling process. Consider the irony in the fact that the NRC Committee that recommended that political factors not be considered in advisory panels was itself composed of a perfect partisan balance between those committee members who had served Republican administrations and those who had served Democratic administrations. The real question is whether we want to openly confront the reality that extra-scientific factors of course play a role in committee empanelment or we turn a blind eye and allow committee empanelment decisions to play out in the proverbial backrooms of political decision making.

In nearly every other area of politics, advice is put forward with political and policy perspectives at the fore: the Supreme Court, congressional hearing witness lists, the Sept. 11 commission, to name just a few. In no other area where advice is given to the government is it even plausibly considered that politics can or should be ignored. And while science is the practice of developing systematic knowledge, scientists are both human beings and citizens, with values and views, which they often express in public forums.

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[23] http://www.climatescience.gov/Library/sap/sap-guidelines.htm
[24] http://www.whitehouse.gov/omb/inforeg/agency_info_quality_links.html
[25] http://books.nap.edu/catalog/11152.html
[26] The full text of the Durbin Amendment is:

> SEC. 519. (a) None of the funds made available in this Act may be used to request that a candidate for appointment to a Federal scientific advisory committee disclose the political affiliation or voting history of the candidate or the position that the candidate holds with respect to political issues not directly related to and necessary for the work of the committee involved. (b) None of the funds made available in this Act may be used to disseminate scientific information that is deliberately false or misleading. [Available from http://thomas.loc.gov]

Sheila Jasanoff has written that when experts make scientific judgments the do so usually

> "in full knowledge that different choices may lead to substantially different policy recommendations. Given this state of affairs, it is almost inevitable that a scientist's personal and political values will influence his reading of particular facts."[27]

Whether they are asked explicitly or not during the appointment process, many scientists' views on politics and policy are well known. For instance, thanks to a letter of endorsement we know of 48 Nobel Prize winners who in 2004 supported John Kerry for president. It would be easy to convene an advisory panel of very distinguished scientists who happen to have signed this letter without formally asking them about their political views. Moreover, to evaluate whether a policy focused on keeping political considerations out of the scientific advisory process is working, it would be necessary to have information showing that the composition of particular panels is not biased with respect to panelists' political and policy views, which in turn would require knowing what those views are in the first place. It is a Catch-22.

Finally, science advisory panels never deal purely with science. They are convened to provide guidance either on policy or on scientific information that is directly relevant to policy. Arizona State University's Dan Sarewitz has persuasively argued,

> "When an issue is both politically and scientifically contentious, then one's point of view can usually be supported with an array of legitimate facts that seem no less compelling than the facts assembled by those with a different perspective."[28]

On climate change, even as scientists have come to a robust consensus that human activities have significant effects on the climate, legitimate debate continues on the costs and benefits of proposed alternative policy actions. And evaluation of costs and benefits involves considerations of values and politics. It would be hopelessly naive to think that an advisory committee on climate change could be empanelled without consideration of how the views of its members map onto the existing political debate.

Rather than eliminating considerations of politics in the composition of science advisory panels, a policy of "don't ask, don't tell" just makes it more difficult to see the role played by politics, which will be ever present. More important than the composition of scientific advisory panels is the charge that they are given and the processes they employ to provide useful information to decision makers. The current debate over these panels reinforces the old myth that we can somehow cleanly separate science from politics and then ensure that the science is somehow untainted by the "impurities" of the rest of

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[27] S. Jasanoff, 1986. **Risk Management and Political Culture: A Comparative Analysis of Science**, (Russell Sage Foundation).

[28] D. Sarewitz, 2000. Science and Environmental Policy: An Excess of Objectivity, Chapter in R. Frodeman (ed.). **Earth Matters: The Earth Sciences, Philosophy, and the Claims of Community**, Upper Saddle River, NJ: Prentice Hall, pp. 79-98. http://www.cspo.org/products/articles/excess.objectivity.html

society. Yet paradoxically, we also want science to be relevant to policy. A better approach would be to focus our attention on developing transparent, accountable and effective processes to manage politics in science -- not to pretend that it doesn't exist.

