Ogmius

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CIRES

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Inside this issue:

Introduction to the Ogmius Exchange
Decision Making and Climate Change

This month's exchange addresses decision making and climate change. Martyn Clark, a Research Scientist here at the CIRES Center for Science and Technology Policy Research (http://sciencepolicy.colorado.edu/homepages/martyn_clark/), and director of the NOAA-OGP Western Water Assessment, along with Roger Pulwarty, a Research Scientist with NOAA's Climate Diagnostics Center (CDC) (http://www.cdc.noaa.gov/~rsp/), point out the urgent need to ensure that scientific information on climate change impacts is developed for and used by decision-makers. Clark and Pulwarty suggest that research should focus on testing the flexibility and resilience of the policies and plans of climate-sensitive decision-makers to a wide range of climate futures rather than attempting to reduce uncertainty among model predictions of future climate. As an example they cite the Western Water Assessment's examination of the advantages and limitations of different management strategies that can be used to adapt to potential water shortages that may result as a consequence of climate extremes and societal changes such as population growth.

Responding to Clark and Pulwarty is Rob Wilby, Climate Change Science Advisor, UK Environment Agency. Wilby maintains that, while it is important to acknowledge uncertainty, the time is fast approaching when we will need to take action. He suggests one way to reduce uncertainty about future climate change is to quantify the impacts of present-day variability, which can teach us a lot about the key climate sensitivities and help to focus limited resources on critical assumptions and thresholds. Like the NOAA-OGP Western Water Assessment, UK Environment Agency's Centre for Risk and Forecasting is appraising options rather than focusing on probabilistic estimates of climate change impacts.

For additional background see:

Environment Agency, Risk and Forecasting, http://www.environment-agency.gov.uk/science/219094/272473/?version=1&lang=_e

Planning Climate and Global Change Research: A Review of the Draft U.S. Climate Change Science Program Strategic Plan, http://www.nap.edu/catalog/10635.html?onpi_topnews_022503

Strategic Plan for the Climate Change Science Program (November 2002 draft), http://www.climatescience.gov/Library/stratplan2003/default.htm

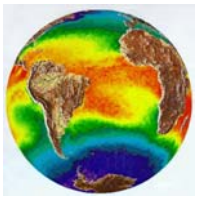
UK Climate Impacts Programme, http://www.ukcip.org.uk/

Western Water Assessment, http://sciencepolicy.colorado.edu/wwa/

Ogmius Exchange: Part I

Devising Resilient Responses to Potential Climate Change Impacts

Martyn Clark and Roger Pulwarty



With the Bush Administration due to release and implement its strategic plan for its Climate Change Science Program, there is an urgent need to ensure that scientific information on climate change impacts is developed for and used by decision-makers.

The most significant challenge cited with using information on climate change impacts is choosing from a diversity of projections—different emission scenarios provide different results, different global climate models provide different results, different downscaling methods provide different results, and different models used to assess climate change impacts (e.g., crop yield models) provide different results. Jones (2000) summarized the resulting problem: "Upon being presented with such large ranges, stakeholders often fail to see the utility of this information, given the large uncertainties they already deal with." Many scientists argue that if they could reduce the diversity of projected futures, or at least assign probabilities to them, they will provide information that is of more use to decision-makers.

Increased understanding leads to increased uncertainty?

But not only should diversity in projections of future climate be expected, it may in fact increase as new scientific understandings increase the complexity of climate models. For example, in 2001 the Intergovernmental Panel on Climate Change presented a larger range of projections of global temperature for 2100 than it did in 1996. This increased diversity in climate projections was explained by Wigley and Raper (2001) to be the result of "a wider range of emissions scenarios, incorporation of climate feedbacks in modeling the carbon cycle, improved relationships between radiative forcing and greenhouse gas abundance, more comprehensive treatments of methane and tropospheric ozone, the direct use of AOGCM results, and different assumed rates of slowdown of the ocean's thermohaline circulation." In other words, more comprehensive modeling of the Earth system has led to a wider rather than narrower range of projected impacts from climate change.

And even if diversity in projections of future climate grows, it still may not include the actual future climate we may encounter, for at least three reasons. First, climate models are constructed and operated to provide a "best guess" of future climate, not to estimate the entire range of plausible futures. An approach focused on bounding the scope of possible futures would represent a departure from current practices. Different models share assumptions and source code, further restricting the range of model projections. Second, climate models are necessarily a simplification of reality, and many important factors—such as land use effects on climate—are not included. And we are still ignorant of how particular phenomena such as clouds influence climate system behavior. Third, and perhaps most important, projections of future climate depend critically on anticipating human activity. It is essentially impossible to forecast population growth, new technological innovations that may increase or decrease greenhouse gas emissions, the outcome of world conflicts, rates of economic development, and so forth, and yet, projections of future climate depend critically on such changes in human systems and their attendant impacts on the environment.

