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CIRES

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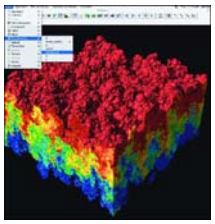
Introduction to Ogmius Exchange



Debate has heated up lately over the predictive capabilities of climate models and the implications for action on climate change. As Roger Pielke, Jr. noted in a recent commentary[1]: "Whether one is faced with evacuating from a possible hurricane landfall or investing in a mutual fund, decision-making is improved when uncertainties are readily understood. On the highly politicized issue of climate change, however, understanding uncertainties is made difficult when scientists advocating for action oversell the predictive capabilities of climate models, such as those of the United Nations Intergovernmental Panel on Climate Change (IPCC)." Advocates for action on climate change maintain that current extreme weather events are "consistent with" climate model projections, while critics point out that temperature trends of the past decade have disproved climate models.

We explore this debate more fully in this issue of Ogmius. Are the predictive capabilities of models oversold? Are models useful, and how so? Can they inform decision-making? Thomas Chase of the University of Colorado offers a critique of the skill of current climate models and suggests caution. Kevin Trenberth of the National Center for Atmospheric Research (http://www.ncar.ucar.edu/) and Mike Hulme of the Tyndall Centre for Climate Change Research (http://www.tyndall.ac.uk/) respond to Tom Chase's article by offering their perspectives on the usefulness of models. As Mike Hulme notes, part of the problem is because "the IPCC has – inadvertently perhaps - elevated the political significance of climate model performance to a new level." Roger Pielke Jr. wraps up the exchange with a few closing thoughts. Comments welcome!
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1. Excerpt from Pielke, Jr. 2008. "Overheated Claims" Financial Post online (http://network.nationalpost.com/np/blogs/fpcomment/archive/2008/06/17/overheated-claims.aspx).

Ogmius Exchange Part I
A caution to policy makers: Climate models fail key tests for accuracy

Should policy makers base decisions on the results of current climate models? I remain unconvinced for several reasons. In a soon to be published paper, Reichler and Kim, 2008, argue that climate models have steadily improved in the last decade in simulating climate behavior when compared to present day observations. While models are improving, to be convincing they must simulate pertinent physical processes accurately to within some objective measure of skill. One minimal definition of accuracy might be that errors in the simulation are

Ogmius Exchange Part I Continued

smaller than the signal we are trying to detect.

The recent Intergovernmental Panel on Climate Change report (IPCC), (Randall et al., 2007) does not provide any assessment of model skill (ability to reproduce observations) in simulating the present day greenhouse effect (downward longwave radiation). It does, however, supply comparisons of model error for other components of the radiation simulation. Figure 1 (from Randall et al., 2007) compares root mean square errors averaged around a latitude band for all current generation IPCC models for outward solar radiation (top panel) and outward terrestrial radiation. We can take these figures as representative of the magnitude of errors in simulating the observed greenhouse effect. Model error varies by latitude from approximately 5W/m^2 (energy per unit time per unit area) to nearly 40W/m^2 in the solar simulation with an averaged model error of greater than 8W/m^2 at nearly every latitude. The longwave simulations have average errors of 5W/m^2 or more at most latitudes with individual models exceeding 30W/m^2 at some locations. Wild (2005) indicates that current models still have systematic errors in simulating parts of the radiation budget and concludes that considerable uncertainties and inconsistencies remain in model calculations particularly as related to water vapor, the main greenhouse gas.

Appreciable greenhouse warming also depends on positive feedbacks in the hydrological cycle (clouds, water vapor and ice) and yet these are precisely the areas which cause most errors in present day simulations (Randall et al., 2007; Wild, 2005).

The magnitude of model error in simulating the present day is important because evidence exists that natural fluctuations in extreme events and average climate may still be larger than any human climate signal (e.g. Chase et al., 2006; Keenlyside et al., 2008) indicating that precision is necessary to separate any human effect. Additionally, Figure 2 shows a summary comparing various expected climate effects and indicates the estimated radiative forcing due to greenhouse gases is approximately 2-3 W/m^2. Even if this perturbation were doubled, the errors in the radiation simulation in models calibrated for the present day are still much larger than the signal we are looking for.

Figure 2 also includes an assessment of the Level of Scientific Understanding (LOSU) for the processes discussed. The effects due to greenhouse gases are judged to have high levels of scientific understanding notwithstanding the simulated errors discussed above but this confidence deteriorates to low and medium levels meaning errors in simulating these are potentially much larger than those due to radiation.