Scientific Cherry Picking and Mischaracterizations are a Part of Politics

A memorandum providing background to this hearing prepared 26 January 2007 by the majority staff of the House Committee on Government Reform and Oversight illustrates the cherry picking of science (reproduced in Figure 1). Cherry picking literally mean "take the best, leave the rest." The memorandum states, quite correctly, that "a consensus has emerged on the basic science of global warming." It goes on to assert that:

> ". . . recently published studies have suggested that the impacts [of global warming] include increases in the intensity of hurricanes and tropical storms, increases in wildfires, and loss of wildlife, such as polar bears and walruses."

To support its claim of increasing intensities of hurricanes and tropical storms the memorandum cites three papers.[29] What the memorandum does not relate is that authors of each of the three cited studies recently participated with about 120 experts from around the world to prepare a consensus statement under the auspices of the World Meteorological Organization which concluded:

> "The possibility that greenhouse gas induced global warming may have already caused a substantial increase in some tropical cyclone indices has been raised (e.g. Mann and Emanuel, 2006), but no consensus has been reached on this issue."[30]

With respect to two of the three papers cited in the memorandum, referring to possible trends in tropical cyclone intensities, the WMO statement concluded the subject "is still hotly debated" and "for which we can provide no definitive conclusion."[31] The WMO Statement was also recently endorsed by the Executive Council of the American Meteorological Society.[32] The hearing background memorandum is absolutely correct when it asserts that "recently published studies have suggested that the impacts [of global warming] include increases in the intensity of hurricanes and tropical storms." But this selective reporting does not tell the whole story either. Such cherry picking and misrepresentations of science are endemic in political discussions involving science.

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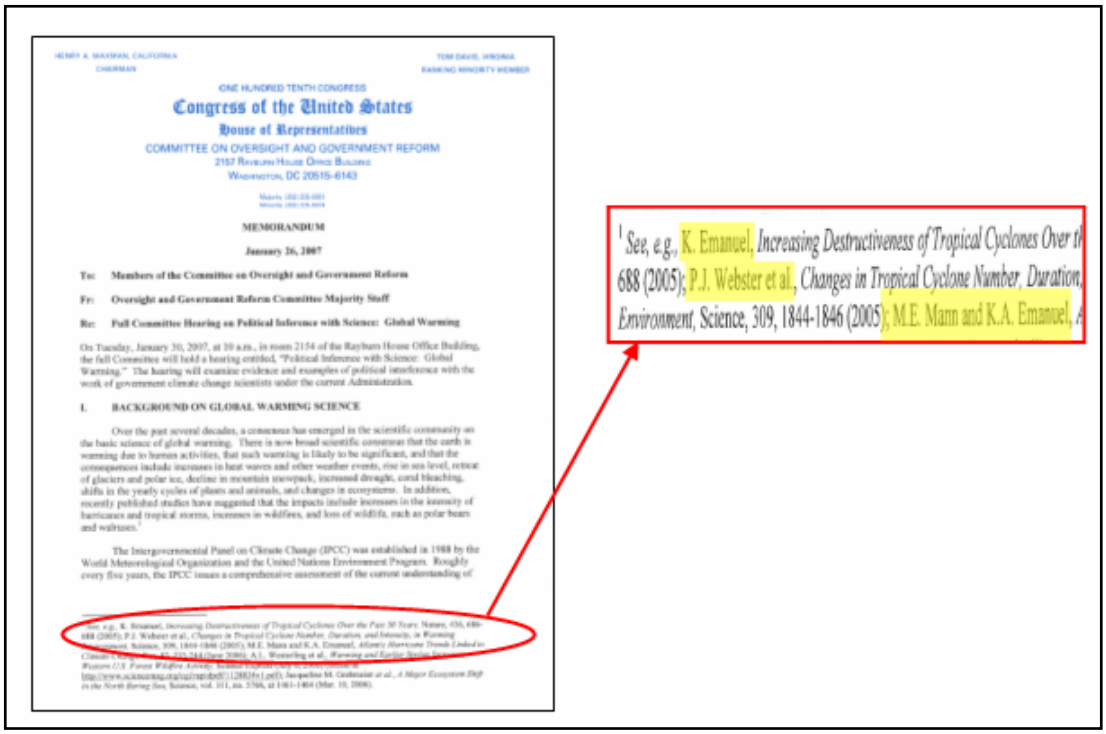
[29] The papers that it cites are: K. Emanuel, 2005. Increasing destructiveness of tropical cyclones over the past 30 years, *Nature*, **436**:686-688. P. J. Webster., G.J. Holland, J.A. Curry, and H.R. Chang, 2005. Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment, *Science*, **309**:1844-1846. M. E. Mann and K. A. Emanuel, 2006: Atlantic hurricane trends linked to climate change. *EOS*, **87**:233-244.