Probability to the rescue?

What then can we do in the face of such uncertainty? A common answer to this question is to express results in terms of probabilities. Probabilistic projections are generally produced by identifying key sources of uncertainty, and modeling those uncertainties in simple climate models. In an ambitious project, Allen and Stainforth (2002) plan to use an incredibly large ensemble of more complex models, obtained by varying parameter values, parameterization schemes, resolution and even entire model components, to generate probabilistic forecasts of climate at the end of the 21st century (http://www.climateprediction.net).

But the inherent problem with such approaches is that while they can say something about the probability of seeing particular results from a model, they can say nothing about how well the modeled output corresponds with the climate future. Put differently, probabilistic climate projections downplay the element of surprise. Recall the discovery of the climatic impacts of sulphate aerosols, and how inclusion of aerosols in climate models altered projections of the future. Consider also the growing understanding of the role of land use change on climate, which, according to Roger Pielke, Sr. and colleagues, when included in climate models result in much greater regional climate impacts than does increases in atmospheric concentrations of greenhouse gasses. And there may be factors we haven't even experienced yet—for example, should we consider the possibility of future regional climatic impacts of water vapor emissions from hydrogen-powered vehicles? These examples do not even account for the virtual impossibility of predicting future changes in human systems, and the effects of these changes on climate. Probabilistic climate projections can mislead decision-makers by actually obscuring the real range of futures they face and by appearing to provide a greater degree of certainty about the future than is warranted.

Ogmius Exchange: Part I Continued

Science for society?

We are thus stuck with a conundrum: How do we conduct climate change research so that we can provide information and tools that are useful for climate-sensitive decision-makers? Current approaches to this topic are unsatisfying. Studies on the regional impacts of climate change that dominate the literature do not suitably account for the diversity of future climate projections—most impact studies are based on one or two scenarios of future climate change with no knowledge of the differences between these scenarios and other plausible scenarios of future climate.

This creates a lose-lose situation. If decision-makers use information from the few climate change scenarios available to them, they may develop policies and plans that are not resilient to all possible future climates. And if decision-makers do not use information from climate change scenarios (e.g., because the uncertainties are so large) and instead rely on the historical record, they may also develop policies and plans that are not resilient to all possible future climates.

The fact that we know we do not know is often ignored. There is a need to reform research efforts in regional and local settings to test the flexibility and resilience of the policies and plans of climate-sensitive decision-makers to a wide range of climate futures.

The NOAA-OGP Western Water Assessment (WWA) project in Boulder, Colorado (http://sciencepolicy.colorado.edu/wwa/) provides a useful alternative to the traditional climate change impact studies. Instead of focusing on projections of the specific impacts of climate change on the water sector, WWA investigators are examining the advantages and limitations of different management strategies that can be used to adapt to potential water shortages that may result as a consequence of climate extremes and societal changes such as population growth. This effort is facilitated through cooperative relationships between scientists and decision-makers, where new problems are identified and addressed as they arise. This shift from the evaluation of the impact of specific climate futures to the assessment of different decision alternatives attempts to respond to the challenge put forward by Lempert and Schlesinger (2000): "what actions should we take, given that we cannot predict the future."

Research efforts devoted to evaluating decision alternatives under uncertainty must be a critical component of the Bush Administration's Climate Change Science Program. As the National Academy of Sciences (2003) wrote in response to the draft CCSP strategic plan: "As society faces increased pressure to decide how best to respond to climate change and associated global changes, there is a need to focus at least part of this effort on more applied research in support of decision-making. In particular, research efforts are needed to explore response options and evaluate the costs and benefits of adaptation and mitigation."

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Ogmius Exchange: Part II
REPLY
Rob Wilby

This is the crux of the problem. What can be done now, in practice, to 'climate-proof' the future given the cascade of scientific and societal uncertainties attached to the likely behavior of the climate system? Whilst it is important to acknowledge uncertainty, the time is fast approaching when we will need to move from awareness-raising to action.