Finally, we have shown in our model simulations (Lawrence and Chase, 2007) that the hydrological response to changes in land cover dominates the albedo effect in line with studies by e.g. Chase et al. (1996) and Feddema et al. (2005). As shown in Figure 2, this does not even consider this hydrological response.

Current generation climate models are *calibrated* to reproduce present day climate and yet are unable to simulate present day radiation balances, the fundamental physical process we are interested in, to the required degree of accuracy (errors are much larger than the several W/m^2 signal we are looking for). Simulation of future climate is dependent on accurate simulation of feedbacks in the hydrological cycle which have proved elusive. Processes for which we have low to medium levels of scientific understanding cannot be simulated to a high degree of accuracy. In some cases the assumed physical mechanisms involved might be entirely wrong. Evidence exists that natural fluctuations may still dominate any human climate change. Finally, there have been relatively few predictions made by climate models which have been unambiguously shown to be a signature of greenhouse gas warming. Climate models can be used effectively as guides to *possible* physical outcomes which need to be independently verified by other means. As yet output from climate models remains mostly speculative and should be used with caution as a guide to policy decisions.

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For references see: http://sciencepolicy.colorado.edu/ogmius/archives/issue_22/ogmius_exchange_refs.html

For figures see: http://sciencepolicy.colorado.edu/ogmius/archives/issue_22/ogmius_exchange_figs.html

Ogmius Exchange Part II

Models can be useful tools for planning ahead

A response to Thomas Chase:

'A caution to policymakers: climate models fail key tests for accuracy'

The opening question raised is "Should policy makers base decisions on the results of current climate models?" Of course the answer is no. George Box is credited with saying "*All models are wrong, some are useful*". It applies to climate models especially well. No one should

Ogmius Exchange Part II Continued

base a decision on a climate model and its output without proper evaluation as to whether it is in the useful category. In fact models are used to guide decisions every day: weather forecasts, seasonal forecasts, and so on. But they should not be used as a "black box".

A climate model is a tool; often a very sophisticated tool that encapsulates much of our understanding about the complex climate system. But it is still a model that makes assumptions and approximations, and is a grossly simplified version of the real world. Faster computers that can permit much higher resolution are required, for one thing, to merely capture our current understanding about the role of currently unresolved phenomena such as hurricanes. Adding more processes and complexity could also allow progress to be made.

Chase decides to use as a metric the radiation at top of atmosphere (TOA). Yes models contain biases and errors. But do they matter? The main way models have been used is to examine the change in response to some new forcing. This avoids worrying about specifying the initial state, and no model, even if perfect, would be expected to closely match the Earth Reduction Budget Experiment (ERBE) values for a very limited period (especially regionally) unless it were initialized and underwent the same sequence of El Niño and La Niña events. Models would also differ from each other depending on sequencing of such natural variability. Chase's interpretation of Figure 1 is very flawed by not accounting for such effects. Models differ: e.g., in resolution, in land-ocean definition, in vegetation specification, and in basic things like the total solar irradiance. Rms errors in Figure 1 say nothing about the errors in the zonal or global mean. Errors in such quantities also say nothing about what happens when the climate is perturbed. The response to some forcing is what matters. If the response is linear or small, then the bias matters not a bit.

Chase should not mistake the uncertainty in knowledge about the forcing and how it has changed with the uncertainty in the model formulation. Aerosol forcing is poorly known. That uncertainty does not affect the confidence in the response to specified known forcing. He also mistakes forcings and feedbacks. Processes internal to the climate system, such as those involving the hydrological cycle, are feedbacks and properly do not belong in Figure 2. However, the hydrological cycle is one area where we suspect that nonlinearities matter. Nonetheless, the dominant feedback effect, that of increasing water vapor with increased heating, and thus an enhanced greenhouse effect, is simulated quite well by models and in ways consistent with observations. Uncertainties in clouds, and aerosol effects on clouds, however, remain large.

All of this does not mean that current climate models are not useful, though, in helping to guide policy decisions, provided they are used appropriately, with adequate evaluations of what they do well and what they do not, what their limitations are and what their capabilities are. This assessment is done by the IPCC.

The climate is changing and the past is no longer a good guide to the future. So what should we use for guidance? Any decision involves a model: whether it is a model of no change (which is surely wrong), a back-of-the-envelope or heuristic model perhaps based on someone's limited experience, a simple energy balance model, or a full blown global climate model that requires a super computer to run. At least the latter includes many of the feedbacks and nonlinearities that we know are so important. But it does not include them all. Such models can be exceedingly useful if used wisely. Observed climate changes are now sufficiently large, and models in IPCC have now improved to the point that they simulate many of the observed changes going on. A confidence booster for sure! But we also need to improve models and have access to faster bigger computers.