[30] http://sciencepolicy.colorado.edu/prometheus/archives/IWTC_Statement.pdf
[31] http://sciencepolicy.colorado.edu/prometheus/archives/IWTC_Statement.pdf
[32] http://www.wmo.ch/web/arep/press_releases/2006/iwtc_statement.pdf



ONE HUNDRED TENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

2157 Rayburn House Office Building

Washington, DC 20515-6143

MEMORANDUM

January 26, 2007

To: Members of the Committee on Oversight and Government Reform

Fr: Oversight and Government Reform Committee Majority Staff

Re: Full Committee Hearing on Political Inference with Science: Global Warming

On Tuesday, January 30, 2007, at 10 a.m., in room 2154 of the Rayburn House Office Building, the full Committee will hold a hearing entitled, "Political Inference with Science: Global Warming." The hearing will examine evidence and examples of political interference with the work of government climate change scientists under the current Administration.

I. BACKGROUND ON GLOBAL WARMING SCIENCE

Over the past several decades, a consensus has emerged in the scientific community on the basic science of global warming. There is now broad scientific consensus that the earth is warming due to human activities, that such warming is likely to be significant, and that the consequences include increases in heat waves and other weather events, rise in sea level, retreat of glaciers and polar ice, decline in mountain snowpack, increased drought, coral bleaching, shifts in the yearly cycles of plants and animals, and changes in ecosystems. In addition, recently published studies have suggested that the impacts include increases in the intensity of hurricanes and tropical storms, increases in wildfires, and loss of wildlife, such as polar bears and walruses.[1]

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United Nations Environment Program. Roughly every five years, the IPCC issues a comprehensive assessment of the current understanding of

[1] See, e.g., K. Emanuel, Increasing Destructiveness of Tropical Cyclones Over th 688 (2005); P.J. Webster et al., Changes in Tropical Cyclone Number, Duration, Environment, Science, 309, 1844-1846 (2005); M.E. Mann and K.A. Emanuel, A

Figure 1. 26 January 2007 Memorandum Re: Full Committee Hearing on Political Interference with Science.

What has occurred in this memorandum is exactly the same sort of thing that we have seen with heavy-handed Bush administration information management strategies which include editing government reports and overbearing management of agency press releases and media contacts with scientists. Inevitably, such ham-handed information management will backfire, because people will notice and demand accountability. This hearing today is good evidence for that.

Scientists Have Contributed to the Politicization of Science

Scientists have not been innocent victims in these political dynamics. Writing in the National Journal, Paul Starobin suggests that:

> "Inevitably the scientist has been dragged, or has catapulted himself, into the values and political combat that surround science and has emerged, in certain respects, as just another (diminished) partisan."[33]

Recent debate over hurricanes and climate change provides a perfect case study of these dynamics and the role that individual scientists play in creating conditions for the pathological politicization of science.

[33] P. Starobin, 2006. Who turned out the enlightenment, *National Journal*, 20-26 July.