The challenges confronting decision-makers are already tangible. For example, the River Thames basin in the UK has available water resources per head of population similar to that of Israel,

Ogmius Exchange: Part II, Reply Continued

yet the London Plan envisages a further half million dwellings by 2016 in a region that is projected to become significantly hotter and drier (Hulme et al., 2002). Natural land movements, increased storminess and sea level rise mean that the cost of infrastructure to protect London from a 1 in 1000-year flood event to the year 2100 will be about £4 billion over the next 40 years. Sea level rise and associated coastal erosion also pose risks to radioactive waste repositories, and threatens valuable inter-tidal habitats (such as salt marsh) with 'coastal squeeze'. The official position with respect to species cited under the UK Biodiversity Action Plan is one of "assisted adaptation" but this raises many questions about prioritizing some species and habitats ahead of others, what to do about exotic species, and how to define "normal" conditions? Regulators must also accommodate new legislation associated with the European Water Framework Directive that will set stringent environmental objectives governing surface and groundwater quality by 2010. All this and more in the face of proliferating climate change outlooks.

An important step towards reducing uncertainty surrounding the consequences of future climate change is to quantify the impacts of present-day variability. The so-called "bottom-up" approach may not be in vogue but it can teach us a lot about the key climate sensitivities of the system(s) of interest and help to focus limited resources on critical assumptions and thresholds. For example, the reliable yield of a reservoir may depend upon the length of dry-spells at critical times of the year. Persistent dry-spells may, in turn, be linked to the occurrence of specific weather patterns over the region. This leads us naturally to question the ability of General Circulation Models to reproduce such weather phenomena for the present climate, as well as changes in the future. Some impact studies show that natural climate variability may be as great as, or even greater than, projected impacts associated with human-induced climate change (e.g., Hulme et al., 1999). In either event, there is considerable scope for capitalizing upon the wealth of palaeo-data for benchmarking levels of climate variability beyond the limited scope of the instrumental record (http://www.ngdc.noaa.gov/paleo/drought/drght_500years.html).

Future global emissions of greenhouse gases will remain a largely intractable source of uncertainty affecting climate predictions. However, it is anticipated that ongoing research into small-scale physical processes (e.g., clouds) and large-scale biogeochemical feedbacks (e.g., the carbon-cycle) will progressively reduce the scientific uncertainties surrounding climate model predictions (Hulme et al., 2002). Higher resolution climate models and innovative ways of testing regional scenarios using seasonal forecasts may also facilitate model verification using hitherto unseen events (e.g., Leung et al., 2002). But the probabilistic description of extreme events or abrupt climate changes, such as the complete shut down of the North Atlantic thermohaline circulation, are largely beyond the scope of even present-day observational data.

A useful alternative to the probabilistic paradigm has already been suggested. The climate change strategy of the Western Water Assessment project has much in common with the guidance of the UK Environment Agency's Centre for Risk and Forecasting. Both are invoking options appraisal rather than probabilistic estimates of climate change impacts. The decision-making framework advocated by Willows and Connell (2003) envisages eight stages:

1) identify problem and objectives
2) establish decision-making criteria
3) assess risk
4) identify options
5) appraise options
6) make decision
7) implement decision
8) monitor, evaluate and review outcomes

The framework is circular, allowing decisions to be revisited in the light of new information and iterative to encourage the refinement of objectives and decision-making criteria. The involvement of stakeholders is seen as an important means of including all potential impacts and of identifying adaptation-constraining decisions.

At the very heart of the risk assessment framework is the philosophy of no regret climate adaptation options. These options deliver benefits under any forseeable climate scenario, including present day variability (e.g., water conservation measures). Unfortunately, no regret options may not always be available, so a second mantra is invoked, namely to keep open or increase the options that will allow climate adaptation measures to be implemented in the future when the risks attached to different measures are less uncertain. This recognizes that some adaptation measures may affect the ability of other decision-makers to manage climate change impacts. For example, the siting, construction and operation of flood defense infrastructure (to address the impact of extreme hydrological events) may compromise water levels and nutrient fluxes of adjacent wetlands (threatened by increased summer drying). An important part of the process is, therefore, to identify potential conflicts between adaptation objectives.

Finally, it is perhaps germane to note that agencies on either side of the Atlantic have arrived at a similar framework for climate change impact adaptation and mitigation. Of course, the true

Ogmius Exchange: Part II, Reply Continued

value of the proposed methodology will lie in the appraisal of 'real-world' decisions. At least there is no shortage of risks to assess!