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For figures see: http://sciencepolicy.colorado.edu/ogmius/archives/issue_22/ogmius_exchange_figs.html

Ogmius Exchange Part III

Reflecting on good and useful climate models

A response to Thomas Chase:

'A caution to policymakers: climate models fail key tests for accuracy'

In his article 'A caution to policymakers: climate models fail key tests for accuracy', Thomas Chase focuses on the fidelity of model outputs as the key test for judging their usefulness for policy- and decision-making. He offers evidence that current climate models remain deficient in this regard, especially with respect to their simulations of future climate under conditions of substantial additional

Ogmius Exchange Part III Continued

greenhouse gas forcing. He concludes that results from climate models should be used 'with caution as guides to policy decisions'. On the terms that Chase approaches the issue this may be a sensible enough conclusion. The operative words of course are 'with caution', the interpretation of which is a matter of judgment and convention that will play out differently in different cultures, traditions and decision-contexts.

But there are many other dimensions to consider when contemplating the relationship between a climate model and decision-making. Chase not only assumes that accuracy – verisimilitude between model and reality - is the key to a good climate model, he also implies that a primary purpose of models is to allow decision-makers to base decisions on their results. Both assumptions – implicitly made in the article referred to - need challenging. They need challenging because they are so widespread. The IPCC has – inadvertently perhaps - elevated the political significance of climate model performance to a new level and a dominant approach to climate change adaptation – namely decision optimization - places a high premium on 'accurate and precise' model predictions (see Dessai et al., 2008).

There are different ways of judging whether a climate model is 'good', and faithful replication of present-day climate is only one such approach. A good model could also be the one which is designed to represent known physical processes to the greatest level of complexity. On the other hand it could be one that is relatively simple in design, easy to use and transparent to its policy audience. Or using the idea of co-production between science and society, a good model could be the one that is co-designed between scientist and decision-maker and which is best fit for a purpose.

There are different ways, too, of conceiving the purpose(s) of climate models. Many people may assume the primary purpose is to offer predictions of future climates for 'guiding policy'. But models perform other functions as well. Conventionally, models function within science as systematic devices to organize knowledge and to reveal what we don't know about complex systems, as much as they exist to offer predictions based on what we think we do know. They have a heuristic rather than a predictive function. This perspective on models was nicely revealed by veteran climate modeler Syukuro Manabe in his classic 1975 paper which described the first 2xCO2 experiment with a 3-D atmospheric General Circulation Model: 'It is not advisable to take too seriously the quantitative aspect of the results obtained in this study. Nevertheless … this study … identifies the various requirements that have to be satisfied for the study of the climate sensitivity with a [climate] model.' (Manabe and Wetherald, 1975: 13).

And from a sociological perspective we must be aware that models in general – and climate models are certainly no exception - can acquire a role for one social group to exert power over another (see Shackley and Darier, 1998). This is why we have seen over the years many arguments about climate change policy reduced to arguments about the veracity of one or more climate models.

Chase offered a note of caution to policy-makers about overly relying on climate models to guide decisions. His cautionary tale must be extended also to the modelers themselves, who must reflect critically on the purposes of their enterprise. As Jerry Ravetz alerts us: "In the sense of the classical philosophy of science, all our models are trivially 'false.'' (Ravetz, 2003: 65).

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For references see: http://sciencepolicy.colorado.edu/ogmius/archives/issue_22/ogmius_exchange_refs.html

For figures see: http://sciencepolicy.colorado.edu/ogmius/archives/issue_22/ogmius_exchange_figs.html

Ogmius Exchange Part IV
Closing Thoughts
Excerpt from Overheated Claims, National Post

Lost in the Manichean debate over climate change is the real significance of what climate models really are telling us: We should act on climate mitigation and adaptation not because we are able to predict the future, but because we cannot. The academic literature, far from public view, contains a much more realistic perspective on the uncertain predictive capabilities of climate models. Oxford University's David Frame and colleagues, all climate modelers, explain that "Rather than seeing models as describing literal truth, we ought to see them as convenient

Ogmius Exchange Part IV Continued

fictions which try to provide something useful."

They are useful because the predictions from models suggest that the climate patterns experienced in the past century or so may not be a useful guide to the future — but exactly how change might occur is uncertain. Ten years ago Simon Shackley and his colleagues warned that "The impression that climate change can be so predicted and managed is not only misleading, but it could also have negative repercussions should policy makers act on this assumption." By this they meant that "the societal perception that the 'climate change problem' is being adequately handled could inhibit the emergence of, and support for, creative social, policy and economic responses to the challenge of coping with a possibly inherently unpredictable system such as climate."