In the spring of 2006, a group of scientists were collectively promoted in a press release by a group called TCS - Tech Central Station - which values "the power of free markets, open societies and individual human ingenuity to raise living standards and improve lives." Each of the scientists cited in the TCS press release believes that global warming plays little discernible role in hurricane activity.[34] Clearly the scientists were selected by, or joined with, TCS because their scientific perspectives happened to be politically convenient. Late in the summer of 2006, another group of scientists collaborated with an environmental group to promote research suggesting that sea surface temperatures had increased due to global warming.[35] Each of these scientists believes that global warming is the primary reason behind increased hurricane activity. These scientists were similarly collected and presented as a group because their scientific perspectives also happened to be politically convenient.

Interest groups have a great deal of power in such situations of scientific diversity, because they can selectively assemble experts on any given topic to basically support any ideological position. That interest groups will cherry-pick among experts comes as no surprise, but what, if any, responsibility do scientists have in such advocacy and what are the implications for the scientific enterprise?

From the perspective of the individual scientist choosing to align with an interest group, it should be recognized that such a decision is political. There is of course nothing wrong with politics. It is how we get the business of society done, and organized interest groups are fundamental to modern democracy. Nonetheless, an observer of this dynamic might be forgiven for thinking that different perspectives on scientific issues are simply a function of political ideologies. We often see how contentious political debates involving science can become, when filtering science through interest groups is the dominant mechanism for connecting science to policy.

Scientists have other options beyond aligning with advocacy groups. Advice can also be provided through government science advisory panels, National Academy committees, and professional societies. When scientists with differing views organize themselves to jointly describe the policy significance of their work (and where they may differ), it can serve to militate against the pathological politicization of science. Unfortunately, many such institutions eschew discussion of the significance of scientific work,[36] or emulate the behavior of advocacy groups by selectively presenting a subset of the relevant science or endorsing particular policy alternatives.

One notable effort to place scientific debate into a policy context was led by MIT's Kerry Emanuel, a hurricane-climate expert embroiled in the current debate over hurricanes and global warming. He organized nine of his colleagues from both sides of the debate to

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[34] http://sciencepolicy.colorado.edu/prometheus/archives/science_policy_general/000747politicization_101_.html

[35] http://www.net.org/warming/hurricane_briefing.vtml

[36] For instance, the Intergovernmental Panel on Climate Change (IPCC) formally states that it does not discuss policy options.

prepare a statement about their debate and its significance for decision making. The statement by the scientists said:

> As the Atlantic hurricane season gets underway, the possible influence of climate change on hurricane activity is receiving renewed attention. While the debate on this issue is of considerable scientific and societal interest and concern, it should in no event detract from the main hurricane problem facing the United States: the ever-growing concentration of population and wealth in vulnerable coastal regions.[37]

With the exception of The New York Times, the statement was been almost completely ignored by the major media and advocacy groups. This is not surprising, as many would rather use scientists for their own narrow purposes, which often depend on the presence of political conflict rather than consensus. Nonetheless, the effort by the hurricane scientists represents responsible leadership seeking to move beyond the exploitation of scientists for political ends.

[37] http://wind.mit.edu/~emanuel/Hurricane_threat.htm The WMO consensus statement referenced above also represents such a community effort.

Short Biography

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Roger A. Pielke, Jr. has been on the faculty of the University of Colorado since 2001 and is a Professor in the Environmental Studies Program and a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES). At CIRES, Roger serves as the Director of the Center for Science and Technology Policy Research. Roger's current areas of interest include understanding disasters and climate change, the politicization of science, decision making under uncertainty, and policy education for scientists. In 2006 Roger received the Eduard Brückner Prize in Munich, Germany for outstanding achievement in interdisciplinary climate research. Before joining the University of Colorado, from 1993-2001 Roger was a Scientist at the National Center for Atmospheric Research. Roger serves on various editorial boards and advisory committees, and is the author of numerous articles and essays. He is also author, co-author or co-editor of five books. Roger has degrees in mathematics, public policy, and political science, all from the University of Colorado. His most recent book is titled: **The Honest Broker: Making Sense of Science in Policy and Politics** to be published by Cambridge University Press in early 2007.

For more information see:
http://sciencepolicy.colorado.edu/about_us/meet_us/roger_pielke/