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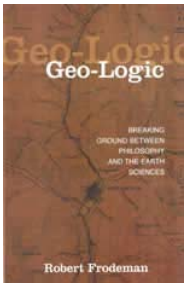
Center News

Geo-Logic, A New Book by Bob Frodeman

The April 18, 2003 edition of The Chronicle of Higher Education included an interview with Bob Frodeman about his new book, *Geo-Logic: Breaking Ground Between Philosophy and the Earth Sciences* (http://sciencepolicy.colorado.edu/homepages/rfrodeman/geologic/geologic_book_flier.pdf) (recently published by the State University of New York Press). According to Frodeman, "When we mess with something beautiful, that's wrong, and we should go correct it. It's an actionable, theological opinion to say that we've sinned, we've committed sacrilege against something wonderful and beautiful and transcendent, [and] that we should spend some money to correct this sin. We fund a case study in salmon restoration in the lower Columbia Basin, where the director of environmental studies and the chair of theology at the University of Portland are trying to integrate environmental science with the ethical and theological dimensions of salmon recovery, to come up with a just and manageable public-policy approach. Salmon are not just resources, right? There's something wonderful about them, and everybody knows that."



See "Earth Sciences Through the Lens of Humanities, Arts, and Theology," by Peter Monaghan. Chronicle of Higher Education (April 18, 2003).

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Center News
New Center Affiliates

Dan Sarewitz (http://sciencepolicy.colorado.edu/homepages/dan_sarewitz/), Managing Director and Senior Research Scholar of the Center for Science, Policy and Outcomes, joins the Center as a visiting scholar. Dan gave a CIRES Distinguished Lecture Series talk entitled "Science, Values, and Climate Change: Probing the Limits of Objectivity" on April 18 to a standing-room only audience.

New Center faculty affiliates include:

Tom Chase (http://sciencepolicy.colorado.edu/homepages/thomas_chase/), a University of Colorado Assistant Professor of Geography;

R. Balaji Rajagopalan (http://sciencepolicy.colorado.edu/homepages/balaji/), an Assistant Professor and Fellow with the Cooperative Institute for Research in Environmental Sciences and the Department of Civil, Environmental and Architectural Engineering at the University of Colorado; and

Tom Yulsman (http://sciencepolicy.colorado.edu/homepages/tom_yulsman/), Co-Director of the Center for Environmental Journalism, School of Journalism & Mass Communication at the University of Colorado.

New Center research affiliate:

Doug Kenney (http://sciencepolicy.colorado.edu/homepages/doug_kenney/), a research associate at the University of Colorado School of Law's Natural Resources Law Center.

Center News
A Few Recent Talks by Center Staff

- Martyn Clark, "The CIRES-NOAA Western Water Assessment," American Meteorological Society Annual Meeting, February 11, 2003, Long Beach, CA.
- Bobbie Klein, "2002 Municipal Response to Drought in the Colorado Front Range," American Meteorological Society Annual Meeting, February 11, 2003, Long Beach, CA, and AGU Hydrology Days, March 31, 2003, Colorado State University, Ft. Collins, CO.
- Roger Pielke, Jr. "Climate Policy and Professional Responsibility," Department of Meteorology, University of Utah, March 6, 2003, Salt Lake City, UT.

Project News
Proposed Graduate Interdisciplinary Certificate Program in Science & Technology Policy

The Center recently submitted to the University of Colorado graduate school a proposal for a new Interdisciplinary Certificate Program in Science and Technology Policy. The program is intended to provide graduate students with an opportunity to supplement their disciplinary or interdisciplinary training with rigorous knowledge and useful skills at the nexus or interface of science, technology, policy and society. It will train graduate students to better understand the broader societal role of their specialized training and will focus on

(a) the relationships between knowledge and decision making in the context of societal problems with political, technical, and social complexities and uncertainties;

(b) the roles and responsibilities of the expert in society, business, politics, and policy, and;

(c) the development of proficiency in specific areas of science and technology policy, including the acquisition of methodological skills, drawing upon the breadth of science and engineering, social science, humanities and other expertise at the University of Colorado and its partners.

Check the Center's website (http://sciencepolicy.colorado.edu) for an upcoming certificate program website.

Project News
"Our Science, Their Science"

Visiting Scholar Myanna Lahsen (http://sciencepolicy.colorado.edu/homepages/myanna_lahsen/) has been awarded a grant by the National Science Foundation for a project entitled "'Our' Science, 'Their' Science – The role of territory and translocality in competing scientific understandings of Amazonia's role in the global carbon cycle." This project involves empirical study of scientists' competing scientific hypotheses related to the role of the Amazon in the global carbon cycle and hence in human-induced climate change. In particular, the project is designed to reveal socio-political patterns among differences in positions on the issue among scientists from Brazil, the US and Europe and the extent to which these patterns do or do not map on to traditional territorial boundaries. Myanna received a Ph.D in Cultural Anthropology from Rice University in 1998 and has held postdoctoral positions at the National Center for Atmospheric Research and the Belfer Center for Science and International Affairs at Harvard University.