The reality is that the future state of the climate is uncertain, and as such it represents a type of risk management problem. In 2002 Steve Schneider, a climate scientist at Stanford University and long-time advocate for action on climate change, explained "uncertainties so infuse the issue of climate change that it is still impossible to rule out either mild or catastrophic outcomes." Combatants in the climate debate congregate around the extremes, emphasize either mild or catastrophic outcomes as is convenient and overstate the certainty of such outcomes.

Effective action on climate change is more likely when we fully appreciate what science can, and cannot, do.

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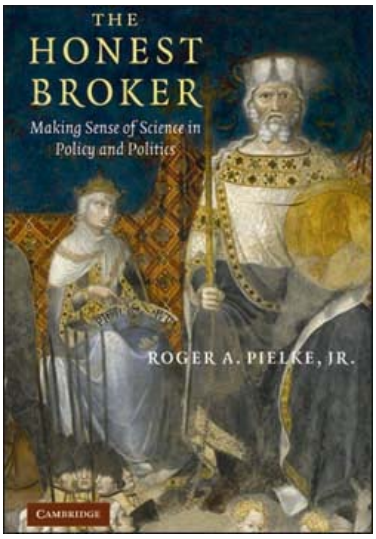
For another recent evaluation of climate models, also see the new CCSP Synthesis and Assessment Report 3.1 "Climate Models: An Assessment of Strengths and Limitations": http://www.climatescience.gov/Library/sap/sap3-1/final-report/default.htm.

Center News

The Honest Broker Receives Rave Reviews

Roger Pielke, Jr.'s latest book, The Honest Broker: Making Sense of Science in Policy and Politics (http://sciencepolicy.colorado.edu/publications/special/honest_broker) was reviewed in Bioscience this past April by Robert Lackey, a scientist at EPA. Lackey provides a strongly positive review including the following:



> The Honest Broker is a must-read for any scientist with even a modest interest in environmental policy or politics, and I recommend it especially to scientists unfamiliar with the continuing controversy over how scientists misuse science in environmental policy and politics. . . . In summary, The Honest Broker is an important book, and it should be read by everyone… (read more at: http://www.bioone.org/perlserv/?request=get-document&doi=10.1641%2FB580414).

Mark Shafer, director of climate services at the Oklahoma Climatological Survey, reviewed The Honest Broker in the May, 2008 Bulletin of the American Meteorological Society. He writes:

> Pielke's discussion of climate change politics is excellent. He seizes on the central issue in climate change politics: that those opposed to action (based on value decisions) raise scientific uncertainty as a reason for delay or inaction. In response, scientists focus on reducing or eliminating uncertainty to undermine grounds for opposition to action rather than focusing on the merits of the argument, which is really a values-based decision irrespective of the science.

The conclusion to the review is very positive:

> The basic framework of the book and its discussion of the importance of considering values and uncertainty are strong. The numerous examples he offers are instructive. Anyone engaged in policy, even on the periphery, would benefit from this discussion.

The Honest Broker can be ordered from Cambridge Press (http://www.cambridge.org/us/catalogue/catalogue.asp?isbn=9780521694810).

Center News
Spring 2008 Noontime Seminar Series

The Center's popular Noontime Seminar Series wrapped up another successful semester with the following presentations this past spring:

Thomas Chase, To What Degree are Climate Models Useful in Guiding Policy Decisions?, February 4, 2008.

Balaji Rajagopalan, The Once and Future Pulse of Indian Monsoonal Climate, February 18, 2008.

Kathleen Tierney, The Good ,the Bad and the Ugly: Post-Katrina Trends in Hazards Policy and Research, March 17, 2008.

Joe Ryan, Abandoned Mine Cleanups, the Clean Water Act, and Environmental Good Samaritans, March 31, 2008.

Rebecca Morss, Interactions among Flood Predictions, Decisions, and Outcomes, April 7, 2008.

Eva Lövbrand, The Democracy Paradox in Studies of Science and Society, April 9, 2008.

Paul Komor, New energy education programs at CU: What does it mean to teach 'energy'?, April 14, 2008.

Reiner Grundmann, Path dependency in the cases of ozone layer protection and climate change, April 23, 2008.

Elizabeth McNie, Exploring the Agora: Co-producing useful Climate Science for Policy, April 25, 2008.

Andrea Ray, Lessons learned from the 2000s Western drought: Evolving linkages between research and services, April 28, 2008.

William Travis, Sustainability Questioned: Appraising the Viability of Land Use Systems, June 19, 2008.

For more information about these or upcoming talks, or to be added to the email list to receive announcements of talks, visit our Speakers page (http://sciencepolicy.colorado.edu/outreach/center_talks.html).

Center News
Upcoming Events

Roger Pielke, Jr., is the vice chair for the Gordon Research Conference on Science and Technology Policy "Prospects for Governing Emerging Technologies," (http://www.grc.org/programs.aspx?year=2008&program=scipolicy) Big Sky, MT. August 17-22, 2008.

Benjamin Hale, Restoration and Remediation as Redress to Wrongdoing, Clemson University, September 5-7, 2008.

Roger Pielke, Jr., Scientists in Highly Politicized Debates, Cornell University, October 23, 2008.

The following speakers (with tentative titles of their talks) will participate in our fall 2008 noontime seminar series. Please check our home page (http://sciencepolicy.colorado.edu) and speakers' page (http://sciencepolicy.colorado.edu/outreach/center_talks.html) for final titles, abstracts, and dates of these talks. Better yet, sign up to be on our mailing list and receive email notifications of upcoming talks: http://sciencepolicy.colorado.edu/mailman/listinfo/events/. All talks are at noon.

September 15, 2008
Barbara Farhar, "Zero Energy Homes"

October 13, 2008
Frank Laird, "Changing Technological Systems: Comprehensive Policy for Renewable Energy"

October 27, 2008
Marilyn Averill, "Climate Litigation: The Role of the Judiciary in U.S. Climate Policy"

November 10, 2008
Jerry Peterson, "A nuclear physicist in the Department of State"

All talks are free and open to the public and will be held at the Center for Science and Technology Policy Research's conference room located at 1333 Grandview Avenue in Boulder. For directions see: http://sciencepolicy.colorado.edu/about_us/find_us.html.

Center News
Grad Student and Alumni Report

Elizabeth McNie

ENVS and CSTPR graduate student **Elizabeth ("Bets") McNie** accepted a joint appointment at Purdue University as an Assistant Professor of Political Science & Earth and Atmospheric Sciences, and will be affiliated with the Purdue Climate Change Research Center. Her areas of interest include environmental and climate policy; science and technology policy; adaptation to climate change; the role of boundary organizations in linking science and policy; and the process of co-producing useful science information for policy through engagement between scientists and civil society. She will continue to explore such issues in the context of the National Oceanic and Atmospheric Administration's "Regional Integrated Sciences and Applications" program that is dedicated to providing policy-relevant climate science to a range of public and private natural resources, public health, agricultural, and other decision makers. This research will be a continuation of her dissertation, titled: "Co-producing useful climate science for policy: Lessons from the RISA program". Elizabeth is also interested in the role of climate science in U.S. state climate change adaptation plans; sustainability science; marine transportation in the Arctic; and interdisciplinary research and teaching. Next fall she will teach two courses, an upper division course called, "Global Green Politics" and a graduate level course called "Environmental Politics and Policy". She will also teach courses in climate change science and policy, sustainability science and policy, policy analysis, science and technology policy, and others.

David Cherney

ENVS and CSTPR graduate student **David Cherney** was awarded a 2008-2009 CIRES Graduate Research Fellowship and was named a 2008-2009 Fellow at the Center for the Humanities and Arts.

ENVS and CSTPR graduate student **Shali Mohleji** taught an undergraduate senior-level topics course in the Environmental Studies Department this past spring. The theme of the course centered on natural disasters, covering both the natural and anthropogenic aspects. The course was organized into three sections: the science of natural disasters, the sociological issues, and the policy aspects. The science section covered material on the earth sciences relevant to earthquakes, landslides, mud and debris flows as well as the hydrology associated with streams and floods, and the meteorology behind hurricanes. The sociological section explored the sociological factors that contribute to vulnerabilities of populations in the different phases of a natural disaster. The policy section addressed the process of disaster declarations, response and recovery policies at local, state, and federal levels, land use management, technical solutions, and the policy process framework. Case studies were used throughout the course, some of which included: Hurricane Mitch, 2007 Mexican floods, 2007 Chilean earthquake, Hurricane Katrina, 2004 Asian tsunami, and the Netherlands flood protection system.

Shali Mohleji

Melanie Roberts

Former CSTPR Visiting Scientist **Melanie Roberts**, who has been an AAAS Science & Technology Policy Fellow, was recently awarded a 1-year CIRES Visiting Fellowship and will be a visiting fellow at our center in 2009.