Project News
Science, Technology and Security Symposium Draft Report Now Available

A draft of the report of the Symposium on Science, Technology and Security held October 10-11, 2002, is now online (http://sciencepolicy.colorado.edu/events/security_symposium_2002/workshop/).

The report is organized into several sections, most importantly:

- Integrated Summary, which seeks to distill the broad themes of the Symposium for science and technology policy.
- Panel Leader Remarks, the summary comments of Lewis Branscomb, David Guston, and Eugene Skolnikoff.
- Breakout Group Reports, which summarize the work of the working groups that addressed bioterrorism, critical infrastructure, energy security, information technology, and water security.

Comments are welcomed (pielke@colorado.edu).

Project News
International Association for Environmental Philosophy (IAEP)

The website of the International Association for Environmental Philosophy (IAEP) has now moved to the CIRES Center for Science and Technology Policy Research. The mission of the Association is to embrace a broad understanding of environmental philosophy, to welcome a diversity of approaches to environmental issues, to encourage joining with other academic disciplines, and to support interdisciplinary scholarship. Bob Frodeman of the CIRES Policy Center is co-founder and director of interdisciplinary activities within IAEP. IAEP is a resource for those interested in questions of environmental ethics, justice, and equity, and how these questions might be integrated with research and education across disciplines. For more information visit the IAEP site (http://www.environmentalphilosophy.org/) or email frodeman@colorado.edu.

Project News
Global Climate Change and Society

GCCS (http://sciencepolicy.colorado.edu/gccs/index.html) will launch its third year on June 16. This summer program sponsored by the National Science Foundation brings 12 undergraduates from around the country to Boulder, Colorado, to spend 8 weeks exploring the nature of scientific knowledge--its epistemological character, and its social and philosophic implications--and the contribution that social scientific and humanistic perspectives play in public policy debates.

Project News

RAA-CU Joint Internship Program

The RAA-CU Joint Internship Program (http://sciencepolicy.colorado.edu/reinsurance/) is a pilot program beginning in the summer of 2003 that places science or policy graduate students with reinsurance companies for approximately 3 months. Following a week in London at which they will take a short course on catastrophe modeling sponsored by Risk Management Solutions, students will be placed with companies in the reinsurance industry to work with decision makers who use science in making decisions or to inform decision-making. The program will be evaluated at the end of this summer for continuation or expansion next summer.

Recent Publications

Roger Pielke and Dan Sarewitz argued in the Winter edition of Issues in Science and Technology that, "based on the experience of the past 13 years, … although the current and proposed climate research agenda has little potential to meet the information needs of decisionmakers, it has a significant potential to reinforce a political situation characterized, above all, by continued lack of action. The situation persists not only because the current research-based approach supports those happy with the present political gridlock, but more uncomfortably, because the primary beneficiaries of this situation include scientists themselves. Things are unlikely to change for the better unless the climate research community adopts a leadership role that places societal responsibility above professional self-interest."

See Pielke, Jr., R. A. and D. Sarewitz, 2003. Wanted: Scientific Leadership on Climate (http://sciencepolicy.colorado.edu/homepages/roger_pielke/hp_roger/pdf/2003.01.pdf), Issues in Science and Technology, Winter, pp. 27-30.

Samples of responses to the article:

- "As an old-timer in the climate policy arena, I applaud the article by [Pielke and Sarewitz]" (Bert Bolin, past chair, IPCC);
- "We take strong issue with the claims of Pielke and Sarewitz…[their] outrageous and unsupported statement is egregiously wrong" (Tom Wigley and Kevin Trenberth, NCAR, Ken Caldeira and Ben Santer, Lawrence Livermore Lab, Martin Hoffert, NYU, Michael Schlesinger, U of Illinois, Stephen Schneider, Stanford);
- "Many of our comments parallel the observations of [Pielke and Sarewitz]" (Winston Hickox and Mary Nichols, Secretaries of the California EPA and California Resources Agency, respectively);
- Pielke and Sarewitz "impressively highlight the marginal inutility of the quest for ever more uncertainty-reducing research on climate change. They expose the error of delaying hard policy choices by hiding behind scientific uncertainty…" (Richard Benedick, Pacific Northwest National Lab and chief U.S. negotiator of the Montreal Protocol);
- "The arguments presented by [Pielke and Sarewitz]…are basically flawed" (Eric Barron, Penn State);
- "What has $20 billion spent on climate change research since 1988 brought us? [Pielke and Sarewitz] claim that we have purchased quite a bit of academic understanding, but not much that helps policymakers…Have we helped policymakers? Probably not, I would agree" (John Cristy, University of Alabama).