Former CSTPR graduate students **Genevieve Maricle** and **Nat Logar** recently finished their dissertations and accepted postdoctoral positions at the Consortium for Science, Policy and Outcomes at Arizona State University where they are working on a project looking at science policy for sustainability.

Genevieve Maricle

Nat Logar

Recent Publications

In the Spotlight

Lahsen, M., 2008. Experiences of Modernity in the Greenhouse: A Cultural Analysis of a Physicist 'Trio' Supporting the Conservative Backlash Against Global Warming. Global Environmental Change, Vol. 18, No. 1, pp 204-219, http://sciencepolicy.colorado.edu/admin/publication_files/resource-2590-2008.05.pdf.

Center research scientist Myanna Lahsen has a provocative new article out that analyzes a prominent subset of US climate contrarians, providing a more multi-faceted and complex account than generally available of why they chose to join the anti-environmental backlash. One of them, Frederick Seitz, died recently, making this a poignant time to examine him as well as his similarly influential colleagues in historical perspective, as she does in this article.

> Abstract: In the context of President George W. Bush's rejection of the Kyoto Protocol intended to combat human-induced climate change, it appears important to improve understanding of powerful efforts to reframe global climate change as a non-problem. This paper draws on ethnographic research among U.S. scientists involved with climate science and politics to improve understanding of the U.S. controversy over global climate change by attending to structuring cultural and historical dimensions. The paper explores why a key subset of scientists – the physicist founders and leaders of the George C. Marshall Institute – chose to lend their scientific authority to the "environmental backlash," the counter-movement that has mobilized to defuse widespread concern about perceived environmental threats, including human-induced climate change. The paper suggests that the physicists joined the backlash to stem changing tides in science and society and to defend their preferred understandings of science, modernity, and of themselves as a physicist elite – understandings challenged by recent transformations in American science and society that express themselves, among other places, in the widespread concern about human-induced climate change.

Pielke, Jr., R. A., 2008. Scientists and the Next President of the United States, Elements, Vol. 4, No. 3, June, http://sciencepolicy.colorado.edu/admin/publication_files/resource-2627-2008.17.pdf.

> Excerpt: In January 2009, the United States will have a new president, and for many scientists, inauguration day cannot come too soon. The past eight years have been a time of intense conflict between the Bush administration and the scientific community. Areas of dispute have included access to the media by federal scientists, decisions that ignore or run counter to the advice given by scientific advisors inside or outside of government, the stacking of advisory committees with ideologically friendly experts, and research budget growth that has fallen short of expectations, especially in the last few years.

Also New:

Pielke, Jr., R. A., 2008. Blinded by Assumptions. Bridges, Vol. 17, April, http://www.ostina.org/content/view/3020/957/.

Pielke, Jr., R. A. 2008. Climate predictions and observations. Nature Geoscience 1: 206, http://sciencepolicy.colorado.edu/admin/publication_files/resource-2592-2008.07.pdf.

Pielke, Jr., R. A., 2008. End of 2007 Hurricane-Global Warming Update, AIR Currents, Jan., http://www.air-worldwide.com/_public/html/air_currentsitem.asp?ID=1394.

Pielke, Jr., R. A., 2008. Overheated Claims. Financial Post, June 17, http://network.nationalpost.com/np/blogs/fpcomment/archive/2008/06/17/overheated-claims.aspx.

Pielke, Jr., R. A., 2008. Trading technologies. Nature Reports Climate Change, online pub 29 May, http://www.nature.com/climate/2008/0806/full/climate.2008.53.html.

Pielke, Jr., R. A., Tom Wigley, and Christopher Green. 2008. Dangerous assumptions. Nature 452(3): 531-532. (see discussion of media coverage in Center News section).

Pielke, R.A., Jr., with contributions from P. Hoeppe (Munich Re) and S. McIntyre (climateaudit.org). Case studies in disaster losses and climate change, http://sciencepolicy.colorado.edu/admin/publication_files/resource-2589-2008.04.pdf.

S&T Opportunities

The Dupont Summit
The New Administration Tackles Science and Technology:
Priorities for the Road Ahead
Washington, DC, December 4 - 6, 2008

Call for Proposals and Workshops: On the verge of a new U.S. Presidential Administration, the Policy Studies Organization is glad to announce that the upcoming Dupont Summit will be held during the first week of December 2008, in the aftermath of the U.S. presidential elections.

The theme of the summit is: The New Administration Tackles Science and Technology. Priorities for the Road Ahead. The purpose of the Dupont Summit is to bring scholars and policymakers into dialogue about pressing policy issues on environment, technology and science, which will need to be addressed by the new American Presidency.

The Dupont Summit will focus on the following themes:

- AIDS
- Alternative Sources of Energy
- Biotechnology
- Bioethics
- Biomedicine
- Chemical and Biological Engineering Genetics
- Global Warming
- Environment and Ecology
- Stem-cell Research
- Information Technology and Telecommunications
- Other suggestions are welcome

For more information please visit the Conference Section via our website http://www.ipsonet.org, or you may contact Daniel Gutiérrez, Conference Manager by email dgutierrezs@ipsonet.org

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Recent Prometheus Blogs

Prometheus (http://sciencepolicy.colorado.edu/prometheus/), the Center's science policy weblog, continues to serve as an online forum for discussion of a variety of issues at the intersection of science and policy. Recent blogs include:

Do IPCC Temperature Forecasts Have Skill? by R. Pielke, Jr.:

"Skill" is a technical term in the forecast verification literature that means the ability to beat a naïve baseline when making forecasts. If your forecasting methodology can't beat some simple heuristic, then it will likely be of little use.

What are examples of such naïve baselines? In weather forecasting historical climatology is often used. So if the average temperature in Boulder for May 20 is 75 degrees, and my prediction is for 85 degrees, then any observed temperature below 80 degrees will mean that my forecast had no skill. In the mutual fund industry stock indexes are examples of naive baselines used to evaluate performance of fund managers. Of course, no forecasting method can always show skill in every forecast, so the appropriate metric is the degree of skill present in your forecasts… read more: http://sciencepolicy.colorado.edu/prometheus/do-ipcc-temperature-forecasts-have-skill-4421.

The Politicization of Climate Science by R. Pielke, Jr.:

Here I'd like to explain why one group of people, which we might call politically active climate scientists and their allies, seek to shut down a useful discussion with intimidation, bluster, and name-calling. It is, as you might expect, a function of the destructive politics of science in the global warming debate.

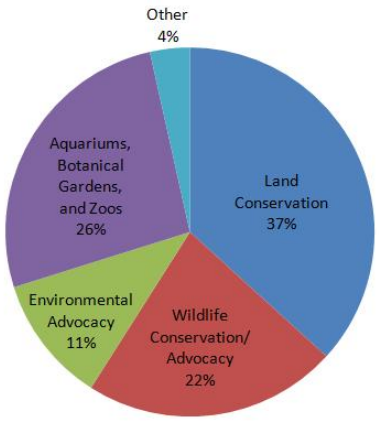
We've had a lot of interest of late in our efforts to explore what would seem to be a simple question:

> What observations of the global climate system (over what time scale, with what certainty, etc.) would be inconsistent with predictions of the IPCC AR4?

The motivation for asking this question is of course the repeated claims by climate scientists that this or that observation is "consistent with" such predictions…. read more: http://sciencepolicy.colorado.edu/prometheus/the-politicization-of-climate-science-4418.

Conservation Nonprofit Revenue by D. Cherney:

This past week, I aggregated IRS tax data for the top 50 revenue producing conservation nonprofit organizations. I documented over $22.5 billion dollars in combined revenue between 1998 and 2005. The combined assets of these organizations were approximately $8 billion in 2005. To help understand where revenue is flowing, I used a simple classification system. The following pie chart breaks down revenue by sector for the eight year period:



Of little surprise, The Nature Conservancy (TNC) is the top revenue generating conservation nonprofit. In 2005, TNC accounted for 25.6% of the revenue generated by the top 50 organizations…. read more: http://sciencepolicy.colorado.edu/prometheus/conservation-nonprofit-revenue-4472.

Center In the News

Center personnel continue to receive national media attention on a variety of topics.

Roger Pielke, Jr.'s Letter to the editor appeared in the 21 July 2008 Financial Times on the cost of carbon: ***Political realities will undermine energy pricing*** by Roger Pielke, Jr., http://www.ft.com/cms/s/0/eedc8ad6-56bb-11dd-8686-000077b07658.html.

Roger Pielke, Jr. was quoted in an 18 May 2008 Washington Times article on climate model predictions: ***Real intelligence failures*** by Richard W. Rahn, http://washingtontimes.com/news/2008/may/18/real-intelligence-failures/.

Lisa Dilling was quoted in a 24 April 2008 ClimateWire article on the affects of pine beetles on global warming: ***Could an ant-sized insect spur global warming?*** by Christa Marshall, http://www.eenews.net/climatewire/2008/04/24/4/.