Complete responses to the article can be found here (http://sciencepolicy.colorado.edu/homepages/roger_pielke/hp_roger/pdf/responce_for_2003.15_forum_climate_research.pdf).

S&T News

Space Policy Resources

Following the Columbia disaster (and the following flurry of interest), the Center created a Space Policy Resources page (http://sciencepolicy.colorado.edu/media_resources/space_policy/index.html) that

includes articles written by Center staff and affiliates as far back as 1987, including Roger Pielke's prescient "When, not if, we lose another shuttle, what then?" (http://sciencepolicy.colorado.edu/homepages/roger_pielke/hp_roger/pdf/2002.20.pdf) written September, 2002.

S&T News

Water, Climate and Uncertainty: Implications for Western Water Law, Policy, and Management

The Natural Resources Law Center of the University of Colorado Law School, in conjunction with the Cooperative Institute for Research in Environmental Sciences, will be hosting its 24th annual water law conference June 11-13, 2003, at the law school. The subject of this year's conference is "Water, Climate, and Uncertainty." The following is the conference's statement of purpose:

"Both short-term climate variability and long-term climate change can, and do, impact natural resources in a variety of significant ways. In the West, the most obvious concern is the impact on water supplies. While drought has garnered the headlines recently, the prospect of more fundamental long-term climate change poses even more dramatic challenges. Advances in climate science and forecasts offer increasingly valuable insights into what the future may hold for us and how our laws, institutions, and societies might have to adapt.

Exploring ways to meet this challenge is the subject of a 3-day conference aimed primarily at political, legal, academic, and resource management professionals seeking to learn from each other and from leading scientists."

For more information and to register, visit the conference's site (http://www.colorado.edu/law/NRLC/2003Conference/index.htm).

Monthly Seminar Series

The Center launched a monthly seminar series to provide an opportunity for Center staff, students, and affiliates to learn about each other's work, as well as to bring in the occasional special guest.

- Faculty affiliate Joe Ryan of the Department of Civil, Environmental, and Architectural Engineering, the Environmental Engineering Program, and the Environmental Studies Program gave the first seminar titled "Abandoned Mines and Acid Mine Drainage: Achievements and Obstacles in Community-Driven Remediation" on March 31. Professor Ryan addressed the problem of acid mine drainage and its remediation in the context of current efforts to improve the water quality of the Lefthand Creek watershed in northwestern Boulder County.
- Congressman Mark Udall visited the Center on April 28 to discuss his work on the House Science Committee and with renewable energy legislation, among other topics.

Job Opportunities

Congressman Ehlers is seeking candidates for two science positions.

The first position is Chairman's Designee on the Environment, Technology, and Standards Subcommittee (which Congressman Ehlers chairs) of the House Science Committee. The person would be responsible for representing Congressman Ehlers' views on a wide range of issues within the Subcommittee's jurisdiction (this includes programs at the National Institute of Standards and Technology, and science programs at the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, as well as other environmental science and technology issues). The qualifications for the position include: A Ph.D (preferably in the physical sciences) is preferred but not necessary, background in science policy (preferably with an emphasis in technology policy), strong writing and communication skills, and experience in the federal legislative process.

The second position is Legislative Assistant in Congressman Ehlers' personal office. The person would be responsible for advising the Congressman and developing policy on all scientific issues that are before Congress. In addition, the person would be responsible for staying abreast of developments in the different fields of science and briefing the Congressman on new issues or discoveries relevant to federal policy, working with the various scientific organizations on policy and scientific issues, and representing the Congressman's views to the scientific community. The qualifications for the position include: A Ph.D is required; background in science policy; strong writing, communication, and networking skills; ability to keep abreast of research in different fields of science; and experience in the federal legislative process.

Please e-mail resume and CV (as appropriate) to Cameron.wilson@mail.house.gov with the subject "Ehlers' Science Position". No phone calls or faxes please.

About Us

Ogmius is the newsletter of the Center for Science and Technology Policy Research which is published three 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.

On-Line Version

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