Center In the News Continued

Roger Pielke, Jr's Nature commentary (with Tom Wigley and Chris Green), ***Dangerous Assumptions*** (http://sciencepolicy.colorado.edu/admin/publication_files/resource-2593-2008.08.pdf) has been cited, referred to or commented on by numerous media around the world. The following are a sample:

CO2 Targets May Be Missed With New Technology, Researchers Say by Jeremy van Loon and Jim Efstathiou Jr., Bloomberg, April 2, 2008, http://www.bloomberg.com/apps/news?pid=20601124&sid=aGFPbYSahrVA&refer=home.

IPCC underestimates global warming challenge, researchers say, CBS News, April 2, 2008, http://www.cbc.ca/technology/story/2008/04/02/tech-ipcc-underestimate.html.

Climate challenge underestimated? by Quirin Schiermeier, Nature, April 2, 2008, http://www.nature.com/news/2008/080402/full/news.2008.728.html.

The Technology Gap in the Climate Debate by Andrew C. Revkin, New York Times, April 2, 2008, http://dotearth.blogs.nytimes.com/2008/04/02/the-technology-gap-in-the-climate-debate/?hp.

U.N. climate panel seen downplaying technology need by Deborah Zabarenko, Reuters UK, April 2, 2008, http://uk.reuters.com/article/oilRpt/idUKN02414150200804 02.

Report: Panel too optimistic about global warming by Bill Scanlon, Rocky Mountain News, April 2, 2008, http://www.rockymountainnews.com/news/2008/apr/02/report-uphill-fight-vs-co2/.

IPCC seriously underplays climate change by Roger Highfield, Telegraph.co.uk, April 2, 2008, http://www.telegraph.co.uk/earth/main.jhtml?view=DETAILS&grid=&xml=/earth/2008/04/02/sciipcc102.xml.

Critics: Need for climate technology far greater, Boston Globe, April 3, 2008, http://www.boston.com/news/nation/washington/articles/2008/04/03/critics_need_for_climate_technology_far_greater/.

Climate change a moving target, experts note by Katy Human, Denver Post, April 3, 2008, http://origin.denverpost.com/nationalpolitics/ci_8789173.

The road from Kyoto by Gwyn Prins, The Guardian (UK), April 4, 2008, http://www.guardian.co.uk/commentisfree/2008/apr/04/climatechange.carbonemissions.

Climate Bill: How Do You Slice it? by Keith Johnson, Wall Street Journal, April 4, 2008, http://blogs.wsj.com/environmentalcapital/2008/04/04/climate-bill-how-do-you-slice-it/.

A Shift in the Debate Over Global Warming by Andrew C. Revkin, New York Times, April 6, 2008, http://www.nytimes.com/2008/04/06/weekinreview/06revkin.html.

New Focus on Coal's Part in Warming by Juliet Eilperin, Washington Post, April 6, 2008, http://www.washingtonpost.com/wp-dyn/content/article/2008/04/05/AR2008040501136.html.

S&T News

The Center for Nanotechnology in Society at Arizona State University (CNS-ASU) invites you to help design the future of nanotechnology.

READ, REVISE, RANT: Some say that Nanotechnology will revolutionize life as we know it, but what should we really expect from the future of nanotechnology? CNS developed 6 plausible product descriptions to provide some structure to discussions about nanotechnology. These fictional scenes have been evaluated by nanoscale scientists and engineers for technical plausibility- it is up to you to weigh social, economic, ethical, environmental and political plausibility-and desirability!!

Through an interactive website, the NanoFutures experiment invites citizens, scientists and engineers, social scientists, policy makers, and others interested in nanotechnology to assess the potentials and perils of nano-enabled futures. On this site you can:

READ the scenes: What if ultra fast sequencing technology is used to analyze the DNA in harvested waste water? What if you could predict disease before the onset of symptoms? What if your intelligence was enhanced with a brain chip? What if, instead of prisons, convicted criminals were injected with disabling drugs that were activated if the prisoners misbehaved?

REVISE the scenes in a wiki: the scenes are predominately technical- what about social values, religious viewpoints, economic feasibility, and ethical desirability? Edit the scenes to create richer portraits of the implications of the technology.

You can also write your own scenario about nanotechnologies' development!

RANT about and discuss the scenes: What are your thoughts on the implications of nanotechnology? Are there some technologies that should not be developed? Who should control nanotechnology? Go to: http://cns.asu.edu/nanofutures.

About Us

Ogmius is the newsletter of the Center for Science and Technology Policy Research which is published four times a year. The Center is within the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado-Boulder. The mission of CIRES, which was established in 1967, is to act as a national resource for multidisciplinary research and education in the environmental sciences. CIRES is jointly sponsored by the University of Colorado-Boulder and the National Oceanic and Atmospheric Administration.

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